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SELF-EMPLOYMENT: A MICROECONOMETRIC APPROACH

-Autoempleo: un enfoque microeconométrico-

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June, 2008

A mi hermano Fernando

Preface

This PhD thesis investigates the determinants and success in self-employment across the EU-15. The origins of this contribution can be traced back to 2004, when I finished my Master's thesis at the *Universidad de Alicante* (Quantitative Economics Doctorate, QED), on self-employment in Spain during the Nineties. That work became the starting point of this PhD research (see Chapter 6). After graduating, I held teaching positions at various departments of economics at different universities in Spain (Pablo de Olavide, Oviedo, La Laguna and Huelva), where this doctoral dissertation was written under the supervision of Emilio Congregado.

Several people have been influential during my PhD research. Javier Álvarez was already my supervisor during my Master thesis period. At the end of that period, he encouraged me to continue researching into applied microeconometrics. I am especially grateful to my friend and advisor, Emilio Congregado, for his constant support, inspiration and understanding. I am also indebted to David Audretsch and Zoltan Acs who invited me to stay at the *Max-Planck-Institut für Ökonomik* (Jena, Germany) in 2005. During my time there, André van Stel helped me by commenting on draft versions of chapters and by encouraging me to continue researching into entrepreneurship. Part II of this study gained a great deal from the joint work with Raquel Carrasco, during my four months stay at the *Universidad Carlos III* in 2006. Manuel Arellano suggested including Part III on this thesis. I learned a great deal from José Ignacio García, Juan Antonio Máñez, María Engracia Rochina and Juan Alberto Sanchís, thanks to their valuable comments on survival analysis (Part IV). In addition to the aforementioned people, I would like to express my gratitude to Antonio Golpe, Stephen Jenkins, Juan Francisco Jimeno, Simon Parker and Concepción Román for their valuable comments on preliminary drafts of this study.

My work also benefited from a pleasant working environment. Even though there is not enough room to mention everyone, I particularly would like to thank Rafael Aguado, Jorge Barrientos, Emilio Congregado, Andrea Conte, Antonio Golpe, Francisco Martínez, Rafael López, Raquel Ortega, Alicia Pérez, Elena Rama, Concepción Román, Silvestro di Sanzo and Andre van Stel. It would also be unfair not to mention all my students since I started my career in academic. Regarding institutional support, I would also like to thank the *Fundación Centro de Estudios Andaluces* and the *Instituto de Estadística de Andalucía* for financial support for part of this research.

I would also like to express my special thanks to my sister Ana, my parents, my grandparents, my family, my friends and, above all, Patricia, for their unconditional support over the years. I would like to end by dedicating this thesis to my older brother Fernando, who I miss greatly. If it was not for all of you, none of this would have been possible. A truly heartfelt thank you.

Huelva, June 2008
José María Millán Tapia

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Summary

Esta tesis ofrece un exhaustivo análisis empírico tanto de la decisión de convertirse en autoempleado como del éxito en este estado en toda la UE-15. Así, a través de modelos de elección discreta, analizamos las transiciones al autoempleo, distinguiendo desempleados y empleados asalariados dentro del estado inicial, y empleadores y trabajadores autónomos dentro del estado final. Por otra parte, este trabajo estudia la decisión de convertirse en empleador, partiendo de la situación de trabajador autónomo, que interpretamos como la consecuencia del propio éxito del negocio. Además, utilizamos modelos de duración en tiempo discreto para analizar la supervivencia en el autoempleo. Por último, llevamos a cabo dos estimaciones complementarias en las que analizamos separadamente la duración en su estado de los trabajadores autónomos y de los empleadores.

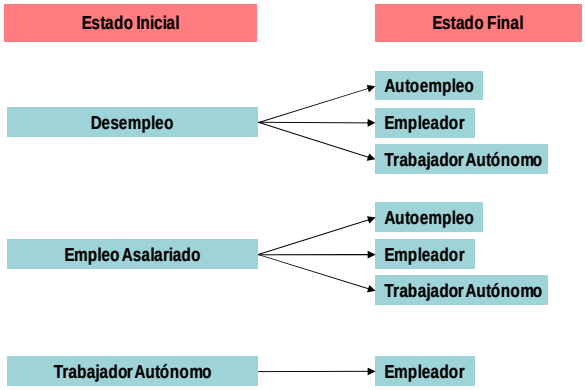

Fig. 1. Fase 1: Análisis de transiciones

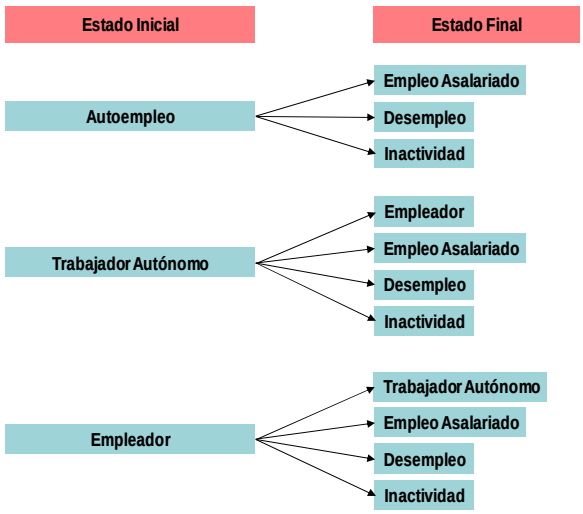

Fig. 2. Fase 2: Análisis de duración

Las Figuras 1 y 2 resumen el análisis empírico desarrollado en este trabajo. Este trabajo, además de presentar los mencionados trabajos empíricos que conforman su núcleo, ofrece un marco conceptual para el análisis y una revisión y evaluación de las fuentes de información disponibles para el estudio del presente tópico.

Capítulo 1: Introducción

En el primer capítulo se describen los objetivos, las hipótesis, la metodología y las fuentes utilizadas, así como los principales hitos de la tesis doctoral y el grado de oportunidad de la misma. Igualmente, se incluye la estructura capitular de la misma y un avance de los contenidos por capítulos.

Parte I: Conceptualización, Medida y Hechos Estilizados

La primera parte de la tesis, que comprende un total de tres capítulos –capítulos 2 a 4-, trata de realizar una fijación previa del marco conceptual, repasar los problemas asociados a los problemas de medición y observar ciertas regularidades empíricas, ciertos hechos estilizados en relación al autoempleo en los dos ámbitos especiales en los que se realizan las aplicaciones empíricas de esta tesis: Europa y España.

Capítulo 2: El Entrepreneurship y la Teoría Económica: ¿Un factor productivo?

Así, en el capítulo 2, se revisa la evolución reciente del análisis económico del *entrepreneurship*, poniendo el énfasis en la operacionalización a través del autoempleo. El problema de la definición del *entrepreneurship* no es una cuestión trivial. Al contrario, delimitar este concepto es una de las tareas más difíciles a las que se enfrentan los investigadores dedicados a este campo. Así, la proliferación de teorías, definiciones y taxonomías procedentes de diferentes disciplinas genera como resultado una ausencia de acuerdo sobre una definición precisa entre los investigadores. Desde el punto de vista del análisis empírico dentro de la economía laboral, que es el enfoque adoptado en nuestro trabajo empírico, los trabajos existentes equiparan trabajo por cuenta propia a *entrepreneurship*. Así, aprovechando la información que acerca de la situación profesional de los ocupados proporcionaban las encuestas sobre fuerzas de trabajo, el número de autoempleados se comenzó a utilizar como *proxy* del número de individuos que llevaban a cabo la función empresarial. Esta equivalencia, en el plano conceptual es, como mínimo, cuestionable. Sin embargo, la disponibilidad de datos sobre el empleo por cuenta propia es una poderosa razón para hacer operativo este concepto en la investigación aplicada. Pese a todo, estos problemas conceptuales ponen de relieve la necesidad de avanzar hacia un marco conceptual común, antes de pasar el análisis aplicado.

El modelo plantea la existencia de una serie de factores que afectan a la oferta y a la demanda de empresarios. La demanda queda determinada por las oportunidades de beneficio, mientras que la oferta hace referencia a la potencialidad para acometer un proyecto empresarial. Los determinantes de esta oferta y demanda junto a la estructura de incentivos y los elementos de motivación y cultura determinan el nivel de actividad empresarial de un determinado territorio o sector.

Capítulo 3: El estudio del Entrepreneurship desde la perspectiva de las Encuestas de Población

El capítulo 3 repasa las dificultades de medición del fenómeno a partir de las estadísticas existentes. Así, a través de este trabajo, puede observarse cómo el estudio del autoempleo puede abordarse a través de muchas y muy diversas fuentes de información, tanto en términos cuantitativos –a través de los estudios de demografía empresarial- como cualitativos –haciendo uso de las encuestas de población-, cada una de ellas con diferentes objetivos perseguidos. En este sentido, las encuestas sobre fuerzas de trabajo y las encuestas de hogares, pese a sus limitaciones, se configuran como las fuentes más adecuadas para su análisis. Así, hemos experimentado un cambio radical en los últimos años, viendo aparecer nuevas fuentes estadísticas que, junto con el perfeccionamiento de las ya existentes, han contribuido a enriquecer la información puesta a disposición de los usuarios y analistas del mercado laboral para el estudio del empleo y, por ende, del autoempleo. Sin embargo, si bien la información suministrada puede parecer certera para los objetivos específicos de cada fuente, se convierte en incompleta e incluso errática si se pretende con ellas estudiar el fenómeno del *entrepreneurship*. No obstante, si bien la información disponible tan solo permite llevar a cabo análisis parciales de este fenómeno, no toda la responsabilidad puede atribuirse a las deficiencias de los datos. En este sentido, parte de este problema ha venido dado por el hecho de que el análisis económico del *entrepreneurship* no ha gozado, hasta fechas recientes, del grado de desarrollo necesario para revelar unas necesidades estadísticas claras, lo que se ha traducido en un uso bastante errático de fuentes e indicadores en función de la aproximación realizada –análisis del tejido empresarial individual, corporativo, o estudios de demografía empresarial-. El capítulo apunta, entre otras cosas, hacia la necesidad de integrar las encuestas de individuos con los registros de empresas, de forma que se pueda acometer el análisis de las unidades individuales conjuntamente con los establecimientos. A medida que vayamos superando estas trabas, se debe ir produciendo una homogeneización de las demandas de este tipo de datos, y con ello una mejora de las mediciones y magnitudes estadísticas que permitan capturar las diferentes dimensiones en las que se traduce la acción económica del *entrepreneurship*.

Capítulo 4: El Autoempleo en Datos

El capítulo 4, por su parte, repasa los principales hechos estilizados del autoempleo en Europa y España en las tres últimas décadas, un punto de partida que nos permite elevar algunas hipótesis que son comprobadas o refutadas con ayuda de los análisis realizados en las partes segunda, tercera y cuarta de esta tesis.

De este modo encontramos una mayor proporción de varones autoempleados en todos los miembros de la UE-15, siendo mayor este diferencial en el caso de los empleadores. Sin embargo, la evolución progresiva de las tasas de autoempleo sugiere que estas diferencias disminuyen progresivamente. Por otra parte, observamos cómo una mayoría de los que ejercen la función empresarial se encuentran en la banda media de edad (24 a 49 años), y que la tendencia de estas series nos lleva a una disminución de la proporción de jóvenes autoempleados, mientras que aumentan los de mayor edad. Los niveles de educación, sin embargo, no ofrecen resultados tan homogéneos entre países. En cuanto a los sectores de actividad, el sector servicios es aquel en el que el autoempleo es predominante.

Parte II: Transiciones al Autoempleo

La segunda parte de la tesis se dedica al análisis de las transiciones al autoempleo en Europa y España. Frente a análisis previos de similares características, el análisis considera todas las posibles transiciones entre estados iniciales (desempleo versus empleo asalariado) y finales (autónomo y empleador).

Capítulo 5: Nuevos Emprendedores en Europa

El capítulo 5 se dedica al análisis de los determinantes de la entrada al autoempleo en Europa, distinguiendo tanto desempleados y empleados asalariados dentro del estado inicial como empleadores y trabajadores autónomos dentro del estado final. Para este capítulo hacemos uso de los microdatos del Panel de Hogares europeo para los países de la UE-15 (1994-2001).

El germen de este trabajo surge en la observación del sesgo existente en la política de promoción empresarial europea, en la que las transiciones desde el desempleo al autoempleo adoptan un papel predominante. Este hecho sienta sus bases en la persistencia en las tasas de desempleo en Europa durante las dos últimas décadas. De este modo, la promoción de estas entradas se utiliza como un instrumento de la política de empleo.[1] Esto parece concordar con la visión extendida de que unas mayores tasas de autoempleo contribuyen con los procesos generadores de innovación y crecimiento de una economía. Sin embargo, como puede observarse en la Figura 3, los países más ricos suelen presentar unas menores tasas de autoempleo, por lo que la relación entre autoempleo y crecimiento no parece una conjunción tan obvia.

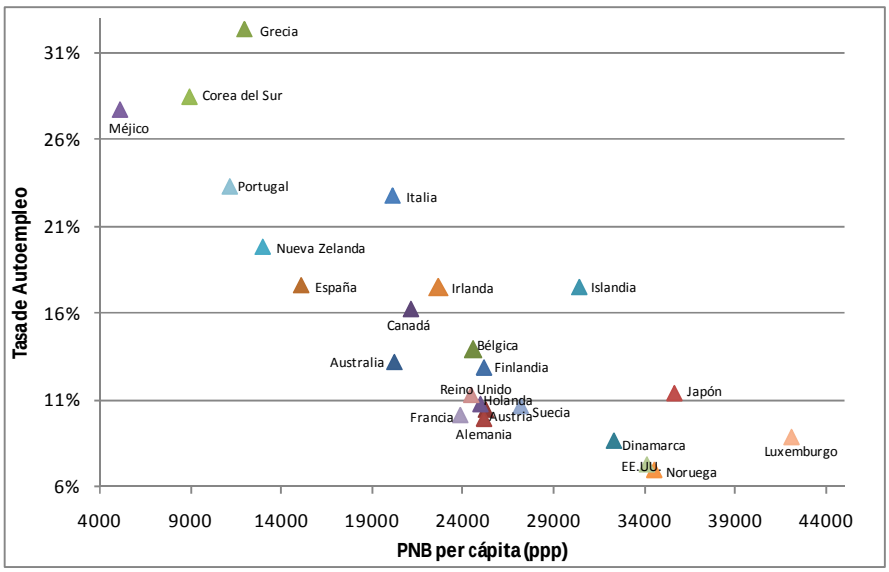

Fig. 3. Tasa de autoempleo y PNB per cápita en la OCDE, 2000 (repúblicas ex-comunistas excluidas)

Fuente de Datos: International Labour Office, Labour Force Survey y World Bank. PNB per cápita, expresados en dólares americanos en poder de compra constante

[1] Existen dos canales a través de los cuales el autoempleo puede contribuir a la reducción del desempleo. Por una parte, existe un efecto directo en términos de salida del desempleo y entrada en el autoempleo. Por otra parte los autoempleados de éxito necesitarán contratar mano de obra adicional, durante el proceso de expansión de su negocio.

Existen varias razones por las que podría no ser apropiado interpretar un mayor número de autoempleados en una economía como un signo de crecimiento económico. Así, por una parte, podríamos asociar este elevado número a la existencia de barreras de acceso a otros tipos de empleo, frente a los que el autoempleo ofrece la posibilidad de evitar una excesiva regulación. Por otra parte, el hecho de que los objetivos de los programas de promoción empresarial se hayan visto subordinados a las metas de las políticas de empleo hace que los incentivos y bonificaciones fiscales existentes puedan alteren la elección ocupacional de los individuos. De este modo, si el desempleo de larga duración tiende a concentrar a los individuos menos dotados, esto podría generar problemas de selección adversa entre el conjunto de autoempleados que tengan su origen en ese grupo.

Teniendo en cuenta que la política de promoción empresarial tiene como su principal objetivo el incentivar las transiciones desde el desempleo al autoempleo, el estudio de los determinantes de estas decisiones se convirtió en un tópico intensamente explorado en la literatura, que trató de buscar algunas guías para el diseño de estas políticas. En este sentido, las aproximaciones más extendidas hundieron sus raíces en los modelos de búsqueda de empleo en los que la probabilidad de transitar al autoempleo dependía de un conjunto de características individuales y de variables económicas en el momento *t-1*. Así pues, un individuo que no estaba autoempleado en el momento *t-1* se encontraría autoempleado en el momento *t* si la utilidad asociada al autoempleo es superior a la que obtiene en la ocupación alternativa.

Sin embargo, muchos de estos trabajos –no todos[2]- ignoraron la existencia de diferentes estados iniciales y finales. Llegados a este punto, debemos destacar que si los instrumentos existentes para la promoción del autoempleo están basados en el análisis de las transiciones al autoempleo, ignorando los distintos estados de salida y de llegada, las recomendaciones de política podrían incluir sesgos a favor de determinados tipos de transiciones. En otras palabras, supongamos que los determinantes de las transiciones desde el desempleo fueran diferentes –o incluso opuestos- a aquellos que favorecen la entrada al autoempleo desde el empleo asalariado. En este caso, el uso de una política común podría ser beneficioso para un tipo de transiciones e inocuo –o incluso perjudicial- para el otro tipo.

Por lo tanto, un diseño adecuado de la política de promoción empresarial exige la búsqueda de posibles factores diferenciales para cada tipo de transición. En este sentido, el principal objetivo de este capítulo es presentar un estudio de carácter global sobre los determinantes de la entrada en el autoempleo, considerando todas las posibles combinaciones de estados iniciales y finales.

De este modo, sobre la base de este análisis, obtenemos evidencias que avalan la existencia de factores que afectan con diferente intensidad cada transición considerada, en función de los estados iniciales y finales. Del mismo modo, las probabilidades de transición predichas también dependen enormemente de estos estados. Así observamos cómo la probabilidad de transitar al trabajo autónomo es ocho veces superior desde el desempleo que desde el empleo asalariado. Este resultado avala la idea de que el autoempleo es visto como una alternativa al desempleo. Además observamos cómo los desempleados que entran en el autoempleo son aquellos que presentan una mayor dotación de capital humano y una menor permanencia en el estado de desempleo. En ese sentido, nuestros resultados no avalan la posible existencia de selección adversa.

Del mismo modo, observamos cómo todos los procesos informales de adquisición de capital humano –experiencia previa en el mercado de trabajo y transferencias intergeneracionales de

[2] Véase Carrasco (1999) entre otras excepciones.

conocimientos- presentan un mayor efecto que la educación formal, cuyo efecto tampoco es desdeñable.

En relación con la posible existencia de restricciones de la liquidez, nuestros resultados avalan esta hipótesis, independientemente del estado inicial. Además, al tener en cuenta los estados finales, estas restricciones son más importantes en las transiciones a empleador, que son aquellos que *a priori* se enfrentan a unas mayores necesidades de capital. Consecuentemente, subsidios, ayudas o incluso la posibilidad de capitalizar las prestaciones por desempleo favorecerán las decisiones de convertirse en autoempleado.

Por otra parte, detectamos la presencia de factores idiosincráticos que afectan a las probabilidades de transitar entre diferentes países, lo que podría deberse a diferentes factores institucionales o diferentes entornos para los negocios. Estos resultados revelan la necesidad de ahondar en esta búsqueda, en aras de encontrar el papel exacto que tienen estos factores.

Todos estos resultados plantean la necesidad de revisar la pertinencia y precisión de la política de promoción empresarial europea, no solo en términos de objetivos planteados sino también de instrumentos de política implementados.

Capítulo 6: Transiciones al Autoempleo en España durante los Noventa

Por su parte, el capítulo 6, con el que se cierra esta segunda parte, analiza las transiciones al autoempleo en España durante toda la década de los noventa, combinando para ello ejercicios realizados con dos bases de datos: el Panel de Hogares de la UE-15 para España, y la Encuesta Continua de Presupuestos Familiares española.

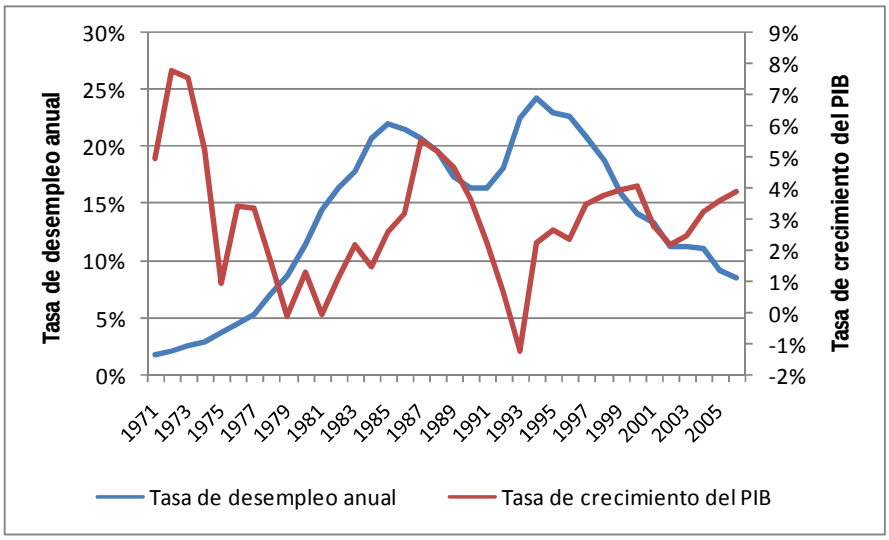

Fig. 4. Tasas de desempleo y de crecimiento del PIB en España, 1971-2006

Fuente de Datos: Instituto Nacional de Estadística (INE), Encuesta de Población Activa (EPA) y Contabilidad Nacional Española

Las particularidades de la economía española convierten a este país en un interesante objeto de análisis. Así, observamos en la Figura 4 tasas de desempleo por encima del 20% durante la mitad de las décadas de los ochenta y los noventa. Siendo estas elevadas y persistentes tasas de desempleo uno de los mayores problemas a los que se enfrentó este país durante este periodo, estas tuvieron entre las causas más probables un importante cambio estructural en su industria

unido a diferentes *shocks* negativos de oferta, cambios en la estructura socio-económica y demográfica de la oferta de trabajo –incluyendo un elevado aumento en la participación laboral femenina- y las rigideces existentes en el mercado laboral.[3]

En esta situación, la promoción de las transiciones desde el desempleo al autoempleo se implementa también como un instrumento de la política de empleo. De este modo, si la creencia generalmente aceptada en la clase política de que la contribución del autoempleo a los procesos de innovación y creación de empleo fuera tan rigurosa, España hubiera estado en una ventajosa posición en relación con otras economías europeas. En efecto, España ha presentado durante estas dos décadas una de las mayores tasas de autoempleo europeas. Sin embargo, estas tasas han disminuido intensamente desde la mitad de la década de los noventa, cayendo desde un 22,42% en 1984 a un 16,54% en 2004.[4]

La variación del autoempleo en España puede explicarse por el papel jugado por uno de sus componentes: los trabajadores autónomos. Así, podemos observar una evolución opuesta entre empleadores con y sin asalariados, en la que las tasas de empleadores han aumentado, mientras que la proporción de trabajadores autónomos ha disminuido notablemente.[5] Estos cambios han modificado radicalmente la composición del autoempleo en España. Sin embargo, si tenemos en cuenta la composición sectorial, podemos entender con claridad estos cambios. Así, excluyendo de nuestro análisis descriptivo al sector primario, observamos cómo el autoempleo en España ha seguido una corriente alcista[6], lo que tampoco debería sorprendernos teniendo en cuenta que el estado natural en este sector es precisamente el autoempleo.

De este modo, todas estas singularidades, unido al *shock* externo que genera la incorporación a la Europa comunitaria de España en 1986, convierten a este país en un interesante objeto de estudio a la hora de analizar los determinantes de la decisión de entrada en el autoempleo.

Así, los determinantes del autoempleo en España muestran grandes similitudes entre ambas muestras, y también con los determinantes detectados para la UE-15. Así, consistente con la idea de que el autoempleo es percibido como una alternativa al desempleo, observamos cómo la probabilidad de transitar al autoempleo es mayor si el estado inicial es el desempleo que si lo es el empleo asalariado. Por otra parte, los varones, los individuos de mediana edad, los dotados con mayores niveles de formación y los que poseen familiares autoempleados presentan mayores probabilidades de transitar. Además, los trabajadores con mayores rentas de capital, junto a los desempleados que no perciben prestaciones por desempleo y con estancia más corta en este estado, también presentan mayores tasas de entrada en el autoempleo. Nuestros ejercicios también presentan evidencias que defienden la hipótesis “pull” para las transiciones desde el empleo asalariado mediante los datos de la ECPF. Este resultado no rechaza lo obtenido para el ejercicio europeo, y nos ayuda a concluir que el efecto del ciclo obtenido para la UE-15 no está sesgado por haber limitado el análisis a un periodo de expansión (1994-2001).

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[3] El gobierno español ha implementado importantes acciones para flexibilizar su mercado laboral. Sirvan como ejemplos relevantes la reforma del mercado laboral de 1984, en el que se produjo la segmentación del mercado laboral en trabajadores fijos y temporales, o la reforma del sistema español de prestaciones por desempleo de Abril de 1992, en la que se disminuyó la cuantía de las prestaciones y su duración potencial. Véase Alba-Ramírez (1999) para un estudio de los efectos de esta última acción sobre el mercado laboral español.

[4] Véase la Tabla 2 en el Capítulo 4.

[5] Véanse las Figuras A1-A3 del Apéndice A, en el Capítulo 6.

[6] Mediante datos procedentes de la base de datos COMPENDIA, la Tabla 1 en el Capítulo 4 presenta una evolución del autoempleo en los países de la OCDE excluyendo el sector primario.

Finalmente, cuando controlamos los posibles efectos regionales dentro de España, observamos en regiones como el País Vasco, Navarra, La Rioja, Aragón, Cataluña, Comunidad Valenciana y las Islas Baleares, las entradas al autoempleo desde el desempleo son más probables, lo que sugiere i) la existencia de otros factores adicionales a los factores institucionales, habida cuenta de que estas regiones comparten un mismo marco institucional, y ii) la necesidad de profundizar en el análisis para identificar con precisión qué hay detrás de estos efectos regionales.

Parte III: Transiciones dentro del Autoempleo

Capítulo 7: Transiciones dentro del Autoempleo: De Autónomo a Empleador

La tercera parte de esta tesis supone un hito novedoso, al analizar los movimientos en el autoempleo. Las deficiencias de las estadísticas disponibles hasta el momento habían impedido el análisis de los determinantes de la decisión de transitar desde el trabajo autónomo a empleador con asalariados, un síntoma de éxito. El hallazgo de los determinantes de esta decisión, a cuya labor se dedica el capítulo 7, proporciona una serie de proposiciones y guías para el diseño de la política de promoción empresarial. Este análisis se realiza sobre la base de ejercicios realizados para la UE-15, mediante el Panel de Hogares de la Unión Europea, y a través de estimaciones para España con dos bases de datos, el Panel de Hogares de la UE-15 para España, y la Encuesta Continua de Presupuestos Familiares española.

Hemos de hacer hincapié en que el trabajo autónomo cubre un extenso abanico de ocupaciones, desde artesanos y agricultores hasta profesionales liberales como abogados, arquitectos o consultores. Paralelamente a esta diversidad de ocupaciones, coexisten gran cantidad de motivaciones detrás de esta elección ocupacional. En este sentido encontraremos desde el autoempleado que ha elegido libremente el trabajar por cuenta propia –hipótesis "pull"- al trabajador que no encuentra otra alternativa a su situación de desempleo actual y se ve abocado a esta decisión –hipótesis "push"-.

Haciendo abstracción de aquellas actividades en las que, dada su especial naturaleza, el trabajo autónomo sin asalariados se convierte en su forma más natural y eficiente, el lógico desarrollo y crecimiento de cualquier aventura empresarial debe resultar en un crecimiento en el número de asalariados, esto es, en transiciones del trabajo autónomo a la situación de empleador. Sin embargo, algunos elementos podrían favorecer –u obstaculizar- esta decisión.

En este sentido, entre los factores que podrían interferir en este crecimiento, entendido éste como la contratación de nuevos trabajadores, encontraríamos seguramente la aparición de costes irrecuperables que obstaculicen futuros ajustes a la baja en la plantilla. De esta manera, aquellos trabajadores autónomos que se enfrenten a *shocks* positivos de demanda y que traten de cubrirlos mediante el crecimiento de la plantilla podrían verse disuadidos de esta decisión, precisamente por la existencia de estos costes, produciéndose un efecto negativo sobre el número de empleadores con asalariados. Por el contrario, pese al indudable papel que el marco institucional tendrá sobre la viabilidad o conveniencia de esta expansión, otros factores como el estado del ciclo económico, las necesidades de financiación ajena, la percepción del carácter del *shock* de demanda –permanente o transitorio-, la capacidad para trabajar en equipo o las habilidades de dirección también serán elementos que influirán sobre la proporción de empleadores en una economía.

En lo relativo al área geográfica, objeto de nuestro análisis, y tal y como hemos mencionado anteriormente, la política de promoción empresarial europea tuvo como eje central el alcanzar un elevado número de individuos que llevaran a cabo la función empresarial, lo cual parecía lógico ante una situación de persistente y elevado desempleo. Convendremos, sin embargo, que el objetivo no puede limitarse a alcanzar un cierto número de autoempleados a corto plazo, sino que las miras deben apuntar hacia la persistencia de estos efectos. Así pues, este sesgo podría corregirse incluyendo de manera complementaria incentivos e instrumentos cuyo objetivo sea aumentar la supervivencia dentro del autoempleo. En efecto, la literatura dedicada al análisis de supervivencia nos ofrece algunas guías útiles en este sentido. Sin embargo, la promoción del crecimiento de los negocios también parece tener cabida, y la literatura al respecto es muy escasa y tan solo contiene algunas aproximaciones tangenciales a este fenómeno[7], lo que confirma la oportunidad de nuestro análisis.

Además del análisis del caso europeo, el caso español vuelve a partir de unas regularidades específicas que merecen un análisis individualizado. Así, España pertenece a los denominados "países de la cohesión[8]" –Irlanda, Portugal, España y Grecia-. Estos países presentaban las mayores tasas de autoempleo europeas a principios de los ochenta, mientras que sus rentas per cápita se encontraban entre las más bajas. Así, los casos de Irlanda, España y Grecia presentaron similitudes durante las décadas de los ochenta y noventa, en términos de una reducción de la tasa de autoempleados. Esta reducción vino motivada principalmente por una importante reducción en el número de trabajadores por cuenta propia, siendo esta tendencia opuesta a la seguida por los empleadores, cuya proporción aumentó significativamente.[9]

Podemos encontrar explicaciones probables a este fenómeno en las medidas flexibilizadoras introducidas en los respectivos mercados laborales[10], o incluso el efecto de cambios estructurales o demográficos. Centrándonos en el caso español, la Figura 5 nos muestra cómo la reducción en la tasa de trabajadores autónomos se suaviza sustancialmente si se excluye del análisis el sector primario.

Sin embargo, también estamos tentados de asociar parte de esta reducción a la incorporación a la Europa comunitaria.[11] Así, la aparición de nuevas oportunidades de beneficio, unido a la presencia de importantes fondos estructurales y de cohesión[12], pudo influir positivamente en un crecimiento de la dimensión empresarial dentro de estos países.

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[7] Carroll *et al.* (2000) para EE.UU., Barkham (1994), Westhead y Cowling (1995), Burke *et al.* (2000, 2002), y Cowling *et al.* (2004) para el Reino Unido son los únicos trabajos que podrían estudiar los determinantes de la creación de empleo por parte de los autoempleados.

[8] Irlanda, Portugal, España y Grecia se denominaron colectivamente los "países de la cohesión". Se caracterizaron económicamente por presentar bajos niveles de renta per cápita –en relación con la UE-15-, una parte importante del territorio considerada como "Regiones Deprimidas", una estructura manufacturera tradicional, y a menudo altas tasas de empleo en el sector primario y baja productividad.

[9] Véanse las Tablas 2-4 en el Capítulo 4.

[10] Los mercados de trabajo en estos países han sido particularmente rígidos, especialmente en los países mediterráneos. Estas rigideces han sido consideradas como el argumento principal para explicar estas elevadas tasas de autoempleo. De este modo, los elevados costes a los que se enfrentan los autoempleados para contratar personal empujan a muchos individuos a autoemplearse, pese a sus preferencias de trabajar por cuenta ajena. Esto termina derivando en unas elevadas tasas de autoempleo, de pequeña dimensión.

[11] Irlanda se incorporó en 1973, Grecia en 1981, y Portugal y España en 1986.

[12] Los fondos estructurales y de cohesión están financiados por la Unión Europea. Los objetivos de los fondos estructurales son i) corregir el retraso de los territorios menos favorecidos, y ii) revitalizar áreas que se enfrentan a dificultades estructurales. Los fondos de cohesion se conceden a aquellos estados miembros que tienen un PNB per cápita inferior al 90% de la media comunitaria (en términos de pari-

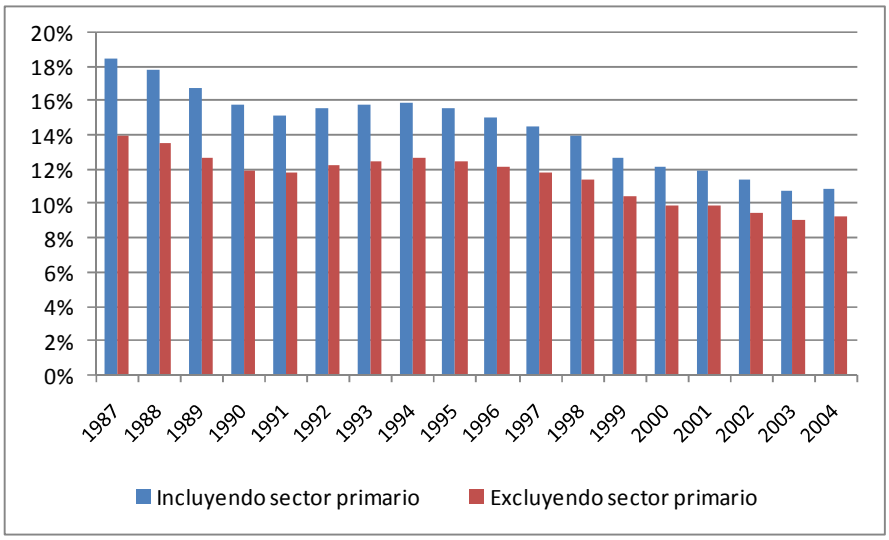


Fig. 5. Tasas de trabajadores autónomos en España

Fuente de Datos: Instituto Nacional de Estadística (INE), Encuesta de Población Activa (EPA)

Por todo ello, España se convierte en un excelente candidato para completar nuestro análisis de los determinantes de las transiciones desde el estado de autónomo al de empleador, considerando así la incorporación al mercado único como un *shock* externo positivo que podría explicar el aumento sufrido en las tasas de empleadores.

En relación a los resultados obtenidos, este capítulo muestra la importancia que tienen factores tales como la marcha del negocio o el ciclo económico en las decisiones de contratación de trabajadores. Sin embargo, los procesos informales de adquisición de capital humano también se presentan como significativos, a la hora de acometer decisiones de contratación. Así, la experiencia previa en el mercado laboral –como empleador o como empleado asalariado- tienen un importante efecto sobre estas decisiones. Por ello, si el objetivo es favorecer aquel autoempleo que en un futuro pueda contribuir a los procesos de generación de empleo, parece conveniente favorecer la adquisición del capital humano empresarial necesario para que la creación de empleo sea llevada a cabo por aquellos individuos más dotados.

Finalmente, uno de los resultados más interesantes hace referencia a la existencia de factores específicos en diferentes países. En particular, tras Finlandia, son Grecia, Irlanda y España los países en los que la transición desde el trabajo autónomo a la situación de empleador es más probable. Así, estas diferencias sugieren la importancia relativa que tienen *shocks* externos –como la incorporación a la Europa comunitaria- y otros factores institucionales. Consecuentemente, estas diferencias entre países necesitarán de investigación adicional para conocer las relaciones causa-efecto que están detrás de estos resultados.

Parte IV: Éxito y Fracaso en el Autoempleo

La cuarta parte de la tesis está dedicada al análisis de los factores de supervivencia en el autoempleo. Haciendo uso de modelos de duración, la supervivencia en el autoempleo es explicada a través de una serie de variables individuales y de entorno macroeconómico.

dades de poder adquisitivo), y están destinados a mejorar el medio ambiente y la integración en las redes transeuropeas de transporte.

Capítulo 8: Supervivencia dentro del Autoempleo

El capítulo 8 analiza los determinantes de la supervivencia en el autoempleo en la UE-15, mediante el uso de modelos de duración en tiempo discreto, tanto en términos de riesgo único –single risk models-, como utilizando modelos de riesgo en competencia –competing risk models- para distinguir tres estados de salida diferentes: empleo asalariado, desempleo e inactividad. Para este capítulo hacemos uso de las ocho olas correspondientes a los microdatos del Panel de Hogares europeo.

En este sentido, la mayoría de los trabajos sobre *entrepreneurship* dedicados a la elección ocupacional han analizado las decisiones de entrada en el autoempleo. Por tanto, indudablemente estos trabajos han contribuido enormemente a la detección de las variables que facilitan la decisión de convertirse en autoempleado, pero no necesariamente a la identificación de aquellas que convierten al autoempleado en un emprendedor de éxito.

Sin embargo, identificar el porqué algunos individuos abandonan el autoempleo al poco tiempo de ingresar en él, mientras otros sobreviven, debe ser considerado una cuestión decisiva en aras de mejorar la efectividad de la política de promoción empresarial. De este modo, como avanzamos anteriormente, su objetivo debe buscar no solo la entrada en el autoempleo, sino la persistencia en el medio y largo plazo.[13]

Centrándonos en el caso europeo, el Consejo Europeo de Lisboa en el año 2000 definió sus objetivos en términos de empleo y crecimiento económico. Para alcanzarlos, las autoridades europeas están involucradas en el compromiso de promocionar el *entrepreneurship* mediante el diseño de un completo espectro de políticas e iniciativas, especialmente relevantes para el conjunto de PYMEs.[14] Así, en el mismo Consejo de Lisboa se adopta la *Carta europea de las pequeñas empresas*[15], en la que se establecen recomendaciones para que las pequeñas empresas aprovechen plenamente la economía del conocimiento. Desde entonces, y a favor del impulso que supuso este consejo, se ha generado una serie de documentos específicos como el Libro Verde *El Espíritu Empresarial en Europa*[16], que vio la luz en 2003, o el *Programa Europeo a favor del Espíritu Empresarial*[17], del año 2004. Además se ha establecido una serie de programas de actuación más generales como el *Programa Marco para la Innovación y la Competitividad* (2007-2013)[18], que sustituye al *Programa Plurianual en favor de la Empresa y el Espíritu*

[13] Tal y como Geroski (1995) sugiere, la entrada en el Mercado es relativamente sencilla, pero no así la supervivencia.

[14] Las pequeñas y medianas empresas (PYMEs) se definen como aquellas que cuentan con menos de doscientos cincuenta empleados. Véase a este respecto la recomendación 2003/361/CE de la Comisión.

[15] Más información sobre la *Carta europea de las pequeñas empresas* está disponible en http://ec.europa.eu/enterprise/entrepreneurship/charter_en.htm.

[16] El Libro Verde "El Espíritu Empresarial en Europa" es un documento de diagnóstico del tejido empresarial europeo sobre el que basar una estrategia de promoción empresarial dirigida a fomentar el autoempleo y mejorar la competitividad del existente en el marco de una estrategia más amplia de crecimiento económico que permitiera reducir el *gap* de riqueza per cápita y productividad con respecto a los Estados Unidos.

[17] Este plan de acción proporciona un marco estratégico para impulsar el espíritu empresarial, siendo un complemento, mediante acciones focalizadas, del *Programa plurianual en favor de la empresa y el espíritu empresarial*. El plan puede consultarse en el documento de la comisión COM (2004) 70 final.

[18] El objetivo del Programa Marco es fomentar la innovación y la competitividad de las empresas europeas (y, en particular, de las PYME), acelerar el desarrollo de una sociedad de la información sostenible, competitiva, innovadora e inclusiva y promover la eficiencia energética y las fuentes de energía nuevas y renovables.

Empresarial (2001-2006), o el *Programa de Lisboa para 2005-2008*[19], recientemente revisado en el *Nuevo Programa de Lisboa para 2008-2010*.[20]

Entre las acciones más relevantes, observamos sin embargo una marcada tendencia o sesgo a favor de medidas que promueven la entrada en el autoempleo. Destacan, en este sentido, las destinadas a mejorar el acceso a la financiación, o a facilitar la incorporación de los jóvenes, de las mujeres, o de las minorías étnicas al desempeño de la función empresarial. Sin embargo, un riesgo evidente que genera este tipo de medidas es que pueden distorsionar la elección de ocupación, pudiendo impulsar el espíritu empresarial entre individuos que no reúnen los requisitos necesarios para acometer un proyecto empresarial y que podrían o bien fracasar o simplemente volver al desempleo cuando los incentivos económicos desaparezcan o las condiciones económicas empeoren.

Por ello, el éxito a largo plazo de estas medidas dependerá del apropiado diagnóstico de las transiciones más convenientes para aumentar el empleo en Europa, junto con una urgente solución a la falta de medidas destinadas al aumento de la supervivencia de los proyectos empresariales existentes. En otros términos, la promoción del autoempleo debe consistir no solo en políticas de entrada, sino también en la permanencia en este estado. Consecuentemente, la identificación de los factores que contribuyen a la supervivencia de los individuos ejerciendo la función empresarial se convierte en una cuestión crucial.

Los trabajos empíricos dedicados al análisis del éxito en el autoempleo podrían atender, entre otras, a la siguiente clasificación. Citaríamos de un lado aquellos artículos en los que la unidad objeto de análisis es la empresa o establecimiento, mientras que tendríamos por otra parte aquellos ejercicios donde el centro de atención es el individuo que ejerce la función empresarial. El primer tipo de trabajos ha sido prominente en la literatura, contribuyendo a detectar los efectos que tienen sobre la supervivencia de empresas factores tales como su tamaño, publicidad de la marca, inversión en I+D, productividad, intensidad exportadora, estructura legal o participación extranjera en el capital. En este sentido, este tópico es sin duda apropiado para estudiar la actividad empresarial de tipo corporativo, pero falla a la hora de explicar el fenómeno de la supervivencia en el autoempleo desde una perspectiva individual. Por otra parte, la segunda línea de investigación, mucho menos desarrollada sin embargo debido principalmente a la falta de datos, examina precisamente el éxito en el autoempleo por medio del análisis de características individuales obtenidas de las encuestas sobre fuerzas de trabajo y de las encuestas de hogares.[21]

En este sentido, la mayoría de los trabajos utiliza como territorio objeto de análisis o bien EE.UU. o bien el Reino Unido. También existe un grupo de ejercicios que se dedican al estudio de un único país de forma individual. Sin embargo, tan solo el trabajo de Williams (2004) se

[19] Este programa vuelve a poner énfasis en la estrategia diseñada en Lisboa, haciendo especial hincapié en los objetivos de crecimiento y empleo. Este plan puede consultarse en el documento de la comisión COM (2005) 141 final.

[20] Este programa integra las acciones a desarrollar para el siguiente ciclo, destacando nuevamente los objetivos de crecimiento y creación de empleo. Este plan puede consultarse en el documento de la comisión COM (2007) 804 final.

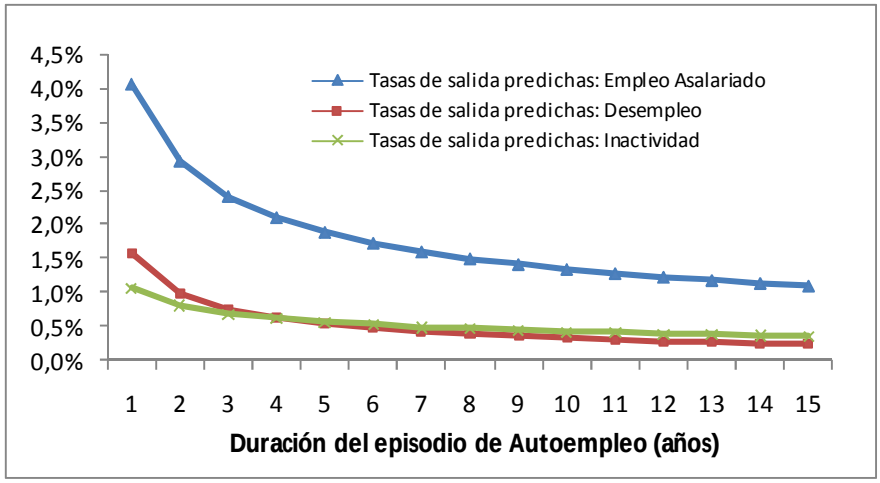
[21] El capítulo 3 ya apunta, entre otras cosas, hacia la necesidad de integrar las encuestas de individuos con los registros de empresas, de forma que se pueda acometer el análisis de las unidades individuales conjuntamente con los establecimientos. Sirvan como ejemplos de estas encuestas el *Panel Study of Entrepreneurship Dynamics (PSED)* para EE.UU., o la encuesta *Factors of Business Success (FOBS)* diseñada por Eurostat.

dedica al análisis del individuo que dirige la empresa, considerando todo el territorio de la UE-15.[22] Por ello, este capítulo viene a cubrir el *gap* de trabajos existentes a nivel europeo.

En lo relativo a nuestros resultados, y en línea con lo obtenido por trabajos previos, observamos cómo el riesgo de salida disminuye a medida que aumenta la experiencia en el autoempleo, independientemente del estado de destino, lo que puede interpretarse en términos de "aprendizaje".[23] La Figura 6 nos muestra las probabilidades de salida para los distintos estados de salida.

Fig. 6. Salidas del autoempleo hacia diferentes estados

Fuente de Datos: Elaboración propia a través de los datos del Panel de Hogares de la UE-15



Notas:
(i) Estas simulaciones están basadas en los resultados de la Tabla A1 –Apéndice A-, del capítulo 8. Las estimaciones se realizan para los valores medios, tanto para variables discretas como continuas.

Así mismo observamos cómo la supervivencia depende en gran medida de los resultados de la actividad empresarial. Además, aquellos individuos que presentan experiencia previa en el autoempleo o en el empleo asalariado presentan mayores tasas de supervivencia, mientras que la experiencia previa en el desempleo obstaculiza la duración futura en este estado. Sirva este último resultado como ejemplo de la importancia de conocer las relaciones causa-efecto que afectan a la supervivencia de los emprendedores. Así pues, las políticas de promoción empresarial deberían tener en cuenta la inefectividad a largo plazo –o al menos el menor efecto- de aquellos instrumentos diseñados para la promoción de las transiciones al autoempleo desde el desempleo, en comparación con aquellas que parten del empleo asalariado.

Capítulo 9: Empleadores frente a Autónomos: Éxito y Fracaso

Este capítulo analiza el papel que tienen diferentes factores sobre la supervivencia en el autoempleo desde una nueva perspectiva, buscando si existen o no diferencias entre la probabilidad de supervivencia, según el individuo sea autónomo o empleador. Nuevamente hacemos uso de

[22] Williams trata de identificar los efectos que tiene sobre la duración en el autoempleo la presencia de niños en el hogar, analizando ocho países europeos: Bélgica, Dinamarca, Francia, Grecia, Irlanda, Italia, Portugal y España. Sin embargo, observamos cómo este autor no trata convenientemente los problemas de censura por la izquierda que tiene su muestra, ni permite la posibilidad de que los individuos aparezcan en su muestra más de una vez –multiple spells-, ni incluye las rentas procedentes del trabajo por cuenta propia como variable explicativa al desarrollar el ejercicio para todo el territorio.

[23] Los resultados de Taylor (1999), Carrasco (1999), y Van Praag (2003) entre otros apuntan en la misma dirección.

modelos de duración en tiempo discreto, tanto en términos de riesgo único, como utilizando modelos de riesgo en competencia para distinguir diferentes estados de salida. De este modo consideramos cuatro estados de salida para los empleadores: trabajador autónomo, empleo asalariado, desempleo e inactividad. Del mismo modo, también consideramos cuatro diferentes estados de salida para los autónomos: empleador –signo de éxito-, empleo asalariado, desempleo e inactividad. Para este capítulo también hacemos uso de los microdatos del Panel de Hogares para la UE-15.

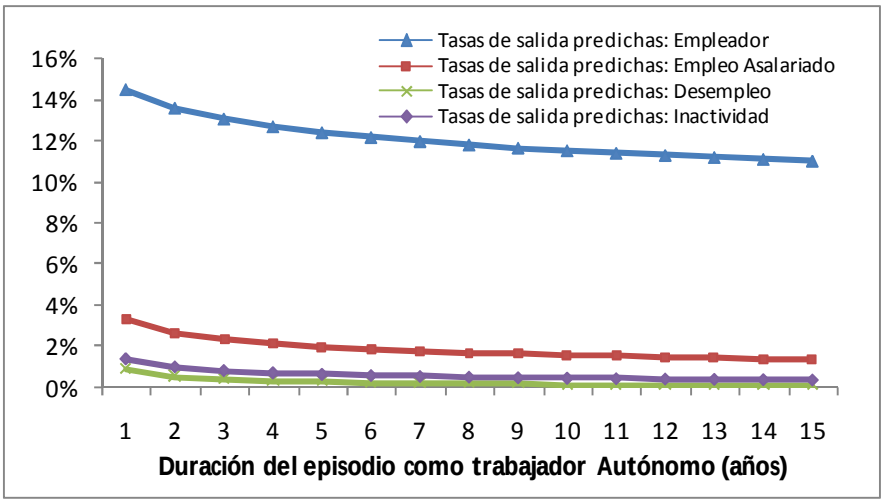
De este modo, al distinguir trabajadores autónomos y empleadores en este tipo de análisis, nuestras estimaciones apuntan a la existencia de una mayor probabilidad de salida del trabajador autónomo al estado de empleador –señal de éxito-, en comparación con otros destinos –empleo asalariado, desempleo o inactividad-. Por lo tanto, surgen dudas acerca de la importancia relativa de la regulación existente sobre el mercado de trabajo –costes de despido-, en relación con las decisiones de contratación. La Figura 7 nos muestra las tasas de salida estimadas para cada destino considerado.

Por otra parte, cuando un empleador tiene que cambiar su estado, opta prioritariamente por disminuir el tamaño de su negocio –transitar al estado de autónomo- en vez de decantarse por otros destinos. Estos resultados apuntan hacia la ausencia de efectos significativos de los costes de despido para los empleadores. La Figura 8 nos muestra las tasas de salida estimadas para cada destino considerado.

En relación con los efectos asociados al ciclo económico, observamos cómo la probabilidad de supervivencia aumenta cuando mejoran las condiciones del ciclo, independientemente del tipo de autoempleo analizado. Así pues, observamos una ausencia de salidas del trabajo autónomo hacia el empleo asalariado en las fases expansivas del ciclo. Esto rechaza la controversia existente acerca de la efectividad de ciertos incentivos para el acceso al autoempleo, cuando algunos de ellos, probablemente los menos dotados, podrían abandonar este estado en cuanto las ofertas de empleo asalariado aumentan, esto es, en épocas de crecimiento económico.

Fig. 7. Salidas del estado de trabajador autónomo hacia diferentes estados

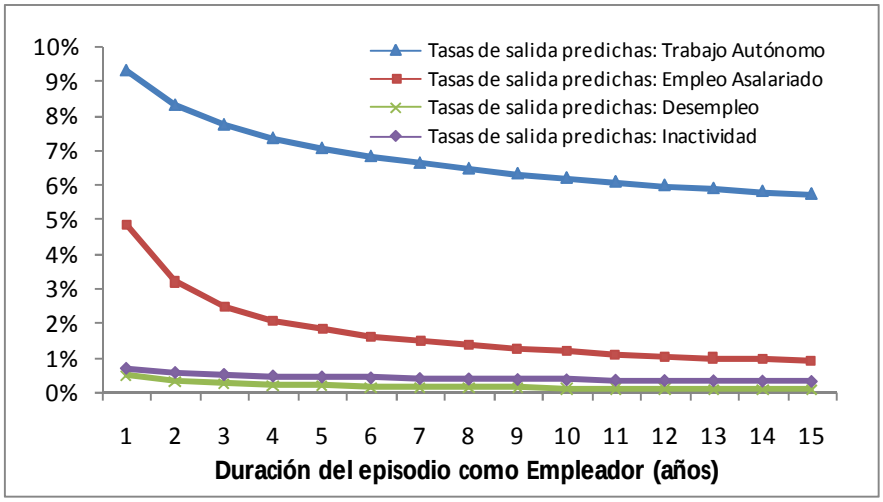
Fuente de Datos: Elaboración propia a través de los datos del Panel de Hogares de la UE-15



Notas:
(i) Estas simulaciones están basadas en los resultados de la Tabla A7 –Apéndice A-, del capítulo 9. Las estimaciones se realizan para los valores medios, tanto para variables discretas como continuas.

Fig. 8. Salidas del estado de empleador hacia diferentes estados

Fuente de Datos: Elaboración propia a través de los datos del Panel de Hogares de la UE-15



Notas:
(i) Estas simulaciones están basadas en los resultados de la Tabla A1 –Apéndice A-, del capítulo 9. Las estimaciones se realizan para los valores medios, tanto para variables discretas como continuas.

Sin embargo, nuestros resultados también confirman que las tasas de salida aumentan con la presencia de periodos previos de desempleo. Este resultado, por tanto, sí apunta hacia la necesidad de cierto nivel de capital humano para la supervivencia en el autoempleo y hacia los posibles problemas de selección adversa que podrían generarse mediante la promoción de la entrada en el autoempleo desde el desempleo.

En relación con este último resultado, también observamos cómo los procesos educativos formales aumentan la probabilidad de supervivencia como empleador, pero no tienen un efecto significativo en la supervivencia de los trabajadores autónomos. Además, todos los procesos informales de adquisición de capital humano –experiencia previa y transferencias intergeneracionales- presentan mayores efectos, tanto en la supervivencia en el estado de empleador como en las salidas desde el estado de autónomo a empleador. Podemos por tanto concluir la importancia de las dotaciones de capital humano para la identificación y captura de más y mejores oportunidades de beneficio.

Finalmente, detectamos nuevamente la existencia de factores específicos en diferentes países que vuelven a alertar sobre la necesidad de investigación adicional para conocer las causas que hay tras estos resultados.

En resumen, el éxito o fracaso de cualquier iniciativa empresarial es el resultado de muchos factores, algunos de los cuales presentan efectos mas importantes que otros en la supervivencia. Este capítulo muestra, como era de esperar, algunos factores relevantes, tales como los ingresos procedentes del negocio o el capital humano empresarial. Sin embargo, estos efectos coexisten con otras circunstancias externas como la situación del ciclo económico o el grado de regulación institucional existente. Por ello, todos estos resultados nos permiten aumentar nuestro conocimiento de los factores que contribuyen al éxito o fracaso de los distintos tipos de autoempleo. Sin embargo, el presente trabajo también genera la necesidad de seguir estudiando este fenómeno para contrastar –o rechazar- las nuevas evidencias presentadas.

Parte V: Conclusiones

Capítulo 10: Conclusiones y Líneas Futuras de Investigación

La tesis se cierra con un capítulo décimo en el que se repasan las principales conclusiones y se sugieren algunas líneas de investigación futura. Resumimos a continuación las principales aportaciones en este sentido.

Sobre la base del análisis de las transiciones al autoempleo, obtenemos evidencias que avalan la existencia de factores que afectan con diferente intensidad cada transición considerada, en función de los estados iniciales y finales. Sirva como ejemplo el hecho de que las restricciones de liquidez afecten con mucha mayor intensidad cuando el estado final es el de empleador que cuando el estado de llegada es el de trabajador autónomo. Del mismo modo, las probabilidades de transición predichas también dependen enormemente de estos estados. Así observamos cómo la probabilidad de transitar al trabajo autónomo es ocho veces superior desde el desempleo que desde el empleo asalariado. Este resultado avala la idea de que el autoempleo es visto como una alternativa al desempleo.

En lo relativo al análisis de duración, y en línea con lo obtenido por trabajos previos, observamos cómo el riesgo de salida disminuye a medida que aumenta la experiencia en el autoempleo, independientemente del estado de destino, lo que puede interpretarse en términos de "aprendizaje". Así mismo observamos cómo la supervivencia depende en gran medida de los resultados de la actividad empresarial. Por otra parte, cuando distinguimos trabajadores autónomos y empleadores en este tipo de análisis, nuestras estimaciones apuntan a la existencia de una mayor probabilidad de salida del trabajador autónomo al estado de empleador –señal de éxito-, en comparación con otros destinos –empleo asalariado, desempleo o inactividad-. Por lo tanto, surgen dudas acerca de la importancia relativa de la regulación existente sobre el mercado de trabajo, en relación con las decisiones de contratación. Por otra parte, cuando un empleador tiene que cambiar su estado, opta prioritariamente por disminuir el tamaño de su negocio –transitar al estado de autónomo- en vez de decantarse por otros destinos. Estos resultados apuntan hacia la ausencia de efectos significativos de los costes de despido para los empleadores.

Uno de los resultados más interesantes obtenidos tal vez hace referencia a la importancia de las dotaciones de capital humano en relación con todas las decisiones de entrada y supervivencia. Así, observamos cómo la experiencia previa en el mercado de trabajo o las transferencias intergeneracionales de conocimientos presentan un mayor efecto que la educación formal –cuyo efecto tampoco es desdeñable-. Por lo tanto, si el objetivo es fomentar el éxito del trabajo por cuenta propia a largo plazo, el esfuerzo no debe estar basado únicamente en facilitar la entrada, sino también en favorecer la adquisición del capital humano empresarial necesario, con el fin de que sean las personas más dotadas aquellas que ejerzan la función empresarial.

Por otra parte, destacamos también la importancia de los *shocks* tanto individuales –ingresos del trabajo por cuenta propia- como agregados –ciclo económico-. En efecto, este trabajo pone de manifiesto el efecto que tienen los ingresos procedentes del trabajo por cuenta propia sobre la supervivencia y el crecimiento –aproximado este último mediante las decisiones de contratación de los trabajadores autónomos-. Por otra parte, al controlar el efecto del ciclo económico, nuestros resultados son plenamente coherentes con la hipótesis "pull", con independencia del tipo de análisis considerado.

Todas estas cuestiones plantean la necesidad de revisar la pertinencia y precisión de la política de promoción empresarial europea, no solo en términos de objetivos planteados sino también de instrumentos de política implementados.

Publicaciones

Algunos capítulos de esta tesis están basados en trabajos previos y pueden ser leídos independientemente unos de otros. Así, los capítulos 2 y 3 están basados en los capítulos 16 y 6 publicados en Congregado, E. (2008) *Measuring entrepreneurship*. Además, los capítulos 6 y 7 están parcialmente basados en las siguientes versiones publicadas: *Economía Industrial* (Aguado *et al*. 2002), *Seminario de Análisis Económico – Universidad de Huelva Working Paper Series* (Congregado *et al*. 2003), *Cuestiones Clave de la Economía Española* (Congregado *et al*. 2005), *Perspectivas del Sistema Financiero* (Congregado *et al*. 2006) y Congregado *et al*. (2008) *El Capital humano y los emprendedores en España*, Capítulo 3.

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Chapter 1. Introduction and Outline

Over recent decades, entrepreneurial promotion policies have played a key role in policy agenda, but often subordinated to other policies. Thus, entrepreneurship policies have focused on promoting transitions from unemployment to self-employment. This fact was a logical corollary, given the ineffectiveness shown by the majority of active labour market policy instruments traditionally used to reduce the high and persistent unemployment rates. The aim was to reduce unemployment directly by shifting people out of an unemployed status into self-employment and indirectly thanks to new jobs created by these new entrepreneurs.[1] Furthermore, the achievement of higher self-employment rates was being incorporated to the predominant political discourse, given its positive effects on economic growth, innovation and on job creation process.

This perception can help us to understand, to a certain extent, the whys and wherefores of a renewed interest in entrepreneurship research. In fact, entrepreneurship have attracted an increased interest in the world of Economics, which is evident according to the exponential growth of works devoted (mainly empirical) to the Economics of Entrepreneurship (perhaps, more precisely to the Economics of self-employment).

Surprisingly, the evolution of this topic of research has been peculiar. In fact, the progressive introduction of some active promotion self-employment policies in the action policy agenda was prior to the proliferation of propositions and empirical findings. It was to be expected that this fact had profound effects on the effectiveness of entrepreneurial policy.

On the one hand, given the main objective –the promotion to self-employment from unemployment- policies paid too much attention to self-employment entry while little attention was paid to survival or growth.

On the other hand, the non existence of a proper set of propositions and the weakness of some empirical results became a source of error for the action policy agenda design.

In Europe, after twenty years of high and persistent unemployment rates, the economic recovery has changed the latter view, so that entrepreneurship policies are progressively changing their objectives, mainly to the new empirical findings and theoretical advances obtained by analysts.

Hence, we have moved from a situation in which policy makers identified a market failure and decided to intervene, in spite of the weakness of existing propositions, to another one characterized by the existence of more precise findings which can be used as powerful political guidelines.

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[1] There are two channels through which self-employment can contribute to reducing unemployment. First, there is the direct effect of removing a newly self-employed individual from unemployment. Secondly, there is the indirect effect of eventual job creation by entrepreneurs who succeed in running enterprises that require outside labour.

Therefore, extensive but quite imprecise premises could be reconsidered: i) the achievement of a higher self-employment rate as an explicit objective given that there are still some doubts regarding its contribution to economic growth and to job creation processes; ii) the entrepreneurial spirit gap. Thus, most diagnoses consider that there is a market failure which is due to liquidity constraints or risk-aversion amongst other factors, based on the gap between individuals who express their desire to become entrepreneurs, and those who decide to become self-employed.[2]

But leaving aside these questions, the key change has been the relationship between entrepreneurship promotion and the active labour market policy. Let us focus on the European case. The higher intensity of employment over recent years has produced an unexpected change even in the objectives of policy action plans. The Lisbon Strategy (2000) and its successive reformulations have supposed a radical change: the focus has moved from unemployment to employment. In fact, the explicit aims included in those documents refer to employment objectives, without any reference to unemployment rates as it had been usual up to then.

However, this change has not had yet affected the design of entrepreneurship promotion policy, as a logical corollary. So, in the European strategy of economic growth and job creation, the promotion of transitions to self-employment is still being an explicit objective, so that guarantees, tax reductions, and another type of incentives to entry are still the fundamentals of this type of policy. However, there are relatively scarce measures aimed at foresting the growth of existing self-employed.

In parallel, empirical and theoretical findings were focused on the entry to self-employment, irrespective of initial (unemployment/paid employment) or final states (own-account workers/employers), whereas few studies have been devoted to the success in self-employment. On the other hand, and due to statistical deficiencies in that case, most studies were restricted to specific countries over very short periods. These circumstances had a decisive influence on the scope of propositions incorporated as political guidelines.

However, there are some questions that have not been sufficiently explored so far. This is precisely the objective of this PhD thesis: to investigate the influence of some economic and non-economic factors on the decision to become an entrepreneur and the success in self-employment, distinguishing between initial and final states. In this sense, we are particularly interested in providing some evidence to support the existence of different factors affecting each considered transition both in terms of intensity and direction of the causal relationship taking into account the possible existence of idiosyncratic factors. To this end, data drawn from the European Community Household Panel for the EU-15 (ECHP, 1994-2001) and the Spanish Continuous Family Expenditure Survey (ECPF) is used.

[2] Based on these two premises, policy makers decisively opted for an entrepreneurship promotion policy consisting of subordinating the entrepreneurial policy within the frame of an active labour market policy. In fact, during the Eighties, a decade marked by high unemployment rates, the promotion of transitions from unemployment into self-employment was considered a useful way to reduce unemployment. Hence, the profusion of this kind of policies in most countries contributed to a generalized increase in self-employment rates during the Eighties. As a result, new problems arose. The first one was related to these new entrepreneurs' characteristics. If an individual chooses self-employment not because the value of self-employment is so high but because the value of his wage work is so low –thanks to incentives-, it is possible that self-employed people have lower levels of human capital than wage workers. In other words, an adverse selection problem can emerge. The second is related to the effectiveness of these measures. When economic conditions improve, some of these self-employed people might decide to become a salaried employee, so that this policy only would have had a transitory effect.

Furthermore, to assess the impact of entrepreneurship promotion policy on not only fostering the entry of individuals into self-employment but also encouraging a growing number of own-account workers to become a job creator, we include a novel approach: the analysis of transition from own-account work self-employment to employer with employees.

In short, the interest of our analysis is fourfold: i) considering all possible combinations between final and initial states in order to achieve a better understanding of the determinants of transitions to self-employment which might help to provide more precise propositions for improving the political effectiveness, ii) providing some useful empirical findings to correct the existent bias in current entrepreneurship promotion programs which usually focuses on getting people to become self-employed whereas they do not include instruments oriented at facilitating or making the self-employed becoming more interested in expanding their workforce; iii) providing new evidence about the underlying determinants of self-employment survival and searching for differences across own-account workers and employer, and iv) exploring not just the existence of specific country factors affecting to transitions and success, but also its relative importance when compared with other shocks.

Regarding methodological issues, our analysis exploit the longitudinal character of the data which allows controlling for the possible existence of unobserved heterogeneity.

Consequently, empirical analysis is divided in two stages (see Figures 1 and 2). First, the decision of becoming self-employed with and without employees is analysed, distinguishing between paid-employment and unemployment as starting status. Furthermore, this work deals with the decision of becoming self-employed with employees (employer) from own-account self-employment. In the second stage, stability (i.e. duration) of self-employment is regarded as measure of success. Thus, we allow for different exits: paid employment, unemployment, or inactivity. Finally, two complementary duration analysis are performed where we distinguish those own-account workers from employers as the starting point.

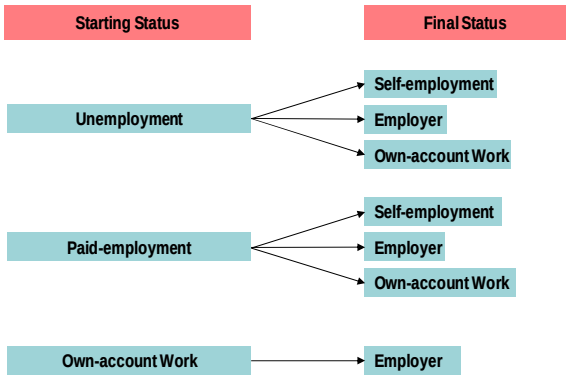

Fig. 1. Stage 1: Analysis of transitions

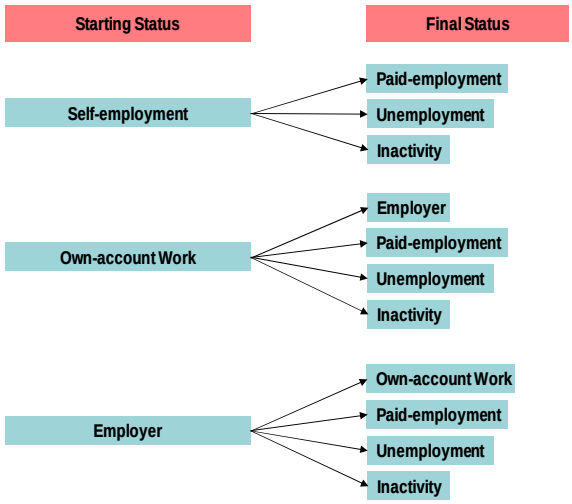

Fig. 2. Stage 2: Duration analysis

Hence, our study aims to provide an answer to some of these questions: who are the European unemployed entering in each type of self-employment, in Europe? Who are the European wage-workers entering in each type of self-employment, in Europe? Which are the underlying determinants of success of European self-employed? Is the success of self-employment affected by different factors depending on the type of self-employment considered? Are there some idiosyncratic factors affecting the decision to become entrepreneur or even affecting the success and survival into self-employment?

The study is structured as follows. It mainly consists of three parts. Part I includes Chapter 2 to Chapter 4. Chapter 2 establishes the operative conceptualization of entrepreneurship used in this study, whereas chapter 3 reviews the sources and difficulties related to measuring entrepreneurship. Finally, Chapter 4 discusses trends in self-employment in Europe and Spain during the Nineties, and describes some stylized facts in both spaces.

Part II of the study is devoted to the analysis of transitions. It is divided into two chapters. Thus, Chapter 5 aims to investigate who is entering self-employment in Europe whereas chapter 6 analyses the determinants of transitions to self-employment in Spain. Thus, European and Spanish data are used to analyse to what extent differences in individual characteristics and characteristics of the economic and social environments affect entrepreneurial choice.

To assess the impact of entrepreneurship promotion policy, not only fostering the entry of individuals into self-employment but also encouraging a growing number of own-account workers to become job creators, Part III (chapter 7) deals with a new topic: the analysis of transition from own-account work self-employment to employer with employees, in order to answer to three questions: i) who are the own-account workers becoming job creators?; ii) is the decision to become a job creator affected by country-specific factors?; and, iii) have the individual self-employment earnings and the macroeconomic performance a prevalence over others institutional effects?

Part IV (Chapters 8 and 9) analyses duration in self-employment. By estimating duration models in single and competing risks frameworks, Chapters 8 examines the duration of self-employment spells across the EU-15 and its determining factors, and provides some new evidence about the effect of individual characteristics –including ability-, previous labour market experience and business cycle. Furthermore, this analysis searches for geographical differences

–idiosyncratic factors- and different effects in terms of the final state: paid employment, unemployment or inactivity. As far as Chapter 9 is concerned, it focuses on the analysis devoted to survival as own-account worker, compared to the survival as employer.

Therefore, the contribution of this part is fourfold: first, further evidence is provided self-employment survival literature by carrying out an exhaustively analysis for European countries (a research gap in this type of literature); secondly, thanks to the data characteristics (pooled data), unobservable heterogeneity nature can be used as a control; thirdly, the duration in self-employment is considered, where studying different final states –competing risks model- allows us to detect differences between those variables affecting each type of exit; finally, we explicitly consider the duration in own-account work versus survival as an employer in order to capture possible differences between the determining factors of survival for each kind of self-employment. In this sense, special attention is given to a special area of failure for own-account workers: the exit to employer, given the interest to promote this kind of exit as it is interpreted as a symptom of growth.

In short, this fourth part contributes not only to a better understanding of the determinants of self-employment survival, but also to a growing literature on the differences between job creators –self-employment with employees- versus individual self-employment.

The study concludes with a final chapter –10-, containing some concluding remarks and insights into future lines of research.

Publications

Some chapters of this research are based on previously written articles and papers and can be read independently of each other. Thus, Chapters 2 and 3 are based on Chapters 16 and 6 that were published in Congregado, E. (2008) Measuring entrepreneurship. In adition, Chapters 6 and 7 are partialy based on versions published in *Economía Industrial* (Aguado *et al*. 2002), *Seminario de Análisis Económico – Universidad de Huelva Working Paper Series* (Congregado *et al*. 2003), *Cuestiones Clave de la Economía Española* (Congregado *et al*. 2005), *Perspectivas del Sistema Financiero* (Congregado *et al*. 2006) and Chapter 3 published in Congregado *et al*. (2008) *El Capital humano y los emprendedores en España*.

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Part I
Conceptualization, Measurement and Facts

Chapter 2. Entrepreneurship and Economic Theory: A Production Factor?[1] [2]

The problem of defining entrepreneurship is not a trivial question. Delimitating the entrepreneurship concept is one of the most difficult tasks faced by researchers devoted to this field. The outcome of the proliferation of theories, definitions and taxonomies from different disciplines is that researchers cannot agree on a precise definition of entrepreneurship. From an applied labour economics perspective, which is the approach adopted in our empirical work, analysts equate entrepreneurs with the self-employed. At the conceptual level this equivalence is, at least, questionable. However, the availability of data on self-employment is a powerful reason to operationalise the concept of entrepreneurship by means of self-employment in applied research. These conceptual problems highlight the need for a conceptual framework to be clarified, before turning to the empirical work that is the core of this dissertation.

2.1 Introduction

After reviewing the most conventional contributions on the entrepreneurial function, it is clear that the entrepreneurial performance is configured according to, at least, one of the following functions: i) the entrepreneur is an agent that continuously decreases inefficiencies to be found in the firm (Leibenstein, 1969, 1979). His actions must seek to optimise the factor used by selecting the most appropriate technology combination for this objective; ii) he finds profit opportunities that permanently exist in the markets (Kirzner, 1973, 1979, 1985) by using his knowledge about consumers' preferences, about technology combinations, and about market factors in order to create a productive combination that satisfies this demand; iii) he tackles the uncertainty of predicting the future (Knight, 1929); and, iv) he innovates (Schumpeter, 1912).

Thus, an agent carries out the entrepreneurial function and, therefore, he constitutes the entrepreneurial factor if he develops any of the vectors that compose the entrepreneurial functions, regardless of: i) the level of success or luck with which this task is carried out; and, ii) the link with property. This means that the productive factors should not be overlapped, even though the same agent could be simultaneously a capitalist and entrepreneur, or entrepreneur and paid-employee. In the same way that a single agent can sell his available time as a labour factor, and also contribute with his capital, the same agent can combine the entrepreneurial function and contribute with his capital or labour factor.

In this sense, the entrepreneurial function can be carried out by simple paid-employees without any link to capital property, which is commonplace in corporative firms, only one of the vectors that configure the entrepreneurial function performance can likewise be carried out, as this function is done by specialized teams.

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[1] An extended version of this chapter has been published as a chapter in: Con-gregado, E. (2008) Measuring entrepreneurship, in conjunction with E. Congregado, A. Golpe and C. Román.

[2] I am indebted to the Workshop on Entrepreneurship Statistics (2006) participants for their helpful comments and advice. Errors remaining are on my own.

Therefore, supply and demand will exist for the entrepreneurial factor, in the same way as for any other productive factor, to configure an entrepreneurial factor market, that is to say, available resources and a demand to be met. By clearing this market, expected profits and a specific composition of the network will be generated, which will determine the influence of the market on the results of the entrepreneurial activity: in terms of competitiveness, job creation, generating added value, and even, innovation.

The search for both market force determinants could be a good guideline to establish a theoretical framework.

2.2 A Conceptual Framework

According to the premise that any conceptual framework proposal must be based on the most widely accepted propositions, and that it must use the same conceptual schemes as those used for any other productive factor analysis, the analysis of the entrepreneurial market and its results –if it is either measured in terms of the productive combinations they create or either in terms of its interrelations to other markets-, is a good guide to determine the key topics to be analysed by the Economics of Entrepreneurship.

Although literature shows an unequal development level associated to the number of contributions from the supply perspective in relation to the analysis of the demand, this fact must not be understood in terms of a complete absence of contributions.

Thus, the most frequent way to understand the entrepreneurial factor demand is by means of the way the agents identify with the incentives the agents if they carry the entrepreneurial action out. This is the idea derived from the theories of Schultz (1975) or Casson (1982), who consider that entrepreneur demand is formed by the entrepreneurial profit opportunities. Given this perspective, the entrepreneurial factor demand comprises the profit opportunities themselves that each agent is able to detect[3], and the agent will therefore try to first implement the opportunities associated with a higher expected profit rate. Thus, entrepreneurial demand is configured as a decreasing relation between profit opportunities and hours spent on the entrepreneurial function performance.

On the other hand, the entrepreneurial factor supply must provide the keys to why the economic agent is willing to dedicate his time and energy to performing the entrepreneurial function.

At first sight, any agent has the possibility to be entrepreneur. Each agent will have some kind of capacity derived from his knowledge –innate or acquired-, that will allow him to access a wider or more limited set of opportunities.[4] In the same way, a person can be subjected to some relative or absolute restrictions that may prevent him from making that choice, although this may be the chosen option in accordance with the expected outcome of this option in relation to the derived outcome of paid-employment.

[3] Nevertheless, the profit opportunities are not detected by everybody in the same way, as information and knowledge are not uniformly distributed throughout the population. This fact can help to understand some aspects of the phenomena, such as entrepreneurial concentration or productive specializations in specific areas.

[4] Note that in order to access to a higher number of profit opportunities, it is not a necessary condition to access more profitable opportunities.

This is a problem related to occupational choice, although with a subjective assessment element determined by the incertitude associated to the entrepreneurial function performance against the safe wage of paid-employment particularly in labour markets where legislation introduces specific guarantees for paid-employment.

As in other markets, the equilibrium will be achieved when for a certain expected profit level, the time required for entrepreneurial function performance to capture an opportunity, tallies with the time agents have allocated to the current profit.

In aggregate terms, as result of this dedication to the entrepreneurial function, an entrepreneurial activity level and productive configurations resulting from the action will be generated, i.e., a specific quantitative and qualitative composition of the entrepreneurial network.

This level of entrepreneurial activity creates certain production levels, employment, some economic results, and even some specific lines of specialization and innovations, depending on the kind of opportunities that have been detected and captured, and on the productive combinations configured on its actions.

2.3. Entrepreneurship Demand

Let us assume there is a continuous flow of profit opportunities set by the general conditions of the external and internal economic environment, although they are probably limited by both the information available the individual based on his knowledge, and by the existence of some institutions that limit the "potential set" of opportunities to be captured. If the restrictions set by institutions are then ignored, the general conditions of the economic environment, i. e., economic development –that can be identified with the driving forces of aggregate supply and demand-, will create an atmosphere for the potential development of businesses. This will influence the current feasibility of any profit opportunity.

Thus, shocks –both for offer or demand-, regardless of the reasons of their origin or the market that created them, will generate variations of the assessment of each entrepreneurial profit opportunity, and they will also imply that some opportunities may be rejected while other can be created.

On the other hand, along with these general environmental conditions, a prior condition to capture opportunities is to do with deregulation and competence level, together with the degree of openness, and even with guidelines for knowledge diffusion. Thus, the existence of absolute barriers to certain sectors or the restrictive regulations on some types of activities may imply that some perceptible opportunities are not feasible, and they therefore become non-existent profit opportunities. Similar reasoning could be followed in relation to the difficulties faced to disseminate technology, and therefore, they prevent some productive configurations and some entrepreneurial projects.

Thus, highly deregulated economies with a high competence level will show profit opportunities, that are possibly not as great as in other environments, but they will may suitable to be captured by a significant part of the entrepreneurial network. On the other hand, over-regulated economies, with a low competence level will create a set of profit opportunities, possibly with a very high associated performance, but a significant part of the entrepreneurial network will have limited access.

Let us consider some examples that will help to clarify the influence of the regulation level of the economy regulation level. An attempt will be made to establish clear distinction from those that could involve administrative obstacles or institutions that have an effect on the productive factor mobilization. These will be analysed later as obstacles that negatively impact the offer.

Let us assume that there is a specific economic activity, which is regulated so that a quantity-limited, perceptive license is necessary to carry out this activity. In this case, despite the existence of individuals that would be ready to capture these profit opportunities, there is an absolute barrier to access t this activity. A similar phenomenon would derive from the existence of patents (although this would only imply a temporary absolute barrier), or from the existence of monopolies, regardless of their origin.

Thus, entrepreneurial demand interrelates the profit opportunities that the entrepreneurial network detects and is able to capture. Let us analyse in greater detail how the general conditions of the aggregate supply and demand, the degree of economic freedom, the guideless to diffuse technology, and the degree of openness influence the demand.

2.3.1 The Macroeconomic Environment

In order to proceed to detect and capture the different existing profit opportunities, the entrepreneurial agent must firstly take into account the analysis of the economic environment, where this entrepreneurial activity is carried out. There are two sides to this environment: the inner side (internal market) and the outer side (external market), with a greater or lesser influence depending on the target market and on the origin of the productive factors. The entrepreneur, as is the case of any other productive agent, needs information to detect the opportunities and to face the incertitude inherent to any entrepreneurial venture. This way, and as in any investment project assessment, the forecast of demand, factors to be mobilised and costs related to these factors is crucial. Hence, the result of any decision made about the firm's competitive strategy is subject to the evolution of the general business context the aggregate demand level, the market factors and by Government intervention. Therefore, the entrepreneur must interpret the consequences of the economic situation on the result of his actions. One of the vectors that define the entrepreneurial function performance derives from the need to face the inherent incertitude of this kind of activity. The results of this entrepreneurial activity are, by their very nature, uncertain and, therefore, the entrepreneurial factor must take decisions in this incertitude framework. Obviously, the quantity information, the interpretation of this information, the forecasts and the methods used to forecast the future will be different from agent to agent. Thus, the suitability level of the firm's strategic decisions to changes in the economic environment will be linked to the existence, interpretation, and quality of the information, but also to forecasts.

2.3.2 The Degree of Economic Freedom

Defence for competence is considered as an essential element to guarantee economic efficiency, that is why it is included as rule in most modern constitutional texts. From our point of view, the existence of barriers that hinder or impede access to a specific activity sector not only mean an efficiency loss for the economy, but they also cause the available profit opportunities for potential entrepreneurs to decrease.[5] But, regardless of the assessment of its involvement, our interest is focused on articulating indicators to measure this aspect. In this sense, the exis-

[5] The point is not choosing one or another regulation, but being able to assess which elements of the regulation have different effects to those expected.

tence of absolute barriers to access is usually assessed by means of indicators that measure the scope of the legal barriers or the number of exceptions to the anti-monopoly legislation.

2.3.3 The Degree of Openness

The degree of openness should impact directly on the profit opportunities. Let us consider a closed economy, where the existent profit opportunities are those derived from the potential demand of the domestic market, while the productive possibilities are limited to the technologic possibilities and to inner productive factors. In an opposite situation, a complete opening of this economy –let us think in terms of perfect mobility-, will imply the appearance of new profit opportunities. This appearance is due to the extension of latent demand ranges and of market dimensions, while simultaneously making production possibilities feasible, which were not previously possible for technology reasons or the impossibility of mobilizing the required productive factors in the inner market. Hence, the opening-up increases the entrepreneurial factor demand. Nevertheless, the final result of a greater opening-up does not necessarily imply an increase in the inner entrepreneurial activity. Although the opening-up will create new profit opportunities, this will also imply an increase in the entrepreneur's supply, so the impact can even be the opposite.[6]

Let us ignore these two extreme situations for the moment and let us think about an autarchic economy that experiences a progressive opening up period. Let us assume, for example, that in this first opening stage, the free movement of capital factor is allowed, but non-national entrepreneurs are forbidden from setting up firms. In this case, the opening-up would not increase the profit opportunities, but it would favour the entrepreneurs' access to new capital markets, i.e., it would foster the factor mobilization from the national entrepreneurs' side. This same situation would be also applicable if difficulties exist in order to mobilize labour factor with the desired productivity level and wages, and the arrival of other countries workers is allowed.

Generally speaking, the importance given by governments to the exporting activity of its firms is subject to its contribution to economic growth (Lages and Montgomery, 2005). These favourable effects have led to increasing interest in analysing the opening effects. Most of these papers argue that countries with a greater number of exporting firms experience a global improvement in its competitiveness level, as these firms (either through showing the effect or either by requiring shares in the partner national firms) force the remaining activities to focus on modernization (Girma *et al*., 2004). Thus, it is widely accepted that an exporting guidance of firms is a factor that favours economic growth (Moen, 2002), although empirical studies confirming this are scarce. On the other hand, there are studies that consider exporting firms as more productive firms, with a bigger size and with more probability of survival, while they are capable of paying greater wages than those that do not export (Aw *et al*., 2000). However, the situation that is not really clear is if the greater productivity showed by these firms originates from their emphasis on exporting (which allows them to acquire new knowledge, access new technologies, and that forces them to be more competitive), or if the innovation and competitiveness themselves guide these firms towards exporting.

[6] Given a specific national sector size, the national entrepreneurship crowding-out can be made up by the profits that interaction with foreign firms can provide, in terms of previous experiences, knowledge and technology transfers. Grossman (1984) shows how international capital, and particularly direct foreign investments, may imply the expulsion of the national entrepreneurship. In a very similar line, Hausmann and Rodrik (2003) argue that the *laissez-faire*, and specially the opening-up may create low levels of ex ante investments and self-employment.

2.3.4 Technology Dissemination

Innovation, apart from being one of the functions that define the entrepreneurial function performance and one of the entrepreneurial activity outputs, must be analysed according to the mechanisms used by innovation to propagate throughout the productive system, since these mechanisms are configured as essential elements for its potential conversion to business opportunities. Thus, the configuration of the science-technology-industry system is one of the main determinants of entrepreneurship demand, since this determines the way in which the innovations are disseminated throughout the productive system. If the R&D activity, even if it is successful, does not have the appropriate mechanisms to satisfy the productive demands, or if the connections among systems fail, it may become a futile activity with no impact on the economic activity. From the other perspective, the existence of problems in the technological dissemination processes is the main factor responsible for the failure to fulfil the convergence proposition related to the neoclassical theory of economic growth. This refers to the fact that a greater opening up –even if this would imply perfect mobility- does not necessarily imply access to every profit opportunity for the participating countries in the free trade agreement. This way, some profit opportunities will be protected and hence, these would be limited by patents, regardless if they are process –or product- derived. Thus, economies with a lower technological development level will see that some business opportunities will not be captured; while these opportunities can be captured in other economies, only through royalties payment that will decrease their expected performance, but the economies will be in an unfavourable situation. The dominant role of the country that has the highest relative development level will become an obstacle to capturing these profit opportunities from the point of view of the national entrepreneurs.

2.4. Entrepreneurship Supply

If demand factors are associated to available opportunities, supply factors must be associated to the necessary requirements. Thus, entrepreneurial skills, whether innate or acquired, will have an effect on the perception of opportunities. A second requirement for developing an entrepreneurial project is determined by the ability to mobilize these required productive factors. A potential entrepreneur can detect a profit opportunity, but he will not able to exploit it if he has no rights on factors or he has no way to have them. As it has already been stated, an agent will decide to become entrepreneur if the expected outcome is higher than the alternative occupation. In other words, if the expected compensation of the profit opportunity that he attempts to capture is higher than the opportunity cost of the alternative activity, which is the paid-employment once taxes and incentives are discounted, plus a risk bonus and dedication bonus that involve some personal aspects, such as family situation, that may have some impact on this decision. Hence, all those variables that alter the opportunity cost to perform the entrepreneurial function, as well as those personal aspects (regardless of whether they derive from personal circumstances or from sociological factors) that may affect the assessment of the incertitude linked to the entrepreneurial opportunity compared to paid-employment, will be determinant aspects of the entrepreneurial offer and, therefore, they will affect the quantitative composition of the entrepreneurial network. Finally, the institutions of the labour and capital markets may affect the relative assessment of the alternative occupations and then affect the employment decision.

2.4.1 Entrepreneurial Human Capital

In principle, it may be expected that having previous experience in a sector increases knowledge of product and factor markets related to this sector, enables knowledge of feasible produc-

tive combinations and, therefore, it reduces the incertitude associated to any entrepreneurial change as the quantity of available information increases. Likewise, having knowledge and entrepreneurial skills in the management area or in markets will allow inefficiency to decrease, which is another vector that configures entrepreneurial function performance. Generally speaking, there is a greater likelihood that individuals with more experience or those who have acquired a higher level of entrepreneurial knowledge (either by formal educational processes or either by non-formal mechanisms, including those considered as externalities) will be more capable of detecting profit opportunities. Then, by contributing to the accumulation of this specific kind of human capital, the detection of profit opportunities will be favoured and, in all likelihood, established firms will be more likely to improve their economic results. Thus, the literature about entrepreneurial human capital has not only analysed how the different kinds and levels of human capital have an effect on the decision of being an entrepreneur, i.e., on the probability of identifying and pursuing business opportunities, but it also has studied its influence on the entrepreneurs' performance in terms of survival and work life span, or even on the activity outcome itself. Hence, the design of mechanisms that favour the accumulation of this kind of human capital is considered as one of the most efficient instruments to favour the detection of more and better opportunities. That is why the analysis of the design has an important place on the research agenda.

Generally, economies or sectors with a denser entrepreneurial network, with a wider entrepreneurial dimension or a higher technology development, require the necessary entrepreneurial human capital level to capture profit opportunities to be higher, which sometimes becomes a real access barrier to performing the entrepreneurial function. Likewise, the complexity of some entrepreneurial organizations requires a team to be created with a high specialization level on different areas in the entrepreneurial function, even in the design stage of a productive combination. Therefore, if the aim is to capture the entrepreneurial human capital of an individual, economy or sector, both the stock of entrepreneurial knowledge and its accumulation processes should somehow be captured.

Therefore, older workers or workers with wider previous experience may gather entrepreneurial skills, savings and business relations, and are more likely to become entrepreneurs, although it is agreed that proximity between the indicators and the aspects to be measured is not very accurate.

Another possible accumulation mechanism is determined by the intergenerational transfer of entrepreneurial skills. Based on the parents' labour situation, there is evidence or the following fact. Self-employed people's children are more likely to become entrepreneurs than paid-employed people's children.[7] This result is supported by the opinion surveys (Eurobarometer) that show that self-employed' children are more likely to be self-employed, than paid-employed people's children.

Apart from these factors, the most intensely studied mechanism of human capital accumulation is that related to the participation on formal educational processes. The role that education may have on favouring the existence of a positive social image of the entrepreneurial activity, so education may favour a kind of entrepreneurial spirit[8], is not referred to here, but the emphasis is

[7] See Dunn and Holtz-Eakin (2000), Evans and Leighton (1989), Fairlie and Robb (2005) Chapter 1, Laband and Lentz (1983) or Taylor (1996), among others.

[8] However, European public authorities suggest that education is the mechanism to be used to change attitudes towards risks, so education may contribute to promote the entrepreneurial spirit, fostering a favourable attitude, the sensitising for professional opportunities as entrepreneur, and competencies. From their point of view, starting a business requires energy, creativity and persistence, while its devel-

rather on the role of education in acquiring skills and capabilities that may allow profit opportunities to be captured. Economic analysis has intensively studied this relation: Evans and Leighton (1989), Blanchflower and Meyer (1994), and Schuetze (2000) (among others) conclude that there is a positive relation between the achieved educational level and the probability of becoming an entrepreneur.

In relation to this question, Ucbasaran *et al*. (2006) study this relation in depth in a very recent work. It divides the general human capital effects (education and labour experience) from those of entrepreneurial human capital (experience as business owner, management skills and technical abilities); effects on the identification and business opportunities, and finds evidence to favour both kinds of effects of human capital effects. Parker and Van Praag (2006) try to capture the relative importance of the human capital stock, according to the access process to self-employment, i. e., depending on if access has been by starting a new business or by joining an already-established business. Therefore, it seems that having a higher education level is positively related to the setting up of a new business, while having previous experience in management roles is more likely to provide access to an already established business.[9]

Hence, empirical evidence seems to support the hypothesis, where human capital is a determinant factor not only for searching and exploiting business opportunities, but also for the type of access, survival and performance itself. According to these significant effects of human capital on the results of entrepreneurial activity, a good work guideline to search for indicators that allow the analysed aspects to be measured in relation to the entrepreneurial human capital, must spotlight indicators designed to measure the stock of this kind of knowledge from those that capture the voluntary accumulation processes, and from those indicators that capture unintentionally acquired knowledge.

2.4.2 Productive Factors Mobilization

A second requirement for the development of an entrepreneurial project is being able to mobilize the required productive factors. Access to the propriety rights of the capital factor, or the sufficient labour factor, endowed with the required human capital, are fundamental for starting a business. Yet, reference also has to be made to the existence of non-excludable factors, i.e., considered as public goods, such as transport or communications infrastructure, which will decrease the necessary factor resources and will foster the mobilisation of factors in a specific location.

The Supply of Capital

Although it is easy to confuse the agent with the productive factor, particularly when the capital factor and entrepreneurial factor are provided by the same agent, not only is the existence of liquidity constraints a key variable in order to become an entrepreneur, but there is also the difficulty of accessing any kind of financing. Therefore, a great part of the empirical literature focuses on analysing the role of these liquidity constraints when deciding to be entrepreneur. Thus, and generally speaking, the literature seems to show a solid confirmation of the hy-

opment requires increasing management ability, which implies efficiency, effectiveness and responsibility. Together with this line of action, the European Commission tries to spread the teaching of entrepreneurial skills, for example, in technical studies faculties, teaching how an entrepreneurial spirit may contribute to combing entrepreneurial and technical potential. Education on entrepreneurial spirit combined with public programmes for research gathers the required elements to join scientific excellence and trading of results.

[9] The literature has also analysed the entrepreneurial human capital performance (on survival probability. See Van der Sluis *et al*. (2006) and Bhattacharjee *et al*. (2006).

pothesis that states the following. It seems that certain kind of entrepreneurial projects, particularly those that require large initial injections of capital, do not really depend so much on the previous own funds, but rather on how accessible the capital markets are, on the ease of searching for investors, and the development level of the financing institutions.

The Labour Market

A regulated market, with problems that impede the adjustment, or with an unsuitable inadequate human capital, may hinder the starting of any entrepreneurial project.[10] Yet, the labour market also plays a role, from a different perspective: paid-employment is the alternative activity when it comes to the problem of choosing an occupation. Therefore, the labour market features, either related to the relative remuneration of each occupation or how this affects the incertitude level, will be elements that favour or hinder the decision of becoming an entrepreneur.

Therefore, a highly regulated market, whose features include permanent or temporary hiring and high wages, increases the cost of self-employment opportunity, both in terms of the rejected wage and the incertitude level for each occupation.

Finally, the labour market features have consequences on the location. The existence of a labour factor with suitable human capital for the project requirements (professional human capital), and with efficiency and cost levels that make this feasible become essential not only for the project feasibility itself, but this is also basic for the location of the entrepreneurial activity. Thus, if it is impossible to hire suitable labour for the proposed business, with the productivity level in line with business' requirements or with higher wages, may cause a project not to be feasible in a specific productive location.

Infrastructure

A suitable support for this entrepreneurial activity requires a professional highly qualified consultancy service that may be capable of providing the required information and knowledge (the know-how). Along with this network, the availability of some public goods, such as communication and transport infrastructures or the existence of locations with specific infrastructures or service firms (industry, technology parks or industry areas) or even networks, decrease the installation costs, create synergies that impact efficiency, and foster innovation. Therefore, these elements favour locating in the places where they appear, and starting new entrepreneurial projects (Pittaway *et al*., 2004). Thus, the existence of firms with complementary activities, the existence of business incubators, industrial parks or industry networks, and cooperation centres are some of the elements that form this entrepreneurship infrastructure, regardless of their public or private nature. Finally, cooperation among R&D institutions and firms will cause decisions to be made based on the knowledge sources, which will surely imply a higher effectiveness and suitability level.

2.4.3 Personal Features

Although personal features are not explicitly included in models, the empirical literature confirms that some behaviour patterns may influence the choice of occupation. This decision depends on the personal features of the entrepreneurial network components, and they are also related to the family core as the decision-maker. Taking gender into account, women participation rate in self-employment is substantially lower than for men. Yet, this phenomenon is not limited

[10] Let us consider the effect that some institutions of the labour market, such as the existence of firing costs or permanent hiring formulas, may have on the labour factor demand.

to self-employment. However, the importance of this phenomenon is given by the existence of a bigger difference in relation to paid-employment. The different roles played by women and men in the family core or the higher dedication related to entrepreneurial opportunities have been some of the hypothesis analysed by literature to explain the phenomenon. If the whole family as a unit makes the decision of the occupation, the characteristics of the family must be critically important when choosing the occupation, due to the implications of this decision on the dedication to other activities, and even on the family inheritance itself (Borjas and Bronars, 1989). Likewise, a finding (probably related to the cultural background of specific groups) is given by the high participation of certain groups and ethnic groups in the entrepreneurial network. Thus, it seems that immigrants from certain geographic areas or people from specific ethnic minorities usually chose self-employment against paid-employment.

2.4.4 Costs and Incentives: Taxes and Social Security

A common way of favouring transfers to self-employment is by providing specific incentives (taxes or bonuses in social security fees), so these incentives may decrease the opportunity cost of the alternative occupation. The underlying reason for this kind of measurements is that taxation obligations and costs related to the fulfilment of these obligations must not be an obstacle to creating firms or to their development or consolidation. Relieving the tax burden and simplifying procedures and requirements associated to its fulfilment may be elements that contribute to the firm development, growth and survival. In 1994, Domar and Musgrave suggested using the taxation system as a way to offset the risk costs related to self-employment through the deduction of the generated losses. The introduction of differences in the taxation treatment of the self-employed and paid-employed, in most taxation systems, has shifted the interest to analysing the effects of taxation on the choice of occupation to the opposite side, i.e., on the analysis of the distortions that these differences may generate over the choice of occupation, given the possibilities of tax evasion related to self-employment. The papers by Watson (1985), Kesselman (1989), Pestieau and Possen (1991), or Jung *et al*. (1994), Schuetze (2000) or Parker (2004), are only some of the examples of this work guidelines. Using microdata, empirical literature has identified the different effects of tax regulations on self-employment.[11] This way, Carrol *et al*. (2000) conclude that taxation on the personal income of self-employed people significantly alters their employment, investment, and expansion decisions. Blau (1987), Bruce (2000) and Schuetze (2000) find that a high taxation pressure decreases access to self-employment. Parker and Robson (2004) show that self-employment ratio is positive and significantly related to income tax rates. As marginal income tax rates increase, the entrepreneurs tend to expand their businesses slower, and to invest less and to hire fewer people.[12]

On the other hand, taxes structure also affects entrepreneurial incentives, and particularly, aspects, such as the linear or progressive nature of taxes, the repayment allowed or the applicable taxation benefits. In general, both the level and the structure of taxes determine the activity and decisions of the firms, and specifically, those related to the organizational structure, to the combination of productive factors, to financing sources, and to distribution of profits and composition of assets.

But, as well as the taxation charge itself, either the importance of the costs related to taxation fulfilment on the firms' side should not be ignored. This so-called "indirect taxation pressure"

[11] Bruce (2000) states that an increase of 5 percentage points in the difference between the expected marginal income tax rate of paid-employed and self-employed, reduces the transition from paid-employment to self-employment in 2.4 percentual points.

[12] See Carrol *et al*. (2001)

includes charges derived from collecting taxation information, from heavy taxation charges and deduction at source of different taxes, taxation accounting, consultancy services on the subject, audits and from legal procedures.

Along with tax incentives, some deductions of social costs play the same role when favouring this occupation choice. Steinberger (2005) considers the existence of a negative relation between the size of the Social Security system and the entrepreneurial activity within a specific country. Parker and Robson (2004) show how self-employment rates are negatively related to social security contributions by employers

2.4.5 Sociological and Psychological Factors

The basic choice of occupation model shows that a person will chose self-employment if its associated usefulness surpasses that of the operative the concept of associated usefulness of each occupation operative by identifying it with income. However, as stated before, a set of subjective perceptions, such as the desire for personal development or desire for being one's own boss, are psychological factors directly related to the associated utility of each occupation. These psychological factors have been subject to specific studies, where emphasis is on intentions, rather than on observed behaviours. The results of the opinion surveys are used to set the scene of the individuals' preferences. The aim is to analyse the motives, apart from earnings, that are taking into account when deciding to be entrepreneur. The most surprising result of this kind of studies is the fact that *a priori* the number of individuals that would wish to be an entrepreneur almost trebles the proportion of existent self-employed people. Politicians therefore believe that obstacles need to be cleared that prevent these preferences from emerging in occupation decisions. Desire of being one's own boss (the independency), controlling or even choosing this occupation as a mechanism of social promotion, are motives expressed by individuals in relation to the choice of occupation.

From a similar point of view, although focused on the risk perception, the role assigned in different cultures to excessive incomes, the social regard for entrepreneurs, or even the study of higher frequency of entrepreneurial activities in some ethnic groups, are analysed with interest and some measurements are even created to mitigate adverse possible effects of these sociological elements. This way, the promotion of successful entrepreneurs' experiences, or the introduction of elements that diminish the risk perception in certain cultures, are created as essential elements to remove negative possible effects on the decision to be entrepreneur. Although these factors are formed by assumptions, perceptions and elements associated to learning, the key question is creating mechanisms used for these factors to favour the entrepreneurs appearing. Obviously, imposing a new culture that favours these values is not feasible, but it is possible to apply some measurements so social consideration of the entrepreneurial role may change gradually. The entrepreneurial labour promotion of the people who have developed successfully entrepreneurial projects or favouring the leadership culture in formal education through role play, are some of the most commonly used measurements.

2.5 Entrepreneurial Activity

Following the proposed conceptual scheme, and once the entrepreneurial factor determinants of offer and demand have been analysed in a specific sector or area, this section is devoted to seeking the dimensions and indicators to capture the supply and demand junction results, which will allow us to: i) quantify the network, either from the perspective of the agents, or either from the productive configurations perspective derived from agent's actions, by using the stock vari-

ables; ii) analyse the network dynamics, through the entry and exit analysis or through success using flow variables; iii) diagnose and monitor the entrepreneurial network output, in terms of economic results or according to its interrelations to other markets.

In other terms, if in the two previous sections, the emphasis was on capturing the control factors, which are essential to the possible theoretical application, this section analyses the result variables, which are the key to diagnosing and tracking the entrepreneurial network. The measurement of the entrepreneurial network from the productive factor perspective, i.e., trying to quantify the number of agents who carry any of the vectors that configure the performance of the entrepreneurial function in a specific sector or area, is first discussed. The measurement of the agents who perform the entrepreneurial function, either as self-employed or performing the management functions in a corporative firm.

The second approach to the quantitative composition of the entrepreneurial network, in relation to the stock quantification, is carried out from a lightly different perspective, in which the attention is paid on the productive unit (firm or establishment), and not on the agent or agents, who undertake this task. In other terms, attention is moved from the entrepreneurial factor analysis to the productive organizations analysis (derived from the entrepreneurial factor), to the firm analysis.

2.5.1 The Stock

If the approach is to be the knowledge of the quantitative composition of the entrepreneurial network in a specific sector or area, it would previously need to be decided whether the productive factor is to be quantified or the resulting organization of its activity. Insisting on the difference is not a trivial question, and this even poses some problems for territory divisions. Let us raise some extreme examples to clarify the previous statement. Let us think about the existence of a territory with a very high entrepreneurial density, in terms of a high number of firms and work centres, but nevertheless, this territory has very low self-employment rates vs. a territory or sector with many agents developing the entrepreneurial activity, but where there are a few establishments, as its production centres, or even its organizations, are based in other territories. The diagnosis of both situations is clearly very different and the involvement of these entrepreneurial activities will be also different, in terms of impacts on the growth, competitiveness, and employment in that specific territory or sector. Then, the combination of these two perspectives for the analysis of the quantitative composition of the entrepreneurial network is essential, in order to find accurate diagnosis and tracking of the entrepreneurial network in an economy or sector.

Thus, in order to approach the quantitative composition from the perspective of the productive factor, the entrepreneurial network in a specific area (sector or space) will be taken to be composed of the group of agents who undertake at least one of the functions that define the entrepreneurial action performance. The entrepreneurial network (strictly considered), will therefore be composed of the agents who perform the entrepreneurial function, either in individual firms or corporations, while if a wide perspective of the network is used, this would also include agencies for entrepreneurial promotion, or consultancy agencies, among others. On the other hand, and from the productive organizations point of view –firms, establishments or productive centres-, firms can be distinguished, along with firms' local units, in other words, the sections of each firms located in different places on the firm's account. The measurement of the number of self-employed people as *proxy* of the people who perform the entrepreneurial function in a specific territory is, and has been, the mostly used solution to quantify the number of agents who compound the entrepreneurial network, since this *proxy* easily derives from the Surveys on La-

bour Forces, by analysing employed people per professional situation, which allows to distinguish self-employed people (employers with employees and own-account workers), and paid-employed workers.[13] The number of self-employed people or the self-employment rate has therefore been a variable chosen for this measurement of the entrepreneurial activity to be operative. This method of measurement has been used to favour comparative analysis, as (despite the differences) most progress may have been made in the field of labour statistics from the point of view of the international harmonization of concepts. Thus, in the European context, the unification of the Surveys on the Labour Forces allows international comparisons about self-employment in the different European territories. The concept of business owner (self-employed) –people who have a firm, whether or not incorporated, and who are not simple investors in the firm, but they work for that firm and receive a wage), used by van Stel, is an example of the harmonization of data derived from the OECD's statistics on labour forces.[14]

Once the measurement of the productive factor is analysed, the emphasis now shifts to the productive unit: firm or establishment. This refers to firms and establishments' operating records, to the generally so-called structural surveys of firms. The importance of its analysis is that this is a key variable when establishing the features of productive configurations derived from entrepreneurial factor.[15]

2.5.2 The Output

Finally, and in order to conclude our analysis of entrepreneurial activity, let us analyse its output, in terms of economy, employment, competitiveness and innovations results. A logical way to act, if the entrepreneurial activity results are to be measured ex post, is to consult the analysis of the economic information included in balances. As corporative firms are obliged to publish the annual balances in commerce registries, different statistical operations to exploit these results have been favoured. A second aspect to take in account will be the effects of the entrepreneurial market on the labour market. A third aspect when quantifying the entrepreneurial activity output should be its contribution to the technological innovation processes and by how this network assumes technological innovations. Finally, focus on should be competitiveness. The competitiveness of a country or sector must be known as a consequence of the entrepreneurial network quality and composition.

2.6 Conclusions

Although there is some kind of general agreement about the importance of the entrepreneurial factor due to its contribution to the processes to generate employment, innovation, and to economic growth, and therefore, about why it should be developed, the relative lack of proposals and results compared to other areas of economic research highlights the fact that knowledge of the mechanisms used for the entrepreneurial factor to operate in any of these processes is quite weak. In spite of this, governments are focused on designing and implementing entrepreneurial

[13] In this sense, international guidelines are more in favour of not considering the relatives' help as real entrepreneurs. Therefore, the term "self-employment" makes reference to the sum of employers with and without paid-employed people. However, this omission probably leads us to underestimate the real role of female entrepreneurs, taking into account that some of these women will be classified within the relatives' help, but they should be considered as partners at the same level than that of the business owner (Felstead and Leighton, 1992; Marshall 1999).

[14] See Van Stel (2005).

[15] See Vale (2006).

promotion strategies, mainly aimed at "improving" the business environment in an attempt to increase the self-employment rate and, in some cases, the existent entrepreneurial network quality, so this network may be increasingly dynamic in relation to its contribution to the previously mentioned processes. This chapter has reviewed a theoretical framework and set out the theoretical mechanisms.

2.7 References

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Chapter 3. Human Population Surveys and Entrepreneurship[1] [2]

3.1 Introduction

The study of entrepreneurship and its impact on economic activity has always been on the research agenda for economists. However, it has not been one of the most intensely explored topics. This shortcoming is heightened when most governments and institutions are observed to design and implement entrepreneurial support policies that are not sufficiently verified by empirical evidence. Thus, most indicators assessing the entrepreneurial network have focused on its quantitative composition and, to a great extent, have been biased to the requirements of firm demography studies.

Therefore, it is common to observe that most existing indicators are oriented to quantifying firms, centres or establishments, and to measuring their dimensions basically in terms of their number of workers.

However, the economic analysis of entrepreneurship must also be approached from other perspectives. For instance, the study of entrepreneurial activity requires indicators capturing the number of entrepreneurs in a particular sector (or geographic area) and accounting for the way they perform their task. In conclusion, a deeper look is required at the reasons for choosing to become self-employed, along with the duration and evolution of these business ventures.

Therefore, suitable knowledge of relevant statistical sources (i.e. Human Population Surveys) and the continuous process of development, updating and improvement of these sources, constitute a mandatory requirement to test the basic propositions arising from the theoretical analysis of entrepreneurship.

This chapter seeks to identify and evaluate the information sources available to study entrepreneurship in Spain. The chapter is organized as follows. Section 2 reviews some potential statistical sources. There is also a brief overview of the Human Population Surveys available. Section 3 enumerates the exploitation techniques used in the Human Population Surveys. The existing literature associated to these techniques is also summarized and special attention is devoted to works using Spanish data. Section 4 compares the Human Population Surveys focusing on the advantages and disadvantages of each survey and the literature that has exploited them. Finally, Section 5 is reserved for conclusions and future perspectives for Human Population Surveys in Spain.

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[1] An extended version of this chapter has been published as a chapter in: Congregado, E. (2008) Measuring entrepreneurship, together with E. Congregado and C. Román.

[2] This work was presented at the Workshop on Entrepreneurship Statistics (2006), sponsored by the Andalusian Statistical Institute. I would like to thank José Ignacio García and the workshop participants for their comments. All remaining errors are my own.

3.2 Statistical Sources and Human Population Surveys

With regards to Human Population Surveys, a brief review of the existing statistics reveals the extensive variety of available sources. First, there is the renowned Spanish Labour Force Survey (EPA), which addresses households and has been conducted by the National Statistical Institute (INE) since 1964.

The EPA is the basic structural source yielding information on the characteristics of employment in Spain. It also provides information regarding unemployment and the population outside the labour force. Its quarterly frequency also allows the labour market situation to be monitored.

There are other statistical sources, based on household data, that provide information on the working population (although their primary goals are not to measure employment): the Working and Living Conditions Survey (ECVT 85), the 1991 and 2001 Population Census, the 1991 Sociodemographic Survey, the Household Budget Survey (HBS) –or EPF[3]-; the Quality of Life at the Workplace Survey (ECVT) and the European Community Household Panel (ECHP).

The Working and Living Conditions Survey was conducted by the Spanish Ministry of Labour during the last quarter of 1985. Its main purpose was to assess the informal economy and its importance within the labour market.

The main objective of the Population Census is to count the entire population in each of the Spanish's administrative units and population settlements. In addition, the Census aims to provide information on the population structure to facilitate the decision-making process.

The Sociodemographic Survey was conducted in 1991 and complemented the same year's Population Census information, mainly regarding the life histories of those surveyed on topics such as educational and social background, migration, among others.

Conducted by the INE since 1958, the Household Budget Survey is a statistical operation with a long-standing tradition. Its main objective is to estimate the weights used in the Consumer Price Index.

Started up by the Ministry of Labour in 1999, the Quality of Life at the Workplace Survey (ECVT) is the unique nation-wide Spanish survey specifically designed to study the quality of life at the workplace.

The European Community Household Panel (ECHP) is a standardized survey for the EU-15 member states. Carried out between 1994 and 2001, it was conceived to study and monitor social cohesion, population needs and the impact of socioeconomic policies on households and individuals, and to help design new policies.

The European Statistics on Income and Living Conditions (EU-SILC) is an annual survey conducted to obtain information on household income, poverty and social exclusion. It started in 2004 as an improvement over the ECHP whose content needed to be updated in accordance with the new political demands and the need for faster data generation.

[3] The Spanish nomenclature of this survey is "Encuesta de Presupuestos Familiares" (EPF), that is, Spanish Family Expenditure Survey. This term will be used in Chapters 6 and 7.

In 2001, the Spanish Central Bank decided to start the Spanish Survey of Household Finances (EFF).[4] The central purpose of this survey is to obtain detailed information concerning the financial position of Spanish households. The EFF is a unique statistical source in Spain that allows household revenues, assets, liabilities and expenditures to be linked.

Social Security affiliation is another important indicator of entrepreneurial activity. Current social security records are designed more for managerial purposes than for conducting population studies. Nevertheless, this situation has changed with a new Ministry of Labour database, the Continuous Survey of Work Histories, whose information is already available to research Centres.

Finally, there is the Global Entrepreneurship Monitor project (GEM)[5] which started in 1998. The GEM is an international research programme aimed at generating harmonised annual data on entrepreneurship. It initially started with 10 countries and currently covers 39 countries including Spain since 2000. The data used comes from a survey that seeks to capture the following dimensions: i) entrepreneurial activity; ii) attitudes and perceptions vis-à-vis entrepreneurship; iii) entrepreneurial environment; iv) a series of standardised questionnaires for experts.

3.3 The Use of Human Population Surveys in Empirical Research

Most textbooks approach the entrepreneurial phenomenon from a Business School perspective, setting aside any possible contributions derived from economic theory and empirical research. Nevertheless, the existing surveys on entrepreneurship literature –Audretsch (2002), Blanchflower (2000, 2004), Parker (2004) or Reize (2004) among others- refer to numerous works that overcome this deficiency. Their main contributions include the following models and techniques: discrete choice models, sample selection models and earnings functions, duration models, cointegration analysis for time series, and decomposition techniques.

However, not all of these models are suitable for the micro-data offered by the Human Population Surveys (e.g. time series models) nor have they all been implemented with Spanish data (e.g. decomposition techniques).

The discrete choice models have been widely used to identify the factors inducing self-employment (such as the case of an unemployed individual becoming self-employed or an employee switching to self-employment). They may be divided into either binomial or multinomial models. In the former, the individual's decision is simply restricted to being self-employed or not, while the latter involves a wider range of choices. For instance, the individual may face the alternatives of being a paid-employed (employee), a self-employed with employees (employer) or a self-employed without employees (own-account worker).

Along these lines of research, the works by Evans and Leighton (1989), and Blanchflower and Oswald (1998) deserve special attention. In addition, some important works using Spanish data are: Alba-Ramírez (1994), based on the Working and Living Conditions Survey (ECVT 85), Carrasco (1999), based on the Household Budget Continuous Survey (HBCS); Aguado *et al*. (2002), Carrasco and Ejrnæs (2003), and Congregado *et al*. (2005), based on the European

[4] See Bover (2004).

[5] For detailed information on the project see Reynolds, P. *et al*. (2005). On-line information on the International GEM project can be found at http://www.gemconsortium.org . On-line information on the Spanish GEM project is available at http://www.ie.edu/gem. For on-line information on the project for Andalucía visit http://www.gem-andalucia.org.

Community Household Panel (ECHP); and Congregado *et al*. (2003)[6], based on the HBCS and the ECHP.

Sample selection models try to estimate the probabilities and expected profits associated to self-employed and paid-employed individuals controlling for possible selection bias.

Selection bias may arise if self-employed individuals have special characteristics that make them more suitable for self-employment. In this case, controlling for the bias would allow us to know whether the same individuals could improve their revenues in an alternative occupation.

Along these lines of research, the works by Taylor (1996) and Parker *et al*. (2005) should be highlighted. The work by García and Montuenga (2004) also deserves special attention: using data from the ECHP, it compares the education returns of self-employed individuals and employees in Spain and Portugal.

Duration models seek to identify the variables affecting the duration of self-employment. These models use either Human Population Surveys (which provide information on the individual's self-employment spell) or firm registries (which provide information on the span between firm entry and exit).

A distinction may be made between two types of duration models: single-risk models and competing-risk models. Single-risk models are used when a transition can lead to only one destination or exit state (e.g. the transition from unemployment to employment) while competing-risk models allow for multiple destinations (e.g. the transition from unemployment to part-time or full-time employment). Using Human Population Surveys, Böheim and Taylor (2000) and Falter (2002) make special contributions in these directions. Works using Spanish data that also deserve to be mentioned are: Carrasco (1999), which uses the HBCS; and Congregado *et al*. (2003), based on data from the ECHP.

Finally, decomposition techniques are used to explain differences between socioeconomic subgroups of the population (e.g. divided by gender or by ethnic background). These techniques allow us to determine whether the differences obtained in variables such as earnings and self-employment survival, are due to special characteristics of each subgroup or to possible discrimination. Some of the main works along these lines are Borjas and Bronars (1989) and Hundley (2001).

3.4 Entrepreneurship and Human Population Surveys

This section goes further into the characteristics of the Human Population Surveys that make them suitable to study entrepreneurship in Spain. The exploitation possibilities offered by each survey in relation to the existing empirical approaches to entrepreneurial activity are also highlighted.

3.4.1 Spanish Labour Force Survey

Research on firm demography has intensively explored the indicators related to the number of firms or establishments in a particular geographic area or a specific economic sector. In

[6] This working paper is partly based on my Master's thesis in the Quantitative Economics Doctorate (QED) at the University of Alicante, under the supervision of Javier Álvarez.

Spain, studies in this direction have grown substantially since the establishment of the Central Companies Directory (CCD) and the Survey on Labour Juncture (ECL). Developed by the National Statistical Institute, the CCD is a statistical source that was preceded by the Economic Directories Integration Project (EDIP) of late 1989. In a unique information system, the CCD consolidates data from all Spanish firms and its local units that are situated in the national territory. The ECL was established in 1990 and is published quarterly by the Ministry of Labour. It uses data of over 12,000 establishments (all with more than 5 workers) gathered from the industrial, building and services sectors (Public Administration and Defence are excluded from the last one).

The statistical sources mentioned above are useful to study corporate entrepreneurial activity, but fail to explain entrepreneurship from an individual perspective. To overcome this shortcoming and assess the whole entrepreneurial network (i.e. at individual and corporate levels) we must resort to the Spanish Labour Force Survey (EPA). This survey currently has a rotating panel sample (derived from the 2001 Population Census) of 65,000 households (covering approximately 200,000 persons). It is conducted quarterly and it provides a follow-up on employment status and type of occupation for the same individuals during six consecutive quarters.

The EPA itemizes working individuals into the following categories: employers (self-employed with employees), own-account workers (self-employed without employees), members of producers' co-operatives working in such co-operatives, unpaid family workers, employees and other. Thus, the number of employers and own-account workers provides a good *proxy* to quantify the individual entrepreneurial network.

Nevertheless, there is a predominance of corporate firms in economic activity. There is clear separation between ownership and control in this kind of firms and therefore the entrepreneurial activity may be carried out by corporate officers who are not necessarily shareholders.

Therefore, indicators accounting for corporate entrepreneurial activity are needed to assess the whole entrepreneurial network. The Spanish Labour Force Survey (together with the Population Census) may again provide this kind of indicators. When classifying workers by occupation (National Classification of Occupations, CNO-94), there is a category for private and public business executives. The classification of workers by socioeconomic condition includes four categories: directors and heads of agrarian establishments, directors and managers of non-agrarian establishments, directive staff of the public administration and members of the state offices. Finally, when classifying (where applicable) the type of public administration the individual works at, there is a category for public companies and financial institutions. Therefore, the information from these three classifications allows us to identify the private and public business executives. It is up to the researcher's criteria to either consider the hypothesis that no public worker is an entrepreneur, or to assume that those executives working for public companies or public financial institutions are involved in entrepreneurship. Therefore, it is possible to obtain approximate data on the individual and corporate entrepreneurial network, both at the national and regional level. The most significant shortcoming of this source derives from the fact that a greater sample error has associated to a greater level of disaggregation.

Once the way in which the EPA survey allows us to identify the entrepreneurial network in Spain has been clarified, it is helpful to review the additional information provided in the survey that might be relevant to explain entrepreneurship. In addition to the personal and sociodemographic details of each household member in the sample, the survey provides extensive data on the individual's working situation: current employment (including working time and the economic sector of the activity according to the National Classification of Economic Activities,

CNAE-93); job search and unemployment span (allowing to differentiate unemployment from voluntary unemployment); work experience (although referring only to the immediately previous job); educational background, etc.

Surprisingly, the EPA survey has rarely been used to study entrepreneurial activity. To a great extent, this is explained by the fact that the EPA does not include information on individual income and wealth (by contrast, this information is included in the rest of the European Labour Force Surveys). EUROSTAT tried to overcome this shortcoming by conducting pilot surveys in 2004 while expecting to begin the incorporation of the produced data to the EPA in the first quarter of 2005. However, the quality of the information collected did not meet the minimum reliability requirements and the project was put on hold.

This is an important drawback since most of the existing literature emphasizes the key role played by liquidity constraints when deciding to start a business venture.[7]

In this direction, three important works for the Spanish case are Carrasco (1999), and Congregado *et al*. (2003, 2005). Carrasco uses discrete choice models (binomial and multinomial) and data from the Household Budget Continuous Survey (HBCS) to show a positive correlation between family assets and the probability of switching from paid-employment to self-employment. For the multinomial case, i.e. when distinguishing between self-employed with employees (employer) and without employees (own-account worker), he shows that the correlation is positive for both cases although it is greater for the former. Congregado *et al*. (2003) obtain similar results when using data from the HBCS survey. However, when using data from the ECHP survey they find that the probability of switching to the own-account worker state is invariant to the individual's capital and labour income. Nevertheless, in Congregado *et al*. (2005) they include the last two waves of the ECHP and, contrary to their previous work, they obtain results consistent with Carrasco (1999).

Due to its characteristics, the EPA survey can be considered as an appropriate source to be exploited by discrete choice models, sample selection models and some decomposition techniques. In addition, given that it has been conducted quarterly since 1964, it allows us to adjust for the impact of the economic cycle, thus making it possible to test the hypothesis that aggregate economic conditions affect entrepreneurial activity.

However, while the ECHP is a fixed-panel (i.e. there is no sample panel renovation), the EPA is a rotating-panel survey where the respondents remain in the sample for a maximum of six quarters. This fact together with the lack of information on current employment spell makes it an inadequate survey to study self-employment through duration models. However, the EPA does collect information on the unemployment spell as a discrete variable since the respondent is asked to choose from among intervals of different lengths to reflect the duration of his unemployment spell. This information, which may seem unimportant, becomes relevant when estimating unemployment duration models under two possible scenarios: when self-employment is the unique alternative to unemployment (single risk model) and when there are more alterna-

[7] See Parker (2002) for a literature survey on this subject. Rees and Shah (1986), Evans and Jovanovic (1989), Evans and Leighton (1989), Dolton and Makepeace (1990), Fujii and Hawley (1991), Holtz-Eakin *et al*. (1994), Blanchflower and Oswald (1998), Clark and Drinkwater (2000), Bernhardt (1994), and Parker (2003) find evidence supporting the existence of liquidity constraints. By contrast, De Wit and Van Winden (1989, 1990, 1991), De Wit (1993), and Grilo and Thurik (2004) do not find evidence supporting their existence. Finally, Gill (1988), and Earle and Sakova (2000) find a negative effect of capital.

tives (competing risk model). Finally the lack of information on individual income and wealth prevents us from exploiting the EPA through earnings functions techniques.

However, Arellano and Meghir (1992) are able to estimate a labour supply function by combining two databases: one using the U.K. Family Expenditure Survey (equivalent to the HBCS in Spain), which has detailed information on individual income; the other using the U.K. Labour Force Survey (equivalent to the EPA), which provides the necessary information on working situation and job search. The fact that information on working time is included in both surveys makes them compatible to estimate the labour supply function.

Concerning the methodological changes experienced by the EPA, the incorporation, since the second quarter of 1987, is highlighted of a wider and more complex questionnaire that includes new definitions in accordance to EUROSTAT criteria and the International Labour Organization (ILO)'s recommendations.

With this reform, the EPA provides more complete and detailed information on subjects such as: underemployment; unemployment benefits; working time (full-time or part-time) and job contracts (temporary or indefinite).

In addition the EPA began to use the National Classification of Economic Activities (CNAE-93) and the National Classification of Occupations (CNO-94; this classification introduced modifications in the socioeconomic condition categories), since the first quarter of 1993 and the second quarter of 1994, respectively.

The educational variables used by the EPA (educational level, current studies and area of studies) are codified according to the National Classification of Education (CNED-2000) which substitutes the *ad hoc* classification used before.

Finally, there is a high degree of comparability between the EPA and the Labour Force Surveys conducted in the rest of the European Union. This is so because EUROSTAT provides the criteria to be adopted by the Communitarian Countries in order to homogenize the Labour Force Surveys conducted in each one of them. Moreover, it is important to point out that EUROSTAT carries out an annual survey, the European Union Labour Force Survey (EU-LFS), which includes the second quarter EPA of each year. In addition, two types of modules of survey questions are elaborated: standard modules (comprising questions to be permanently applied in the survey), and focal modules (consisting of questions to be applied in particular quarters).

Standard Modules

Facilitating the incorporation of young people into the labour market constitutes one of the most important points in the fight against unemployment in the European Union.

To deal with this issue, EUROSTAT decided to elaborate a standard questionnaire on training and education to be applied gradually into the different surveys.

In the EPA survey for instance, what was initially a single question concerning the level of completed studies, in 1998 turned into a module comprising questions on current or recent participation in training activities (level, type, duration, etc.) and on completed studies (level, year of completion, etc.). In order to achieve comparability across countries, the module also used the same codes stated in the International Standard Classification of Education (ISCED 1997). In this way, the module harmonisation facilitated the analysis of the transition process from school to the work force in the European Union.

Focal Modules

Following the lines established by the EU, from 1999 onwards, the EPA survey has incorporated, focal modules related to different topics of the labour market in its second quarter questionnaires. Some of the topics treated in the focal modules were: labour hazards (1999); the transition process from school to labour market (2000); working relations, conditions and timetables (2001); disabled persons and employment (2002); education/training courses taken in the preceding 12 months (2003).

Due to its importance in the study of entrepreneurship, the 2000 module deserves special attention. The primary objective of this focal module was to determine the relation between the educational background of an individual and their first job obtained after leaving school, as well as the time spent during the job search. It also related the educational level of an individual to the ones of his progenitors. It is important to note that this focal module reinforces the effort carried out by EUROSTAT in the standard module previously discussed.

3.4.2 Working and Living Conditions Survey

The Working and Living Conditions Survey was conducted by the Ministry of Labour during the second half of 1985 to estimate the informal economy and its importance within the labour market. It used a sample of over 60,000 individuals collecting extensive information on the Spanish labour force. Moreover, it allowed a distinction to be made between own-account workers and employers and, within this last group, those employing more than 5 workers.

Without doubt, its major drawback for assessing current reality is its outdated data. Two important works exploiting this source are Alba-Ramírez (1994) and Gil, Martín and Serrat (1994). The first one uses discrete choice models to study how the unemployment spell affects the transition probability from paid-employment to self-employment. The results are later compared to the ones available for the United States. Furthermore, it estimates earnings functions for self-employed, employees and overall workers. On the other hand, Gil, Martín and Serrat estimate an unemployment duration model in which the possible exit states are self-employment and paid-employment (competing risk model) and they compare it to a simpler model where there is only one exit state (single risk model).

3.4.3 Population Census

A Demographic Census is the statistical project of greatest range that the National Statistics Office of any country must undertake periodically. The denomination, Demographic Census, includes three different censuses: Population, Housing and Building Census. The Population Census is, without any doubt, the most important and long-standing of these three. In Spain, the first modern Population Census took place in 1768 and since 1901, it has been carried out every 10 years (before 1900, four population censuses where undertaken so that the 2001 Census is officially the sixteenth Spanish Population Census).

The Population Census is currently conducted by the INE, and its main objective is the recount of the entire population in the Spanish administrative units and population settlements. In addition, the census seeks to provide information on the population structure to facilitate decision-making processes. Thus, by assessing the geographic, demographic, cultural, economic and social characteristics of the inhabitants, the structural image of the population provided serves as a guideline for the design of demographic, economic and social policies.

In accordance with international recommendations and in order to reach comparability with other countries' censuses, the Spanish Population Census covers all the persons whose habitual residence is in the Spanish territory. This includes individuals in exceptional circumstances on Census Day such as diplomatic personnel on official duty abroad and Spanish residents working temporarily abroad.

The 2001 census made considerable improvements over the 1991 census leading to a significant reduction in its workload and costs. Among these improvements were: a more efficient use of the information collected by the Municipal Registers of Inhabitants, the simplification of questions by eliminating marginal answer choices, and the exclusion of certain questions for being either too vague or because they were already included in other surveys conducted by the INE.

Finally, and with respect to the information provided by the census, besides the personal and sociodemographic details of each individual, it includes data on the individual's migration movements, education level, marital status, fecundity status and employment status. As far as the latter is concerned, the census clearly differentiates employers from own-account workers and it includes the individual's occupation, workplace, economic activity and sector of employment.

Given the above, the population census provides important information to study the labour force and entrepreneurial activity. However, it also presents some shortcomings: Firstly, it lacks information on the individual's income thus giving rise to the problems already discussed for the EPA survey. Secondly, the long periods between censuses prevent the situation from being assessed in an on-going manner. And thirdly, data is collected by self-registration (i.e. the respondent fills in the questionnaire) thus limiting the role of census officers in controlling the information obtained.

As a result of these shortcomings, duration models and earnings functions cannot be estimated. In addition, discrete choice models and sample selection models must be based on participation in self-employment (but not on the transition decisions from one state to another because of the static condition of the census). Therefore, it is not surprising that this source has been seldom used to study entrepreneurial activity in Spain.

3.4.4 Sociodemographic Survey

The 1991 Sociodemographic Survey was carried out as a complement to the 1991 population census and it used a sample of over 160,000 individuals. The main drawback facing this survey is that it has not been updated. In addition to the large amount of respondents, its main advantage is its retrospective feature: by means of a single interview, it allows each respondent's employment history, geographical mobility, educational background, etc., to be reconstructed. This single-interview method has the advantage of avoiding the problems associated to fixed-panel surveys such as the ECHP, in maintaining the respondent's collaboration during extraordinarily long periods. By contrast, it has the shortcoming of being based on the respondent's memory.

The testimonies left by the respondents are of great significance as they reflect the history of the first 90 years of the 20th Century. In the eldest group, those born before 1911, 55% of the cases began to work before the age of 14 and 80% of the cases before the age of 16. This kind of information is no longer gathered by the surveys on labour activity such as the EPA due to the compulsory schooling covering those ages, which gives an idea of the transcendental change that took place in Spain over that period.

3.4.5 Household Budget Surveys

The Household Budget Surveys –or *Encuesta de Presupuestos Familiares*- are among the most long-standing operations in Official Statistics. The first studies on household expenditure for Europe took place in the middle of the 19th century. They began in Spain in 1958 and have been providing information on the consumption expenditure of private households ever since. However, the relevance of this source for our purposes resides in the additional information the survey provides for each household member regarding demographic characteristics, education level, employment status, occupation, and income.

The INE has traditionally carried out two types of HBS. The first type is constituted by the Household Budget Basic Surveys conducted in 1958, 1964-65, 1973-74, 1980-81 and 1990-91. Among their various goals, these surveys have provided estimations regarding the level and structure of annual household consumption and the weight structure of expenditure serving to calculate the Consumer's Price Index. The second type is formed by surveys the INE conducted quarterly to estimate household expenditure and its annual variation. These continuous surveys started with the Permanent Consumption Survey (EPC) which was carried out from the second quarter of 1977 until the last quarter of 1983. The EPC was designed as a panel of 2,000 households rotating every four quarters. Later on, from the first quarter of 1985 until the first quarter of 1997, the rotating-panel Household Budget Continuous Survey 1985, was carried out covering 3,200 households each quarter. In this case, the rotation speed was of 1/8 of the sample each quarter.

The coexistence over time of the two types of HBS presented some disadvantages, the most important being related to their costs. In order to optimize resources and in accordance to the European harmonisation recommendations of the Household Budget Surveys, the INE, under the coordination of EUROSTAT, unified the two types of surveys into the Household Budget Continuous Survey 1997 which started in the first quarter of 1997.[8] From then until the last quarter of 2005, approximately 8,000 households were interviewed maintaining the quarterly rotating-panel design (with a speed of rotation of 1/8 of the sample each quarter).

In response to the users' new demands and in accordance to the international recommendations by EUROSTAT, in 2006 a new survey was initiated, the HBCS 2006. Its main purpose is to ensure the maximum quality of the information provided on annual household consumption expenditure and its annual variations. The methodological design was simplified thus resulting in a considerable reduction in the respondent households' workload. The annual sample is designed to cover approximately 24,000 households, half of which are renewed each year. Every household in the sample will collaborate during 14 days in each of the two consecutive years. As a considerable improvement over the HBCS 1997, the information processing will take place in the provincial deputations of the INE where specific errors and inconsistencies will be controlled. This temporal and physical proximity to the respondent households will improve the quality of the provided information.

Bearing in mind the study of entrepreneurial activity, the strengths and weaknesses of the HBCS' different versions will now be pointed out. The main limitation of the HBCS 1997 with respect to its predecessor is the information it provided on household income. The HBCS 1985 data base offered detailed information on each household member's income and its source from

[8] With the incorporation of the 2001 Population Census data, the survey's results were revised starting in the first quarter of 1998. However, since the last two quarters of 1997 were not revised, the microdata files corresponding to these quarters are not comparable with the rest. For this reason, quarterly files are only available beginning in the first quarter of 1998.

the first quarter of 1985 until the first quarter of 1997, which allowed precise estimations of earnings to be carried out. On the contrary, the HBCS 1997 information on income referred to the household unit which makes it very difficult to impute the respective income to each one of its members. This shortcoming hinders the testing for the presence of liquidity constraints in any given discrete choice model. Therefore, the new European Statistics on Income and Living Conditions (EU-SILC), to be discussed later, constitutes the appropriate source to study household income in detail. Moreover, the information provided by the HBCS 1985 allows us to identify the employment status of the spouse of the head-of-household as employer, own-account worker, employee or unemployed; while the HBCS 1997 only distinguishes the spouses working from those not working. By contrast, the HBCS 1997 information provided on the head-of-household far surpasses that for its predecessor. The HBCS 1985 information concerning the head-of-household's main activity was very limited, failing to identify its economic sector even at the most aggregated level (i.e. agriculture, industry and services). Since there are significant variances in the characteristics and behaviors of individuals working in different economic sectors, the impossibility of controlling effects in the activity's sector will induce a bias in the results of any econometric exercise on occupational choice. The HBCS 1997 clearly overcomes all these shortcomings by providing detailed information on the head-of-household's economic occupation and its economic sector, following the National Classification of Occupations (CNO-94) and the National Classification of Economic Activities (CNAE-93) with all the international comparability advantages that these classifications imply. The CNO-94 even allows the identification of the corporate entrepreneurial network, i.e. those corporate officers undertaking entrepreneurship. Additionally, and unlike the HBSC 1985, the HBCS 1997 includes head-of-household information on working hours and contract type, and it identifies whether his occupation belongs to the private or public sector.

Both surveys (HBCS 1985 and 1997) have the advantage of covering a considerable time span and, along with their quarterly periodicity, they allow for controlling the effects of the economic cycle on the entrepreneurial activity and, in particular, on the individual's decisions. However, it is a pity that the information on education refers only to the head-of-household thus biasing any possible results concerning the effects of education on entrepreneurship to this group of individuals. Finally, while the HBCS may be considered appropriate to assess entrepreneurial activity through discrete choice models, sample selection models and some decomposition techniques, it is inadequate in estimating self-employment duration models as its rotating panel feature allows for a two-year monitoring at maximum.

Regarding the changes introduced in the HBCS 2006, it should first be noted that these types of surveys have now gone beyond the pure economic scope, and have begun pursuing important social and socio-economic objectives as well. Switching from quarterly to annual periodicity certainly has a positive effect on cost reduction but it also represents an important disadvantage when studying the entrepreneurial network as the greater span between surveys prevents the implementation of discrete choice models and duration models. This could be overcome by designing the survey's questionnaire so as to accurately retrieve the information pertaining to the in-between surveys periods.

As discussed earlier, some important works using the HBCS are Carrasco (1999) and Congregado *et al*. (2003). Carrasco uses the HBCS 1985 covering the period 1979-1990 to study the determinants of the individual's transition from different initial states (unemployed or paid-employed) to different final states (employer, own-account worker) through discrete choice models. In addition, he uses duration models to study the determinants of the duration in self-employment. For this last exercise, the HBCS' rotating panel feature prevents the observation of self-employment periods longer than two years. Moreover, the reduced number of observations

forced the author to exclude durations of over three quarters clearly illustrating the limitations of the HBCS source to estimate duration models. Congregado *et al*. (2003) used both the HBCS 1985 and the HBCS covering the 90s decade, to study the same issues as in Carrasco (1999) but also to study the variables affecting the individual's decision to switch from own account worker (self-employed without employees) to employer (self-employed with employees), considering this decision as an indicator of entrepreneurial success.

3.4.6 Quality of Life at the Workplace Survey

The Quality of Life at the Workplace Survey (ECVT), started by the Spanish Ministry of Labour in 1999, is a sample survey of Spain's employed population, specifically designed to study the quality of life at the workplace at a national level. The ECVT collects objective information on working conditions at the workplace as well as subjective information concerning the personal perceptions that the employed individuals have of their working conditions and relations.

The survey has a sample size of 6,020 employed individuals (ages 16 and over) living in family dwellings. Its geographic scope covers the Spanish national territory with the exception of Ceuta and Melilla. The information provided by this survey is articulated in different modules covering working status, family arrangement, socioeconomic data and information on the quality of life at the workplace.

The module comprising working status provides information regarding the real situation the individual has at his workplace. This includes the size of the firm, type of contract and working time (part or full-time), years in the company, way in which he searched and obtained the job, secondary occupation (where applicable), etc. As regards the possibility of assessing entrepreneurial activity, the survey allows the identification of self-employment by distinguishing paid-employed from self-employed individuals (but among this last group, it is not possible to identify those having employees). In addition, the National Classification of Occupations (CNO-94) also provides information on the individual's occupation that allows us to identify the corporate entrepreneurial network and the economic activity by applying the National Classification of Economic Activities (CNAE-93). This information is complemented by data on the individual's work experience such as the age and education level at which he started his first job, past occupations, unemployment situations, subsidies received, etc. There is also relevant data on the individual's family social mobility such as his birthplace and that of his progenitors, the educational and labour characteristics of his family, the current family structure and the working situation of the persons living with him.

The family arrangement module provides information on the individual's conjugal status, relationships, family size and type, among others. The socioeconomic module gathers information on the individual's gender, age, marital status, education level, company size, municipality size, etc. The individual is also asked to reveal his political and religious preferences.

Finally, the module on the quality of life at the workplace refers to the individual's attitudes towards his job and the level of satisfaction with it. It collects information on the job's levels of division, organization and communication; on the safety at work and on collective bargaining. It also gathers the individual's opinions on the level of alienation, participation, integration and autonomy at the workplace, and on his working time and retribution. In addition, the module evaluates the level of occupational training and its relation with job promotion.

The ECVT and the ECHP are currently the only nation-wide Spanish surveys providing information on the workers' level of satisfaction with their jobs. The ECHP, being a full panel

survey, allows for the studying of the dynamic aspects of satisfaction levels. The ECVT, despite renewing the sample completely each year thus preventing controlling for the economic cycle, provides extensive information on the jobs' characteristics and is therefore particularly adequate for analysing the sources of job satisfaction. Even though the absence of income data prevents estimating earnings functions, the collected information may be exploited via sample selection models or discrete choice models to estimate the probability of being self-employed (but not the transition probability). Regarding the duration models, despite having information on the job tenure, only incomplete durations (individuals that we do not observe to leave self-employment) but not complete durations (individuals that are observed to leave self-employment) are reconstructed.

Briefly, the ECVT provides subjective information, absent from the majority of statistical sources that might be a good complement in studying important aspects of job satisfaction in self-employment compared to paid-employment. However, it lacks the suitable structure and the appropriate sample size to be used as a source of reference in the analysis of the entrepreneurial activity.

3.4.7 European Community Household Panel

The European Community Household Panel (ECHP) is an EU-specific full panel survey using harmonized data of 76,500 households covering over 155,000 individuals in the 15 member states (7,200 households and 15,900 individuals for Spain). It constitutes one of the most important statistical instruments for the European Commission and it reinforces EUROSTAT's current statistical infrastructure. Its main objectives are to study and monitor the living and working conditions, social cohesion, population needs, the impact of socioeconomic policies, and to help in designing new policies for the member states.

The survey was designed in close consultation with the Member States through the denominated National Data Collection Units (NDU's). In most countries, the NDUs were formed by the National Statistical Institutes due to the required scientific and technological training.

The preliminary studies were mainly oriented to evaluate the possibility of efficiently using the data provided by pre-existing national and EU surveys with similar information that seemed to fulfil the stated objectives: the Spanish Labour Force Survey (EPA) and the Household Budget Survey (HBS), such as in Spain's case. Regarding the EPA, given its focus on the labour market, it seemed inconvenient to overload its questionnaires and very difficult to adapt it for multiple purposes. This, together with the lack of information on income, invalidated this survey as an instrument for the project. The use of the HBS was also discarded due to the specific requirement of absolute homogeneity across countries in the collected data along with the need to widen it to other research areas.

Therefore, it was necessary to build a new statistical operation, coordinated by EUROSTAT and harmonized for the EU member states, but preserving statistical integration with the other household-addressed surveys (EPA, HBS). It was also considered that the new survey should go beyond the traditional snapshot of transversal information by allowing it to capture longitudinal information, i.e. information pertaining to the same set of households and individuals through different periods in time. After several studies and preparatory conferences in the period 1990-1992, a pilot test was conducted in 1993. In 1994, the first wave of eight (initially only three waves were intended: 1994, 1995 and 1996) was conducted in all of the member states.

The ECHP uses the techniques of a full panel which are ideal for the fulfilment of the stated objectives but entail the difficulties associated to the follow-up of the individuals that remain in the sample during excessively long periods.[9] Given the non-existence of previous household full panels in the majority of the participating countries, the harmonization across countries was produced from the very beginning of the project. The panel follows-up on the same set of households and individuals allowing to study the changes in their lives produced by modifications in socioeconomic policies or in aggregate economic conditions, and to capture their reactions. Taking for granted that the effectiveness of a policy must be evaluated according to the way in which the affected react to it, the ECHP will provide very important indicators on the effects of socioeconomic policies framed in the Common Market.

The target population of the survey is formed by the set of private households and individuals living in principal family dwellings in the EU-15 territory (in Spain, it is circumscribed to the whole Spanish territory with the exceptions of Ceuta and Melilla).

The information contained in this source has two different reference points that are complemented in a very interesting way: there are independent blocks of questions referring to households and individuals and there is a relationship file that allows us to easily relate the individuals in each household. Thus, on one hand the household file offers data on the composition and the household characteristics, as well as, detailed information on its income. On the other hand, the personal file comprises twelve sections whose brief data content description is as follows:

- General and demographic information: age, gender, marital status.
- Current employment: main activity, status in employment, type of contract (full-time/part-time), occupation in current job, main activity of the local unit of his company or organisation.
- Unemployment: number of times the person has been unemployed, unemployment spells that have exceeded 12 months.
- Search for a job: type of job search the individual has done, conditions in which he would accept to work.
- Previous Jobs: whether the individual has worked or owned a business for at least 15 hours per week or not, date and reason for stopping in previous job, comparison between the present job or business with the previous one.
- Calendar of activities: monthly follow-up on the main activity status in the year prior to the interview.
- Income: main source of personal income in the year prior to the survey, current monthly net wage and salary earnings, income received from other sources.
- Education and training: highest level of general or higher education completed, age when the highest level of general or higher education was completed, current studies, and whether the individual has received vocational training paid for or organised by the employer, or not.
- Health: valuation of the individual's health condition, number of times he has consulted a general practitioner or medical specialist, whether he has a state financed health care system or a private medical insurance.
- Social Relations: frequency of relations with the individual's social circle (friends, relatives, neighbours), number of hours spent looking after children or persons (who need special help because of old age, illness or disability).

[9] These difficulties may be overcome through retrospective studies such as the one conducted in the Sociodemographic Survey of 1991.

- Migration: this section analyses factors such as the migration trajectory of the individuals, their current region of residence and their arrival year to the region.
- Satisfaction with various aspects of life: degree of satisfaction with work or main activity, financial situation, housing situation, amount of leisure time.

The study of the labour market is one of the multiple topics that may benefit from the use of the ECHP source. In this sense, some of the important issues in the labour market that may be analysed are the transitions in school-active life (also treated in the standard module of the EPA since 1998), unemployment-employment, within employment, and employment-retirement. This allows the evaluation for instance of the effectiveness of professional training policies as well as the retirement policies. Nevertheless, it should be pointed out that this type of transition analysis sometimes faces an insufficient sample size (e.g. when dealing with infrequent cases). The ECHP is also helpful in illustrating characteristics of the impact of social assistance policies and the role of employment assistance for women. Regarding long-duration unemployment and the return to labour activity thereafter, this source proves to be useful in studying its relation with human capital. As it might be expected, these issues may be redefined in terms of entrepreneurial activity. For the Spanish case, this has been carried out in the works of Aguado *et al*. (2002), Carrasco and Ejrnæs (2003) and Congregado *et al*. (2003, 2005). In all of them, the available information has been exploited through discrete choice models to study the variables leading an individual to choose to become self-employed. In addition, Congregado *et al*. (2003) develop a self-employment duration model in which, using the first 6 waves of the ECHP and based on the current year's information as well as on retrospective information, they are able to reconstruct self-employment durations of up to 15 years. Due to its characteristics, the panel also allows using sample selection models, decomposition techniques and to estimate earnings functions.

Notwithstanding, the difficulties faced by those who intend to study the entrepreneurial activity through this source deserve some attention. Using the ECHP, self-employed individuals may be identified through the employment status stated in the current employment item. However, in order to distinguish among employers, self-employed with employees and own-account workers, the number of employees must be referred to as a *proxy*. Yet this is obviously an approximation and it lacks the precision one would like to have. There is additional information on the individual's occupation and on the establishment where he works via the International Standard Classification of Occupations (ISCO-88) and the Nomenclature of Economic Activities (NACE-93). In the case of the ISCO-88 it is possible to identify the corporate entrepreneurial network or, in other words, the business executives.

As an additional disadvantage for the use of this source in Spain, the identification of the Spanish geographic zones is made according to the Nomenclature of Territorial Units for Statistics[10] level 1 (NUTS level 1), dividing its national territory in Northwest, Northeast, Madrid, Centre, East, South and Canary Islands. But this level of aggregation prevents us from studying the impact of the economic cycle because in Spain the economic-cycle indicators are generated at the aggregation level NUTS-2.

There exists, nevertheless, a different and wider sample corresponding to the year 2000 that covers 15,600 households in Spain and that allows to use the NUTS level 2 classification. By

[10] The NUTS is a three-level hierarchical classification in which each Member State is first divided in a number of regions (NUTS level 1), each of which is subdivided into smaller regions (NUTS level 2, corresponding to *Comunidades Autónomas* in Spain, *Regierungsbezirke* in Germany, *Régions* in France, *Regioni* in Italy, etc…), which in turn are subdivided again (NUTS level 3, corresponding to *Provincias* in Spain, *Kreise* in Germany, *Départements* in France, *Provincie* in Italy, etc.).

using this sample, it is possible to overcome the aforementioned problem, but the households in the sample do not correspond to those of the full panel initiated in 1994. Therefore, the sample must be treated as a transversal cut over time thus allowing us to estimate the probability of being self-employed, but not the probability of transition from one state to another. In addition, the duration models cannot be implemented using this cut either.

Given all of the above, the ECHP constitutes a harmonised source that allows us to compare the characteristics of the entrepreneurial network at an international level. It includes information as relevant as the one referring to income (improving over the EPA information) and as limited as the one pertaining to the degree of satisfaction of the individuals with their jobs (only available in the ECVT). Nevertheless, for some of the information to be obtained for the whole EU-territory, there are already more appropriate sources than the ECHP as, for example, the EPA or the HBS for the Spanish case. Concerning future perspectives, once the ECHP project was completed, a new instrument replaced it in 2004: the European Statistics on Income and Living Conditions (EU-SILC). The next subsection it is devoted to it.

3.4.8 European Statistics on Income and Living Conditions

The European Statistics on Income and Living Conditions (EU-SILC) is an annual EU-harmonised survey coordinated by EUROSTAT that began in 2004 in Spain. It constitutes an appropriate source for the study of household income, income distribution and social exclusion. Between 1994 and 2001, the European Community Household Panel (ECHP) fulfilled these necessities. However, given that it was necessary to update its content in accordance to the new political demands, and that its functioning needed to be improved (mainly regarding the speed in data production), it was decided that ECHP be replaced by a new instrument with wider coverage; the EU-SILC.

Thus, the EU-SILC was launched in 2003 as a gentleman's agreement between six countries of the EU-15 (Belgium, Denmark, Greece, Ireland, Luxembourg and Austria) and Norway. In 2004, it was re-launched with a more demanding coordination and included most of the EU-15 countries (with the exception of Germany, the Netherlands and the United Kingdom) as well as Estonia, Norway, Iceland, and Turkey. In 2005 the remaining EU-25 member states were incorporated as well as Bulgaria and Rumania. Switzerland will join in 2007.

In Spain, the survey has a rotating panel design where one quarter of the sample is renewed each year allowing the observation of the studied variables' evolution. Around 15,000 households are interviewed and each household remains in the sample during four consecutive years. The households are distributed throughout the entire Spanish territory which allows us to have information at the NUTS-2 level (i.e. *Comunidades Autónomas*) for most of the included variables.

The main objective of the survey is to provide information on income, income distribution and social exclusion in Spain, and to allow comparisons with the other EU countries. It is expected that the survey will include different thematic modules in order to approach relevant social aspects such as social participation and the intergenerational transmission of poverty. More specifically, the EU-SILC is designed to collect data on: household income and economic situation; poverty and social exclusion; employment and labour activity; retirement, retirement benefits and socioeconomic situation of the aged; housing and its related costs; regional development, and education, health and their impact in the socioeconomic status.

Household income constitutes an essential part in the EU-SILC for the analysis of the living conditions. It includes wage and salary earnings, benefits/losses from self-employment, social assistance, capital and poverty income, private transfers received, children's income, and after-tax income. Some comments regarding this variable should be pointed out. Firstly, as in the ECHP, the income data refers to the year preceding the interview. Secondly, while the information on wage and salary earnings refers to the individual as well as to the household, the information pertaining to the benefits/losses from self-employment refers only to the household. Thirdly, the survey only collects the monetary component of income (it does not include, for instance, the estimated owner-occupiers dwelling rent, the non-monetary income proceding from own production or the income in kind). These non-monetary components are expected to be incorporated beginning in 2007. Contrary to the ECHP where income was provided in net values, the EU-SILC provides gross income values. This allows for a greater degree of income comparability across Member States because it does not depend on the particular tax-scheme or on the Social Security contributions of each country. Given the initial difficulty in providing gross income data, some countries (Spain included) are allowed to provide net income data during the first years of the survey. Nevertheless, a net-gross conversion process was developed and has been applied since 2004 to obtain current gross wage and salary earnings (i.e. before tax deduction and before Social Security contributions).

The information on employment and Labour activity allows the classification of individuals according to their employment status in the following categories: self-employed with employees, self-employed without employees, employee and family worker. In addition, the survey offers information on the individual's type of occupation (in accordance to the International Standard Classification of Occupations ISCO-88), and on the activity of the establishment he/she works at (in accordance to the Nomenclature of Economic Activities NACE-2002). This will allow the identification of the entrepreneurial activity in a strict sense (i.e. the own-account workers with and without employees) but also the identification of the corporate entrepreneurial network (i.e. the business executives).

In addition to information above, the EU-SILC provides demographic data (age, gender, marital status, place of birth…), information on education, but not as detailed as in the ECHP (highest completed education level and age when completion, current studies…), information on current job (type of contract, number or working hours…), professional experience (characteristics of last main job such as employment status, occupation, type of contract…) job search data (again, not as detailed as in the ECHP) and personal information on general health condition and access to medical care.

This new source constitutes an enormous flow of information that will allow to study, through discrete choice models and sample selection models, all the transitions taking place in the Labour market. The abundant information on net and gross income together with the survey's extensive geographic coverage will allow the estimation of earning functions more accurately; allow for studying the influence of different fiscal schemes; and will provide data pertaining to the role that liquidity constraints play in individual decisions. This faster data availability (just one year after being generated) will allow for a faster redressing of the policies implemented thus gaining in efficiency. Due to its rotating panel feature, the EU-SILC will allow to verify with more reliability the role played by economic aggregate conditions in the individual decision making process. By contrast, the same rotating feature constitutes a disadvantage when trying to estimate duration models because the individuals remain in the sample for four years at most.

3.4.9 Spanish Survey of Household Finances

In 2001, the Spanish Central Bank decided to start the Spanish Survey of Household Finances (EFF), following the example set by other countries in which this type of survey has been conducted for many years. To be more precise, Italy's "Indagine sui bilanci delle famiglie" (IBF)[11] and, most notably, the United State's "Survey of Consumer Finances" (SCF)[12] were the ones that inspired the Spanish survey. The first wave, with a sample of 5.143 households, took place at the end of 2002. The second wave took place at the end of 2005, but henceforth it is expected to be conducted every two years. The 2005 sample comprises a panel including the households previously interviewed in 2002, as well as a refreshment sample by wealth stratification. The fundamental objective of this survey is to collect detailed information on the patrimonial situation (i.e. real and financial assets' distribution, debt obligations, etc.) and financial decisions of households in Spain. The EFF-questionnaire is divided in nine main sections: 1) Demographic characteristics; 2) Real assets and associated debts; 3) Other debts; 4) Financial assets; 5) Pension plans and insurances; 6) Labour status and labour income (for all household members); 7)Non-labour income; 8) Means of payment; 9) Consumption and savings.

The EFF constitutes a unique Spanish statistical source linking income, assets, debt obligations and expenditures for each family unit. The most important characteristic of this sample might be the incorporation, through a collaboration system between the INE and the Taxation Agency, of an oversampling of households with a higher wealth level. Since a large proportion of the assets are held by a small fraction of the population, a random standard sample would not contain enough observations for most of the relevant analysis. The following was considered to illustrate the importance of the over-sample: According to the aggregate information on tax statements, 40% of the total taxable wealth is held by 0.4% of households. Therefore, in a random sample of 5,000 households, one would expect to find at most 20 of these households while the EFF sample includes over 500 of them. Nevertheless, it should point out that the oversample does not include households from Navarre and the Basque Country because the Taxation Agency does not have personal fiscal data for those two Spanish Regions.

The EFF's questionnaire allows us to identify the entrepreneurs in a strict sense, but the identification of the corporate entrepreneurial network is less reliable. In a first filter step, own-account workers are distinguished from the rest (i.e. employee, unemployed, retired, etc.). Then, occupied individuals are asked for their type of occupation (there is only one category grouping private business executives and public executives). The individuals are then asked for the economic sector of their activity and, depending on their working status (i.e. own-account worker, employee or unemployed) each is given a corresponding module.

The own-account worker module provides a big amount of information, including whether it is the individual's main occupation or not, weekly hours worked, number of persons working in the business and whether they are household members or not, the company's legal entity (i.e. entrepreneur –natural person- corporation, limited liability company, other), working status (i.e. liberal professional, sole proprietor, business owner, partner in family firm, partner in non-family firm), profits/losses in the year prior to the interview, expected profits/losses for current year, profits share, the individual's shareholding of the firm, shareholding of the firm and the firm's market value.

The employee module provides information on weekly hours worked, part/full-time job, type of contract (i.e. indefinite, temporary, without contract, other), gross labour income, number of

[11] See Banca d'Italia (2000).
[12] See Aizcorbe, Kennickell and Moore (2003).

working years, initial salary when hired by the company (only if the individual is able to remember it), number of workers in the firm and the expectations of remaining in the firm.

Finally, the unemployed module provides information on the unemployment spell, the sources and the total amount of income and a question regarding the wage at which the individual would accept to work. Note that it would be interesting to exploit this information to test the job search theory based on reservation wages. [13]

In addition, the EFF provides information on demographic characteristics (i.e. age, gender, marital status, citizenship, place of birth, etc.), education (area of studies[14], highest completed education level and age of completion), health condition, parents' main occupation in their lives, real assets and related liabilities (including real state, means of transportation, jewelry, works of art, etc.), financial assets, pensions and insurance, household laboural and non-laboural revenues, laboural history of the household members, household consumption and savings (expenditures, savings destination, debt financing, risk aversion, extraordinary income, future expectations, etc.). Finally, information on the use of different means of payment, phone banking and e-banking is also collected.

This subsection concludes by discussing some of the exploitation possibilities of the EFF source. First, the availability of information on income and its sources makes it suitable to estimate earnings functions. Secondly, despite being a rotating panel, its biannual feature as well as the lack of information on the immediate previous job[15] present some difficulties for the implementation of either discrete choice models or sample selection models in the analysis of transitions (nonetheless, it is suitable for participation analysis) . Thirdly, as the sample rotation speed and the continuity of the project (believed to be indefinite) are unknown, it is hard to evaluate whether it is suitable for the implementation of duration models or not. Therefore, the difficulty in estimating dynamic models prevents the controlling of the economic cycle's impact on individual decisions. Finally, given that entrepreneurs usually have a higher income, the oversampling of higher wealth level households turns this data base into an interesting source for the study of entrepreneurship.

3.4.10 Continuous Survey of Work Histories

Another important indicator of the entrepreneurial activity is the affiliation to the Social Security system. Managed by the General Treasury of the Social Security, their information proceeds from the statistical exploitation of the workers' historic files of affiliation to the different social security regimes. Nevertheless, it should be clarified that up-to-date samples of this source have only been available to some researchers to conduct highly specific studies[16] on pensions, the influence of temporary help agencies (THAs), rates of employment and unemployment and profits distribution. It should not be overlooked that social security records are designed more for managerial purposes than to conduct population studies. Therefore, generating

[13] This theory reveals that the individual searching for a job would accept the job if the wage offered is greater than or equal to his reservation wage. Therefore, there is some probability that the individual will not accept to work during some period and will continue to search. This implies that a fraction of the population will remain unemployed which partially explains the unemployment persistence.

[14] Only a college degree is hold.

[15] The working history of the individual is from a general perspective, including the longest held job and whether the individual has been mainly self-employed or not.

[16] See García-Fontes and Hopenhayn (1996), García-Pérez (1997), Jiménez-Martín and Sánchez (2000), Jiménez-Martín and Boldrin (2002), Bover *et al*. (2002), García-Pérez and Muñoz-Bullón (2005); among others.

suitable data for researchers requires considerable technical work to identify and document the relevant information before it is extracted. This difficulty is overcome with the Continuous Survey of Work Histories, a new data base that is already available for research Centres conducting specific projects. The objective is to design a sample supplying the data needed for different kinds of research projects. Naturally, the data is anonymous and necessary precautions have been taken so that the personal information cannot be identified. This continuous survey will be updated every year with new information on the people already in the sample and with a proportion of new individuals who have joined the Social Security during the year.The original sample was taken from all the affiliated persons who were, in 2004, either paying social security contributions or receiving contributive or unemployment benefits (irrespective of the length of the unemployment duration).The relevant information available through this source includes age, gender, region of work, whether the individual works for the State or not, type of contract, the company's economic activity (CNAE-93), the type of company (joint-stock, limited liability, etc.), the required qualification for the type of work (which is a good *proxy* for the education level), dates of activation and withdrawal from the social security system, quitting cause (voluntary, dismissal or retirement), unemployment benefits, and worker's taxable earnings base.

Regarding the advantages of this source, first we must point out that it uses real data rather than data obtained from a survey. Therefore, the information provided on the individual's work history allows for studying mobility in the labour market via discrete choice models and duration models with almost absolute precision and reliability.[17] The random sample offers 1.1 million anonymous work histories, representing 4% of the reference population (27.4 million people). The sample will be updated by adding each year 4% of the newly incorporated persons to the social security system. Finally, while the elaboration of the EPA costs 13.5 million euros, the social security sample will have technically zero-cost, due to the fact that the information referring to the individual's work history is already available in the social security records.

Nevertheless, there are some disadvantages that are difficult to overcome. The most important is probably the one related to the individuals' wages. The available information refers to the taxable earnings base which enables total wages to be recovered in a simple way, except for the cases of very low or very high wages because in these cases payments are established by a minimum and a maximum base. The same problem is presented when the individual is subscribed to the own-account worker special regime, as most individuals in this regime declare according to the minimum base and therefore the information on their perceived income is not accurate. In addition, for partnership companies where the owners are wage earners, these owners appear as employees in the social security records while they appear as own-account workers in other employment statistics (i.e. the number of entrepreneurs is underestimated according to the social security records). Finally and as is the case for all statistics generated from administrative registries, data on affiliation to the social security system is subject to variable legal norms which prevents a homogenous series from being obtained over time.

[17] In this context, it must not be overlook that a worker has to be part of a social security system throughout his life whether he is working or not. A worker becomes a member of a social security system on commencing work and even if he ceases to work he will continue to be entitled to social security. If, after ceasing work, a worker resumes working then he will be able to commence work again without the need to re-apply for another social security number because, as has been pointed out, once issued with a social security number ("membership" of the particular social security scheme), it is for life.

3.4.11 The Global Entrepreneurship Monitor Project

Finally, it should be pointed out that the research project Global Entrepreneurship Monitor (GEM) jointly developed by Babson College (Massachussetts) and the London Business School. It was initiated in 1998 to generate harmonised annual data on entrepreneurship. It first started with 10 countries and currently covers 39 countries (including Spain since 2000) with a minimum of 2,000 individuals interviewed in each country. Since 2003, there is a regional version of the project, the Regional Entrepreneurship Monitor (REM), which increases and enriches the sample as well as the study's penetration.

Its main objective is to measure entrepreneurial activity in its initial stages for each of the participating countries (this is done in a harmonised way, thus allowing for cross-country comparability). In order to carry out this task, the Total early-stage Entrepreneurial Activity or TEA-index is constructed. This index identifies the starters and owner-managers of new businesses. The starters are those individuals between the ages of 18 and 64 that started a new business in the year prior to the interview and that have not paid more than three payrolls when interviewed. The owner-managers of a new business are those that have not paid salaries or wages for more than 42 months. The sum of the two measures serves to calculate the rates of entrepreneurial activity in each country.

But the GEM not only quantifies entrepreneurial activity, it also compiles information on the economic environment of the businesses and on the influence of sociological and psychological factors leading to entrepreneurship. Finally, the motivations of potential entrepreneurs are also analysed.

The design of this source allows for cross-country comparability of entrepreneurial activity rates. However, the definition of entrepreneurial activity that it uses is not comparable with those on which other sources like EUROSTAT or the OECD are based. Duration models and earnings functions also cannot be estimated due to the lack of panel data, retrospective information, and income data. In addition, discrete choice models and sample selection models can only be based on participation (but not in transitions from one state to another). As a result of the above, it is not surprising that besides the GEM national and regional reports, there are no other studies exploiting this source in Spain.

3.5 Conclusions and Future Perspectives

This chapter has sought to identify and evaluate the information sources available to study entrepreneurship in Spain. It has been shown that the analysis of entrepreneurial activity may be carried out through a wide variety of sources: both in quantitative terms, as in the firm demography studies; and in qualitative terms, through population surveys. The emergence of new statistical sources has been covered, that, along with the improvement of the already existing ones, have contributed to enrich the information available to study the labour market.

Nevertheless, in spite of the different organizations' efforts in offering important and substantive amount of information, the suitability of the sources is shown not to be fully adapted to the demands of entrepreneurial network analysts: the EPA still does not provide data on income, the ECHP project ended, the HBCS changed from quarterly to annual regularity, the Population Census and the ECVT still do not match the pursued goal, etc. Regarding the new emerging surveys, only the EU-SILC, in spite of its limitations, seems to get close to the ideal: the GEM project will only allow for cross-country comparability of entrepreneurial activity from a par-

ticular definition; the Continuous Survey of Work Histories will allow for a better definition of the transitions and the durations but it does not include many entrepreneurs and information is very limited; the EFF will provide enough explanatory information but fails to capture dynamic behaviour. Given that the National Statistical Plan 2005-2008[18] does not even mention the statistical information deficiencies on entrepreneurial activity, future perspectives are therefore not hopeful. Studies on entrepreneurship will still rely more on the skills and imagination of the researchers than on the suitability of the surveys.

Although the available information only allows carrying out a partial analyses of the entrepreneurship phenomenon, not all the blame can be put on data deficiencies. In this sense, part of the problem comes from the fact that the economic analysis of entrepreneurship has not yet reached the degree of development necessary to reveal clear statistical necessities. As a result, there have been erratic uses of sources and indicators depending on the specific approach adopted: individual entrepreneurial network analysis, corporate entrepreneurial network analysis or firm demography studies. As these obstacles are overcome, a homogenization of the demands for this type of data should be created to improve the statistical measurements that would allow capturing the different dimensions in which entrepreneurship affects economic activity.

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[18] The National Statistical Plan is the main instrument organizing the statistical activity of the State General Administration. It contains the statistics that are to be carried out during the quadrennial period of reference.

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Chapter 4. Self-employment Trends[1]

Having established the concept and the use of Human Population Surveys as the main statistical source for empirical research, this chapter is devoted to data analysis in order to obtain some regularities, some stylized facts in Europe and Spain as the step prior to the conditional analysis to be carried out in the following chapters.

4.1 Self-employment Patterns in Europe

4.1.1 Introduction

Harmonised data on entrepreneurship per country are not readily available; definitions that are used differ from country to country and available statistical data sets are often not regularly updated. Nevertheless, the Compendia[2] 2002 data-set can be used to provide an overall picture of the state of entrepreneurship in the EU. Thus, Table 1 and Figure 1 present data on the evolution of non-agricultural self-employment in OECD countries using the COMPENDIA data set.

The average business ownership rate in the EU in the 1990-2000 period was 10.75%, which means that around 11 percent of the labour force is an entrepreneur. Countries like Greece and Italy have an above-average rate; almost 1 in 5 of the labour force are entrepreneurs. This is in contrast with, for example, Denmark and Luxembourg. In these countries, only 6 percent of the labour force is self-employed. Germany, Sweden and Austria are also below the EU average with 8 percent of the labour force working as entrepreneurs.

During the 1990s, self employment grew faster than civilian employment as a whole in most OECD countries. This contrasts with the 1970s, when the share of self-employment tended to fall. Most countries tend to have a U-shape pattern in the rate of self-employment with a decrease in entrepreneurship till the mid-eighties and an increase afterwards.

[1] I would like to thank Concepción Román for her encouragement and help. All remaining errors are my own.

[2] COMPENDIA, which means COMParative Entrepreneurship Data for International Analysis, is a harmonized data set over the period 1972-2002, containing two-yearly data on the number of non-agricultural business owners for 23 OECD countries. The reason of this exclusion is clear: the “agricultural industries”, defined to include agriculture, hunting, forestry and fishing, are structurally different from the rest of the economy, in that self-employment is the natural employment status in these industries. It has been constructed by EIM Business and Policy Research, using OECD statistics as well as other relevant sources. See Van Stel (2005) for details.

Table 1. Self-employment relative to labour force

Data Source: EIM: COMParative Entrepreneurship Data for International Analysis[a], (COMPENDIA 2002.1), Van Stel (2005), Table 5, p. 119

	1972	1980	1988	1996	2002
Austria	9.3 %	7.3 %	6.9 %	7.4 %	8.3 %
Belgium	10.5 %	9.8 %	10.9 %	11.9 %	11.3 %
Denmark	8.2 %	7.4 %	5.6 %	6.4 %	6.7 %
Finland	6.6 %	6.4 %	7.6 %	8 %	7.9 %
France	11.3 %	10.1 %	9.9 %	8.8 %	8.1 %
Germany[b]	7.6 %	6.6 %	7 %	8.2 %	8.6 %
Greece	16.1 %	18.2 %	18.6 %	19.7 %	19.3 %
Ireland	7.7 %	8.6 %	10.1 %	11.2 %	11.2 %
Italy	14.3 %	14.8 %	16.9 %	18.3 %	18.3 %
Luxembourg	10.7 %	8.7 %	7.5 %	6.7 %	5.4 %
The Netherlands	10 %	8.5 %	8.2 %	10.2 %	10.8 %
Portugal	11.3 %	11.9 %	11.6 %	15.6 %	13.7 %
Spain	11.8 %	11 %	12.3 %	13 %	12.9 %
Sweden	7.4 %	7 %	6.4 %	8.1 %	8.1 %
United Kingdom	7.8 %	7.4 %	10.1 %	11.1 %	10.7 %
Iceland	11.1 %	8.8 %	10.1 %	13 %	12.3 %
Norway	9.7 %	8.4 %	8.4 %	7.1 %	6.5 %
Switzerland	6.6 %	6.5 %	7.1 %	8.5 %	7.6 %
Europe-18	**10 %**	**9.5 %**	**10.5 %**	**11.2 %**	**11 %**
USA	8 %	9.5 %	10.7 %	10.4 %	9.5 %
Japan	12.5 %	13.1 %	12.3 %	10.1 %	9.2 %
Canada	7.9 %	8.7 %	10.6 %	12.8 %	12.2 %
Australia	12.6 %	16.8 %	16.4 %	15.5 %	16.4 %
New Zealand	10.6 %	9 %	11.4 %	13.9 %	13.5 %
23 Countries	**9.8 %**	**10.2 %**	**11 %**	**10.9 %**	**10.4 %**
Total number of Business owners (x 1000)	**29401**	**34342**	**40666**	**44206**	**44342**

Notes:
[a] This data set contains harmonized data for 23 OECD countries over the period 1972-2002. The figures in COMPENDIA are comparable across countries and over time. The following definition of self-employment/business ownership rate is used in COMPENDIA: the total number of unincorporated (sole proprietors and partners) and incorporated self-employed (individuals who work for corporations they themselves own) outside the agriculture, hunting, forestry and fishing industries who carry out self-employment as their primary employment activity, as a fraction of the labour force.
[b] Germany refers to West-Germany until 1991.

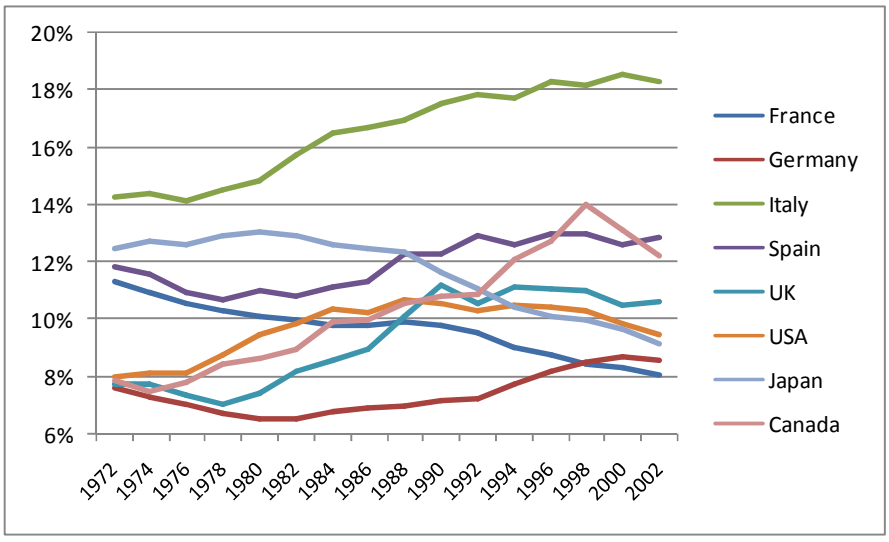

Fig. 1. Self-employment relative to labour force

Data Source: EIM: COMParative Entrepreneurship Data for International Analysis (COMPENDIA 2002.1)

In terms of the decline of business ownership, several authors have reported a negative relationship between economic development and the self-employment rate.[3] The explanations include different approaches such as "a rise of real wages associated with economic development which might have raised the opportunity cost of self-emploment relative to the return" (Lucas, 1978 or Iyigun and Owen, 1998), or "the need to exploit economies of scale and scope during the period after the second industrial revolution in the second half of the 19th century" (Chandler, 1990). However, some other authors have provided evidence of a reversal of the trend towards more self-employment and small business presence in general (Acs *et al*., 1994, Carlsoon, 1989, Loveman and Sengenberger, 1991, Acs and Audretsch, 1993, Acs, 1996 or Thurik, 1999). In this sense, there are many potential reasons for this revival in Western economies[4] such as the important role that small firms play in the emerging industries like software and biotechnology (Acs and Audretsch, 1987, Schmitz, 1989 and Rothwell, 1983, 1984), the fact that new technologies have reduced the importance of scale economies in many sectors (Meredith, 1987, Carlsson, 1989, Jensen, 1993 and Jovanovic, 1993), the deregulation and privatization movements which have swept the world (Shepherd, 1982 and Phillips, 1985), the tendency of large firms to concentrate on "core competences" and downsize (Carlsson, 1989, Jovanovic, 1993, or Aiginger and Tichy, 1991), the increase of the employment share of the services sector which, given the relatively small average firm size of most services, creates more opportunities for business ownership (Inman, 1985), the increasing incomes and the increases in the "demand for variety" as a result (Jackson, 1984), or even "the view of self-employment as a way of achieve personal goals" (Kirchhoff, 1996).

4.1.2 Self-employment: Own-account Workers and Employers

Despite the advantages of COMPENDIA data-set, it still cannot be used to disaggregate self-employment by different characteristics.[5] Therefore, Eurostat data is used to describe self-employment here in after. Table 2 shows self-employment rates for 15 member states during the 1984-2004 period. Over the period in question, the proportion of self-employed fell except for five countries (Austria, Germany, Italy, Netherlands and UK). For the EU as a whole, the self-employment's share of total employment stood at around 15% in 2004. This share has remained more or less stable since the late 1990s.

Table 2. Self-employment rates

Data Source: Eurostat

Country	1984	1989	1994	1999	2004
Austria	N.A.	N.A.	10.86 %	10.77 %	11.73 %
Belgium	15.8 %	16.09 %	15.34 %	14.16 %	13.12 %
Denmark	10.3 %	9.2 %	8.4 %	8.1 %	8.15 %
Finland	N.A.	N.A.	14.29 %	13.29 %	12.3 %
France	13.03 %	12.47 %	11.82 %	10.67 %	9.67 %
Germany	9.32 %	9.13 %	9.28 %	9.96 %	10.94 %
Greece	35.87 %	34.37 %	34.44 %	32.3 %	30.29 %
Ireland	21.72 %	22.19 %	21.04 %	17.75 %	16.91 %
Italy	24.59 %	24.64 %	24.02 %	24.51 %	25.54 %

[3] See Kuznets (1971), Schultz (1990) and Yamada (1996). These studies use a large cross-section of countries with a wide variety in the stage of economic development.

[4] See Carree *et al.* (2002, pp. 274-275) for a detailed list.

[5] EIM and OECD currently have a joint project about the implementation of the Compendia methodology at the sectoral level.

Luxembourg	9.59 %	9.15 %	9.7 %	8.52 %	8.06 %
Netherlands	9.12 %	9.95 %	11.11 %	10.68 %	11.54 %
Portugal	26.32 %	26.45 %	25.25 %	24.64 %	24.67 %
Spain	22.42 %	21.62 %	21.75 %	18.83 %	16.54 %
Sweden	N.A.	N.A	11.73 %	10.95 %	10.21 %
UK	11.28 %	13.22 %	12.85 %	12.2 %	12.78 %
UE-15	N.A.	N.A.	14.98 %	14.57 %	14.74 %
Average	17.45 %	17.37 %	16.05 %	15.12 %	14.82 %

Note: When data are not available, the earliest or the most recent year available in the data set is reported

However, the prevalence of self-employment varies markedly between Member States. For example, the number of self-employed as the percentage of total employment is particularly high in Greece, where the share is around 30%, and in Italy and Portugal where it is of the order of 25%. The share is below 15% for the majority of the remaining Member States.

The foregoing results refer to the self-employed population as a whole. However, it is also of interest to examine own-account workers and employers separately. Tables 3 and 4 present own-account and employer rates separately. This distinction is important given the opposite evolution of these two rates. The employer rate increased over the period while the own-account rate declined.

Table 3. Employers rates

Data Source: Eurostat

Country	**1984**	**1989**	**1994**	**1999**	**2004**
Austria	N.A.	N.A.	4.84 %	5.38 %	4.56 %
Belgium	1.68 %	1.51 %	1.63 %	4.53 %	4.6 %
Denmark	4.48 %	4.52 %	4.06 %	3.96 %	3.67 %
Finland	N.A.	N.A.	3.72 %	4.31 %	4.08 %
France	4.42 %	4.51 %	4.75 %	4.58 %	4.2 %
Germany	5.12 %	5.02 %	5.27 %	5.11 %	5.17 %
Greece	5.11 %	5.57 %	7.03 %	7.55 %	8.02 %
Ireland	4.29 %	5.02 %	5.72 %	5.74 %	5.82 %
Italy	1.05 %	1.02 %	12.25 %	12.82 %	7.28 %
Luxembourg	3.42 %	2.61 %	4.24 %	5.68 %	3.23 %
Netherlands	4.58 %	3.37 %	4.03 %	3.92 %	3.72 %
Portugal	3.53 %	4.25 %	6.46 %	6.07 %	6.42 %
Spain	3.17 %	3.57 %	4.73 %	5.91 %	5.38 %
Sweden	N.A.	N.A.	3.88 %	4.09 %	3.64 %
UK	4.07 %	4.15 %	3.34 %	3.22 %	3.07 %
UE-15	N.A.	N.A.	5.62 %	5.75 %	4.94 %
Average	3.74 %	3.76 %	5.1 %	5.54 %	4.86 %

Note: When data are not available, the earliest or the most recent year available in the data set is reported

Table 4. Own-account workers rates

Data Source: Eurostat

Country	**1984**	**1989**	**1994**	**1999**	**2004**
Austria	N.A.	N.A.	6.01 %	5.39 %	7.17 %
Belgium	14.12 %	14.58 %	13.71 %	9.63 %	8.52 %

Denmark	5.82 %	4.68 %	4.34 %	4.15 %	4.48 %
Finland	N.A.	N.A.	10.62 %	8.98 %	8.22 %
France	8.61 %	7.96 %	7.07 %	6.09 %	5.47 %
Germany	4.2 %	4.11 %	4.01 %	4.85 %	5.77 %
Greece	30.76 %	28.8 %	27.41 %	24.75 %	22.27 %
Ireland	17.43 %	17.17 %	15.32 %	12.01 %	11.09 %
Italy	23.54 %	23.62 %	11.77 %	11.69 %	18.26 %
Luxembourg	6.17 %	6.54 %	5.46 %	2.84 %	4.83 %
Netherlands	4.93 %	6.58 %	7.08 %	6.76 %	7.82 %
Portugal	22.79 %	22.2 %	18.79 %	18.57 %	18.25 %
Spain	19.25 %	18.05 %	17.02 %	12.92 %	11.16 %
Sweden	N.A.	N.A.	7.85 %	6.86 %	6.57 %
UK	7.21 %	9.07 %	9.51 %	8.98 %	9.71 %
UE-15	N.A.	N.A.	9.36 %	8.82 %	9.8 %
Average	13.74 %	13.61 %	10.96 %	9.58 %	9.96 %

Note: When data are not available, the earliest or the most recent year available in the data set is reported

The rate of employers increased in the whole period except for Denmark, France, Luxembourg, Netherlands and UK, whereas the proportion of own-account workers decreased between 1984 and 2004 with the exception of Germany, Netherlands and UK.

The fact that countries with high rates of self-employment and those with low rates remain largely the same is noteworthy and there is hardly any sign of convergence between these countries. Entrepreneurial cultures between countries apparently vary and globalization does not seem to have had a major impact on this.

The rest of this section (4.1.) focuses on the characteristics of the self-employed in Europe. In particular, it studies data on self-employment rates and its distributions by gender, age, educational attainment and business sector.

4.1.3 Self-employment by Gender

In terms of differences by gender, the European labour market is not only noted for the lower of females but also by the higher differential between males and females in the case of self-employment. Tables 5 to 7 present the percentage of males out of total number in self-employment, total employers and total own-account workers for Member States, respectively. It can be observed that there are higher proportions of men than women in the three cases considered in all Member States, with the gender gap being higher in the case of employers. However, the evolution of these series suggests a progressive decline of this gender differential. The self-employment structure changed significantly over the 1984-2004 period. As Table 5 shows, male self-employment rate steadily declined from over 78% in 1984 to 71% in 2004 on average.

Table 5. Percentage of males out of total self-employment

Data Source: Eurostat

Country	**1984**	**1989**	**1994**	**1999**	**2004**
Austria	N.A.	N.A.	N.A	65.41 %	67.56 %
Belgium	74.95 %	75.39 %	73.39 %	69.49 %	71.93 %
Denmark	83.92 %	85.12 %	77.93 %	77.23 %	78.34 %

Finland	N.A.	N.A.	67.36 %	67.88 %	68.29 %
France	78.96 %	75.96 %	74.55 %	74.18 %	72.29 %
Germany	76.78 %	75.91 %	73.98 %	72.62 %	71.64 %
Greece	82.3 %	81.1 %	79.98 %	76.18 %	74.03 %
Ireland	89.92 %	88.89 %	86.22 %	83.57 %	83.23 %
Italy	78.54 %	76.73 %	76.56 %	75.1 %	71.46 %
Luxembourg	78.57 %	78.57 %	68.75 %	66.67 %	66.67 %
Netherlands	83.94 %	72.45 %	68.86 %	67.73 %	66.67 %
Portugal	59.51 %	57.87 %	59.32 %	58.29 %	59.86 %
Spain	77.32 %	75.83 %	74.76 %	74.25 %	72.28 %
Sweden	N.A.	N.A.	74.32 %	75 %	75.35 %
UK	75.97 %	76.34 %	75.15 %	73.48 %	73.08 %
UE-15	N.A.	N.A.	73.97 %	72.85 %	71.44 %
Average	78.39 %	76.68 %	73.67 %	71.87 %	71.51 %

Note: When data are not available, the earliest or the most recent year available in the data set is reported

The trend was for a decrease in the number of employers and own-account workers (Tables 6 and 7). As mentioned above, the gender gap is higher in the case of employers, which suggests the need for gender differences to be specifically treated in order to enhance female participation within self-employment.

Table 6. Percentage of males out of total employers

Data Source: Eurostat

Country	**1984**	**1989**	**1994**	**1999**	**2004**
Austria	N.A.	N.A.	N.A	72.46 %	77.78 %
Belgium	87.93 %	88.89 %	86.89 %	78.09 %	78.19 %
Denmark	85.59 %	87.39 %	82.52 %	80.53 %	82.11 %
Finland	N.A.	N.A.	69.33 %	74.23 %	74 %
France	81.88 %	78.47 %	79.71 %	78.37 %	77.24 %
Germany	81.87 %	80.1 %	78.01 %	78.1 %	76.77 %
Greece	91.16 %	89.71 %	87.22 %	84.31 %	82.42 %
Ireland	89.36 %	87.27 %	82.61 %	80.85 %	81.13 %
Italy	87.32 %	84.91 %	78.03 %	76.1 %	77.1 %
Luxembourg	80 %	N.A.	71.4 %	70 %	66.7 %
Netherlands	89.27 %	85.71 %	81.85 %	76.17 %	76.16 %
Portugal	82.43 %	79.79 %	75.26 %	75.93 %	73.78 %
Spain	88.92 %	87.13 %	83.02 %	79.82 %	77.14 %
Sweden	N.A.	N.A.	78.98 %	78.92 %	80.89 %
UK	78.82 %	78.15 %	76.22 %	76 %	74.44 %
UE-15	N.A.	N.A.	78.71 %	77.78 %	76.91 %
Average	85.38 %	85.63 %	79.32 %	77.35 %	77.05 %

Note: When data are not available, the earliest or the most recent year available in the data set is reported

Table 7. Percentage of males out of total own-account workers

Data Source: Eurostat

Country	**1984**	**1989**	**1994**	**1999**	**2004**
Austria	N.A.	N.A.	N.A.	57.81 %	60.85 %
Belgium	73.21 %	74.19 %	71.65 %	65.62 %	68.38 %

Denmark	83.22 %	83.74 %	73.64 %	73.87 %	75.41 %
Finland	N.A.	N.A.	66.36 %	64.88 %	65.24 %
France	77.41 %	74.58 %	71.13 %	71.02 %	68.48 %
Germany	70.57 %	70.78 %	68.64 %	66.84 %	67.04 %
Greece	80.9 %	79.43 %	78.13 %	73.49 %	71.1 %
Ireland	90.05 %	89.84 %	87.03 %	84.9 %	84.69 %
Italy	78.16 %	76.39 %	75.03 %	74 %	69.17 %
Luxembourg	77.78 %	70 %	66.67 %	60 %	66.67 %
Netherlands	79.77 %	65.82 %	61.34 %	62.72 %	62.13 %
Portugal	55.96 %	53.77 %	53.77 %	52.65 %	54.92 %
Spain	75.36 %	73.6 %	72.5 %	71.72 %	69.93 %
Sweden	N.A.	N.A.	72.01 %	73.02 %	72.46 %
UK	74.3 %	75.44 %	74.77 %	71.64 %	72.66 %
UE-15	N.A.	N.A.	71.12 %	69.64 %	68.69 %
Average	76.39 %	73.97 %	70.92 %	68.36 %	68.61 %

Note: When data are not available, the earliest or the most recent year available in the data set is reported

With respect to differences in the gender gap between countries, as can be seen in Figure 2, Denmark and Ireland are the countries with a greater male-dominated distribution of self-employment in 2004, whereas Portugal is the country with a more equalitarian self-employment distribution by gender.

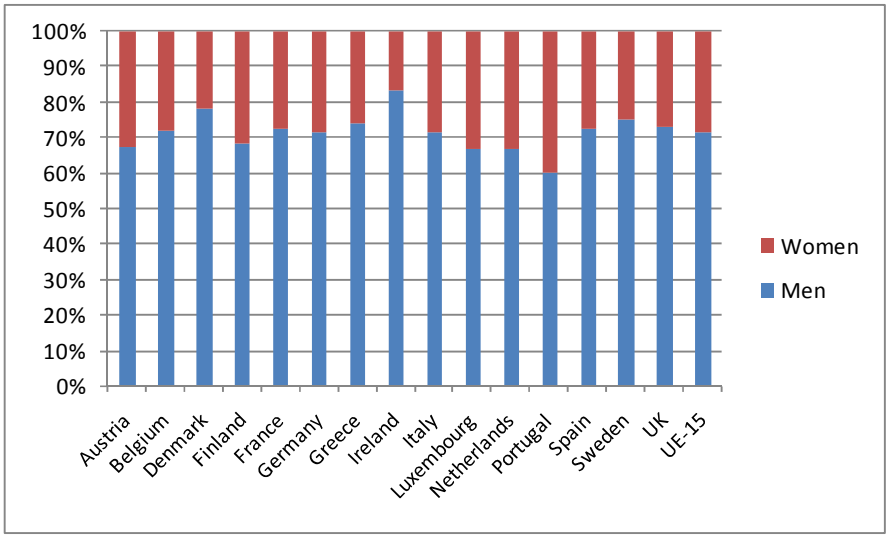

Fig. 2. Distribution of self-employment by gender, 2004

Data Source: Eurostat

4.1.4 Self-employment by Age

Tables 8 to 10 present the distribution by age out of total self-employment, total employers and total own-account workers for Member States, respectively. The structure of the self-employed by age at European Union level shows that the majority of the self-employed are in the middle-age bracket. Looking at the evolution of the series, it can be observed that the tendency is to increase the average age of the self-employed, so that the proportion of young and middle-age self-employed is declining whereas the proportion of older self-employed is increas-

ing. That is, the age structure reveals an ageing trend among the self-employed in Europe. However, this fact is also a characteristic of European societies and labour markets.

Table 8. Self-employment (age composition)

Data Source: Eurostat

	15 to 24			24 to 49			49 to 64		
Country	**1992**	**1998**	**2004**	**1992**	**1998**	**2004**	**1992**	**1998**	**2004**
Austria	2.26 %	1.75 %	1.94 %	64.91 %	68.67 %	67.48 %	28.57 %	26.57 %	28.19 %
Belgium	3.52 %	3 %	2.72 %	69.72 %	70.49 %	68.04 %	24.47 %	23.61 %	26.66 %
Denmark	1.72 %	2.32 %	2.3 %	56.65 %	54.87 %	54.95 %	32.19 %	40.71 %	36.79 %
Finland	2.43 %	2.3 %	2.23 %	64.24 %	63.6 %	55.12 %	28.82 %	30.8 %	38.53 %
France	1.89 %	1.48 %	1.38 %	65.92 %	67.41 %	60.7 %	29.36 %	28.32 %	35.96 %
Germany	1.97 %	1.38 %	1.34 %	60.76 %	62.75 %	61.48 %	32.64 %	31.29 %	32.3 %
Greece	3.15 %	2.7 %	2.14 %	53.42 %	58.89 %	61.86 %	36.82 %	32.98 %	31.86 %
Ireland	3.5 %	2.11 %	1.9 %	57.98 %	60.21 %	60.9 %	28.4 %	28.87 %	30.14 %
Italy	4.09 %	3.07 %	3.29 %	61.83 %	65.44 %	66.72 %	29.83 %	27.25 %	25.28 %
Luxembourg	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Netherlands	5.81 %	5.02 %	4.03 %	63.49 %	60.6 %	59.54 %	24.59 %	30.11 %	30.78 %
Portugal	4.09 %	2.93 %	1.66 %	51.9 %	48.41 %	45.33 %	32.68 %	31.74 %	31.97 %
Spain	3.76 %	3.2 %	2.78 %	61.19 %	63.44 %	63.92 %	32.1 %	31.25 %	31.39 %
Sweden	2.32 %	1.86 %	1.83 %	58.11 %	53.02 %	51.77 %	31.79 %	36.51 %	38.93 %
UK	5.92 %	3.42 %	3.99 %	65.47 %	61.23 %	57.37 %	23.96 %	30.6 %	33.12 %
UE-15	3.31 %	2.59 %	2.65 %	62.7 %	62.7 %	61.3 %	29.3 %	30 %	30.9 %
Average	3.32 %	2.61 %	2.41 %	61.2 %	61.5%	59.8 %	29.7 %	30.7 %	32.2 %

Note: When data are not available, the earliest or the most recent year available in the data set is reported

Table 9. Employers (age composition)

Data Source: Eurostat

	15 to 24			24 to 49			49 to 64		
Country	**1992**	**1998**	**2004**	**1992**	**1998**	**2004**	**1992**	**1998**	**2004**
Austria	2.81 %	1.61 %	1.52 %	65.73 %	69.35 %	67.33 %	27.53 %	26.34 %	30.02 %
Belgium	N.A.	N.A.	1.93 %	76.67 %	71.86 %	71.17 %	21.67 %	24.6 %	25.14 %
Denmark	N.A.	N.A.	N.A.	65.14 %	56.14 %	56.47 %	27.52 %	41.23 %	38.6 %
Finland	N.A.	N.A.	N.A.	67.14 %	57.73 %	25.33 %	25.33 %	29.1 %	37.08 %
France	1.2 %	1.34 %	0.83 %	69.81 %	66.67 %	60.18 %	26.5 %	29.8 %	37.7 %
Germany	1.32 %	0.72 %	0.76 %	59.53 %	59.89 %	58.56 %	34.73 %	34.97 %	36.21 %
Greece	2.34 %	2.29 %	2.17 %	65.63 %	66.27 %	66.58 %	28.52 %	28.3 %	27.63 %
Ireland	N.A.	N.A.	N.A.	64.62 %	64.13 %	65.9 %	27.69 %	29.35 %	29.04 %
Italy	3.8 %	3 %	1.44 %	63.52 %	65.51 %	65.15 %	28.98 %	27.55 %	28.51 %
Luxembourg	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Netherlands	N.A.	N.A.	N.A.	74.78 %	66.55 %	66.55 %	20.8 %	31.74 %	30.54 %
Portugal	N.A.	N.A.	N.A.	63.54 %	61.98 %	59.95 %	27.8 %	30 %	32.48 %
Spain	2.08 %	1.2 %	1.5 %	67.94 %	66.58 %	64.65 %	27.04 %	30.24 %	31.65 %
Sweden	N.A.	N.A.	N.A.	59.87 %	56.25 %	55.84 %	33.76 %	37.5 %	40.64 %
UK	2.18 %	1.54 %	1.6 %	68.01 %	60.87 %	60.06 %	25.66 %	34.16 %	34.16 %
UE-15	1.99 %	1.64 %	1.22 %	65.1 %	63.9 %	62.2 %	29.3 %	31 %	32.9 %
Average	1.18 %	0.89 %	0.86 %	66.5 %	63.6 %	60.4 %	27.5 %	31.1 %	32.8 %

Note: When data are not available, the earliest or the most recent year available in the data set is reported

Table 10. Own-account workers (age composition)

Data Source: Eurostat

	15 to 24			24 to 49			49 to 64		
Country	**1992**	**1998**	**2004**	**1992**	**1998**	**2004**	**1992**	**1998**	**2004**
Austria	2.26 %	1.88 %	2.43 %	64.25 %	68.08 %	67.65 %	29.41 %	26.76 %	27.23 %
Belgium	3.74 %	3.94 %	3.27 %	69.09 %	70.08 %	66.91 %	24.8 %	24.28 %	26.77 %
Denmark	3.23 %	3.45 %	3.4 %	49.19 %	53.57 %	53.72 %	35.48 %	40.18 %	35.29 %
Finland	3.27 %	2.62 %	2.44 %	62.15 %	62 %	53.88 %	29.91 %	31.31 %	39.16 %
France	2.33 %	1.59 %	1.82 %	63.4 %	67.97 %	61.12 %	31.22 %	27.2 %	34.62 %
Germany	2.86 %	2.02 %	1.81 %	62.26 %	65.74 %	64.11 %	30.02 %	27.51 %	28.8 %
Greece	3.35 %	2.87 %	2.13 %	50.38 %	56.78 %	60.15 %	38.81 %	34.33 %	33.4 %
Ireland	3.65 %	2.62 %	2.42 %	55.73 %	58.12 %	58.35 %	28.65 %	28.8 %	30.99 %
Italy	4.41 %	3.16 %	4.04 %	59.72 %	65.37 %	67.35 %	30.93 %	26.91 %	23.98 %
Luxembourg	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Netherlands	7.87 %	7.55 %	5.52 %	57.75 %	57.06 %	56.28 %	26.52 %	29.22 %	30.91 %
Portugal	4.63 %	3.12 %	1.82 %	47.88 %	44.11 %	40.19 %	34.38 %	32.25 %	31.78 %
Spain	4.22 %	3.91 %	3.39 %	59.35 %	62.32 %	63.55 %	33.49 %	31.6 %	31.26 %
Sweden	2.83 %	2.22 %	2.22 %	57.23 %	51.11 %	49.51 %	30.5 %	35.93 %	38.06 %
UK	7.4 %	4.07 %	4.75 %	64.46 %	61.37 %	56.53 %	23.29 %	29.37 %	32.79 %
UE-15	4.11 %	3.16 %	3.37 %	61.3 %	62 %	60.8 %	29.2 %	29.3 %	29.9 %
Average	4.01 %	3.21 %	2.99 %	58.9 %	60.4 %	58.7 %	30.4 %	30.3 %	31.7 %

Note: When data are not available, the earliest or the most recent year available in the data set is reported

Figure 3 compares the distribution of the self-employed by age in European countries in 2004. Netherlands and UK are the countries where the proportion of self-employed aged between 15 and 24 is higher, whereas Germany and France are the ones with a smaller proportion of young self-employed. On the other hand, Finland and Sweden are the countries with a higher proportion of self-employed between 49 and 64, whereas Italy and Belgium are the ones with a smaller proportion of older self-employed.

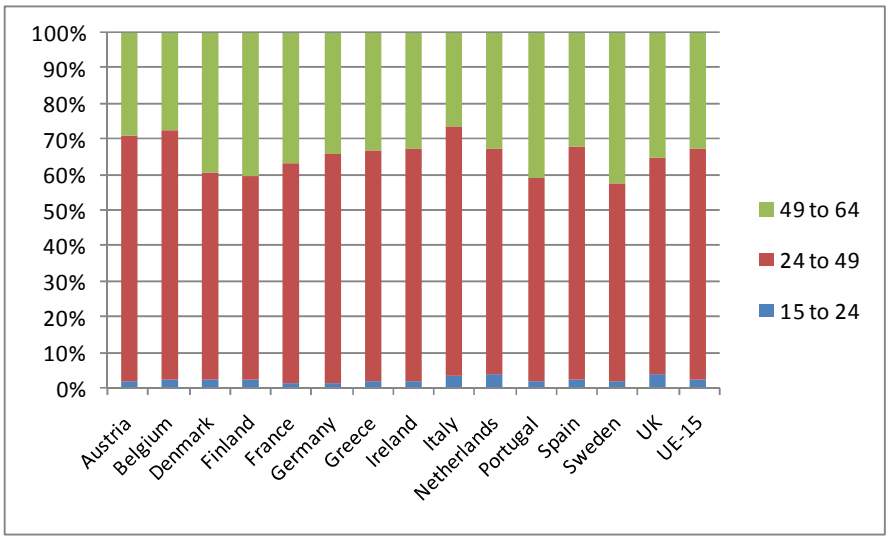

Fig. 3. Distribution of self-employment by age, 2004

Data Source: Eurostat

4.1.5 Self-employment by Educational Attainment

There is not such a homogenous analysis in this case as the one between countries and occupations. Tables 11 to 13 present self-employment distribution, employers and own-account workers, respectively, by educational attainment. Greece, Ireland, Italy, Portugal and Spain are countries in which the majority of self-employed, particularly in the case of own-account workers, are low-skilled workers. On the other hand, countries like Austria, Denmark, Finland, France, Netherlands, Sweden or UK present a self-employment with a majority of medium-skilled workers. It is worth noting the change in the educational pattern in countries such as Belgium, Germany and Spain, where low-skilled individuals are being substituted by high-skilled ones, particularly in the case of self-employment without employees. This may be representative of a change in the skills needed to be self-employed.

Table 11. Self-employment by educational attainment

Data Source: Eurostat

	Primary education			**Secondary education**			**Higher education**		
Country	**1992**	**1998**	**2004**	**1992**	**1998**	**2004**	**1992**	**1998**	**2004**
Austria	29.82 %	22.81 %	12.87 %	57.89 %	63.16 %	54.58 %	12.28 %	14.29 %	32.56 %
Belgium	36.44 %	30.02 %	23.9 %	36.44 %	36.26 %	37.06 %	27.11 %	33.9 %	39.09 %
Denmark	32.62 %	17.26 %	12.45 %	52.36 %	61.95 %	58.59 %	15.02 %	20.8 %	28.74 %
Finland	39.24 %	36.9 %	25.76 %	45.83 %	46.55 %	46.65 %	15.28 %	21.72 %	26.18 %
France	35.09 %	28.77 %	24.59 %	43.32 %	45.09 %	45.61 %	21.55 %	26.1 %	29.82 %
Germany	10.51 %	10.27 %	7.46 %	41.75 %	43 %	45.47 %	37.32 %	43.45 %	46.14 %
Greece	72.25 %	61.04 %	48.21 %	17.83 %	24.65 %	34.53 %	9.92 %	14.32 %	17.1 %
Ireland[b]	69.75 %	61.38 %	42.42 %	21.43 %	25.61 %	37.12 %	16.39 %	21.54 %	24.36 %
Italy[b]	66.4 %	53.36 %	50 %	24.77 %	31.29 %	43.4 %	8.81 %	12.21 %	19.06 %
Luxembourg	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Netherlands	26.13 %	26.85 %	21.74 %	48.38 %	47.18 %	41.79 %	25.36 %	25.6 %	35.52 %
Portugal	88.67 %	90.01 %	86.46 %	6.04 %	6.33 %	8.23 %	5.29 %	4.3 %	6.42 %
Spain	78.85 %	68.94 %	56.31 %	10.73 %	14.17 %	19.75 %	10.43 %	16.88 %	23.93 %
Sweden	32.63 %	31.63 %	22.56 %	45.26 %	47.44 %	56.46 %	21.89 %	20.7 %	20.46 %
UK	43.68 %	14.16 %	13.03 %	37.76 %	50.4 %	58.67 %	18.44 %	26.26 %	27.56 %
UE-15	44.91 %	35.36 %	33.54 %	31.64 %	21.13 %	39.51 %	19.29 %	11.61 %	26.02 %
Average	47.13 %	39.25 %	28.75 %	34.76 %	37.61 %	38.93 %	17.63 %	20.91 %	25.59 %

Notes:

[(a)] When data are not available, the earliest or the most recent year available in the data set is reported

[(b)] Taking into account the methodological changes that these countries present, we should be cautious when interpreting these data

Table 12. Employers by educational attainment

Data Source: Eurostat

	Primary education			**Secondary education**			**Higher education**		
Country	**1992**	**1998**	**2004**	**1992**	**1998**	**2004**	**1992**	**1998**	**2004**
Austria	12.92 %	8.06 %	7.75 %	66.85 %	68.82 %	50.87 %	19.66 %	23.12 %	41.38 %
Belgium	30%	28.57 %	22.7 %	38.33 %	37.14 %	41.06 %	31.67 %	34.29 %	36.24 %
Denmark	24.77 %	13.16 %	9.75 %	58.72 %	62.28 %	57.93 %	17.43 %	23.68 %	31.81 %
Finland	36 %	30.23 %	24.83 %	41.33 %	37.21 %	40.63 %	22.67 %	27.91 %	30.01 %
France	25.24 %	23.02 %	21.66 %	45.92 %	45.94 %	44.4 %	28.75 %	31.04 %	33.94 %

Germany	7.92 %	9.12 %	6.29 %	37.72 %	37.62 %	38.81 %	44.66 %	50.55 %	51.78 %
Greece	52.34 %	45.85 %	35.07 %	31.64 %	34.32 %	42.52 %	15.63 %	19.75 %	22.22 %
Ireland[b]	62.5 %	50.91 %	33.34 %	37.5 %	37.93 %	41.92 %	35.42 %	36.21 %	30.39 %
Italy[b]	64.55 %	51.66 %	28.16 %	26.83 %	31.87 %	25.97 %	8.63 %	11.51 %	7.87 %
Luxembourg	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Netherlands	22.56 %	24.91 %	19.9 %	52.63 %	49.83 %	46.77 %	24.06 %	25.26 %	32.75 %
Portugal	78.34 %	80.85 %	76.11 %	10.11 %	13.1 %	17.23 %	11.55 %	8.56 %	10.7 %
Spain	67.42 %	58.85 %	49.4 %	14.73 %	17.8 %	22.76 %	17.85 %	23.35 %	27.84 %
Sweden	32.48 %	31.25 %	22.57 %	45.86 %	45.63 %	59.46 %	21.66 %	22.5 %	17.65 %
UK	38.86 %	13.42 %	12.48 %	35.37 %	47.98 %	55.53 %	25.66 %	31.31 %	31.34 %
UE-15	36.61 %	30.37 %	28.38 %	34.36 %	24.02 %	40.3 %	24.95 %	12.98 %	30.82 %
Average	39.5 %	33.35 %	26.56 %	38.53 %	39.43 %	41.74 %	23.35 %	25.47 %	29.12 %

Notes:
[(a)] When data are not available, the earliest or the most recent year available in the data set is reported
[(b)] Taking into account the methodological changes that these countries present, we should be cautious when interpreting these data

Table 13. Own-account workers by educational attainment

Data Source: Eurostat

	Primary education			**Secondary education**			**Higher education**		
Country	**1992**	**1998**	**2004**	**1992**	**1998**	**2004**	**1992**	**1998**	**2004**
Austria	42.99 %	35.21 %	16.11 %	50.23 %	57.75 %	57.18 %	6.33 %	6.57 %	26.7 %
Belgium	37.2 %	30.21 %	24.49 %	36.22 %	35.95 %	34.82 %	26.57 %	33.84 %	40.62 %
Denmark	40.32 %	21.43 %	14.88 %	46.77 %	61.61 %	58.92 %	12.9 %	16.96 %	26 %
Finland	40.19 %	39.71 %	26.28 %	47.2 %	50.49 %	49.81 %	12.62 %	19.61 %	24.44 %
France	41.92 %	33.12 %	26.8 %	41.52 %	44.44 %	46.51 %	16.56 %	23.87 %	26.7 %
Germany	13.72 %	11.48 %	8.54 %	46.75 %	48.62 %	51.66 %	28.16 %	36.04 %	40.89 %
Greece	77.06 %	65.5 %	52.93 %	14.44 %	21.79 %	31.61 %	8.51 %	12.73 %	15.27 %
Ireland[b]	71.96 %	63.83 %	47.06 %	17.46 %	21.81 %	34.54 %	12.17 %	17.02 %	21.4 %
Italy[b]	68.76 %	55.22 %	73.47 %	22.25 %	30.66 %	62.15 %	9.04 %	12.92 %	31.08 %
Luxembourg	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Netherlands	28.01 %	28.03 %	22.61 %	45.96 %	45.92 %	39.53 %	26.04 %	25.84 %	36.88 %
Portugal	92.25 %	92.86 %	90.02 %	4.63 %	4.53 %	5.57 %	3.25 %	2.96 %	4.91 %
Spain	81.93 %	72.57 %	59.57 %	9.68 %	12.86 %	18.35 %	8.4 %	14.55 %	22.06 %
Sweden	32.7 %	31.85 %	22.38 %	44.97 %	48.15 %	54.89 %	22.01 %	19.63 %	22.2 %
UK	45.58 %	14.41 %	13.2 %	38.7 %	51.26 %	59.67 %	15.58 %	24.49 %	26.37 %
UE-15	49.91 %	38.41 %	36.14 %	30.01 %	19.38 %	39.11 %	15.9 %	10.78 %	23.98 %
Average	50.97 %	42.26 %	30.73 %	33.12 %	37.01 %	38.81 %	14.94 %	18.52 %	25.97 %

Notes:
[(a)] When data are not available, the earliest or the most recent year available in the data set is reported
[(b)] Taking into account the methodological changes that these countries present, we should be cautious when interpreting these data

The heterogeneity of these distributions can be observed in Figure 4, which shows the 2004 distribution of self-employment by educational attainment for European countries. The case of Portugal, where the proportion of low-skilled self-employment is around 87%, contrasts with the case of Germany, where the number of self-employed with primary education represents only around 7.5% of total self-employment.

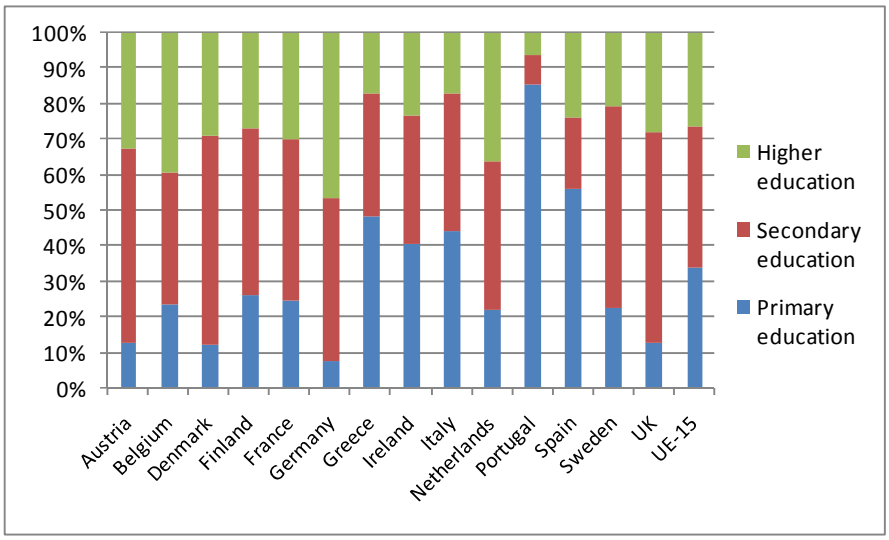

Fig. 4. Distribution of self-employment by educational attainment, 2004
Data Source: Eurostat

4.1.6 Self-employment by Business Sector

Some sectors are more disposed to self-employment than others. Tables 14 to 16 show the distribution of self-employment, employers and own-account workers by business sector. Within the EU, the largest proportion of self-employed people works in the services sector on average, which accounted for 59.71% of all self-employed, 64.06% of all employers and 58.75% of all own-account workers in 2004.

Table 14. Self-employment by business sector
Data Source: Eurostat

	Agriculture and fishing			Industry			Services		
Country	**1992**	**1998**	**2004**	**1992**	**1998**	**2004**	**1992**	**1998**	**2004**
Austria	39.1 %	37.09 %	28.06 %	13.78 %	11.78 %	15.04 %	46.87 %	51.13 %	56.9 %
Belgium	11.97 %	8.94 %	8.15 %	18.13 %	17.71 %	18.5 %	69.89 %	73.52 %	73.39 %
Denmark	28.76 %	19.91 %	17.38 %	20.6 %	20.8 %	19.38 %	50.64 %	59.29 %	63.14 %
Finland	37.15 %	31.37 %	25.71 %	18.75 %	18.3 %	18.74 %	43.75 %	49.67 %	55.29 %
France	27.77 %	22.52 %	22.67 %	20.04 %	20.22 %	20.78 %	52.05 %	57.21 %	56.42 %
Germany	12.58 %	8.83 %	7.53 %	22.26 %	21.73 %	20.42 %	65.19 %	69.47 %	72.08 %
Greece	37.36 %	32.87 %	27.96 %	18.45 %	17.63 %	18.03 %	44.2 %	49.5 %	54.07 %
Ireland	47.08 %	35.21 %	28.23 %	14.4 %	19.01 %	24.58 %	38.52 %	45.77 %	47.1 %
Italy	14.68 %	11.55 %	8.33 %	27.54 %	26.19 %	24.48 %	57.8 %	62.27 %	67.18 %
Luxembourg	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Netherlands	19.08 %	18.29 %	12.88 %	11.48 %	10.74 %	13.13 %	57.53 %	53.68 %	57.93 %
Portugal	34.63 %	38.17 %	37.96 %	20.52 %	22.54 %	21.36 %	44.85 %	39.33 %	40.68 %
Spain	23.13 %	18.91 %	14.3 %	22.72 %	21.93 %	24.96 %	54.15 %	59.16 %	60.75 %
Sweden	17.47 %	16.98 %	14.1 %	21.26 %	20.47 %	20.32 %	61.26 %	62.56 %	65.47 %
UK	9.14 %	7.02 %	5.21 %	32.18 %	28.37 %	29.8 %	58.43 %	64.52 %	64.89 %
UE-15	17.88 %	16.59 %	13.65 %	23.15 %	22.57 %	22.92 %	58.78 %	61.12 %	60.4 %
Average	25.19 %	21.62 %	18.14 %	20.35 %	20 %	20.83 %	53.59 %	57.21 %	59.71 %

Note: When data are not available, the earliest or the most recent year available in the data set is reported

Table 15. Employers by business sector

Data Source: Eurostat

	Agriculture and fishing			Industry			Services		
Country	**1992**	**1998**	**2004**	**1992**	**1998**	**2004**	**1992**	**1998**	**2004**
Austria	6.18 %	5.91 %	9.78 %	25.28 %	18.82 %	21.23 %	68.54 %	75.27 %	68.84 %
Belgium	N.A.	4.29 %	4.47 %	33.33 %	28.57 %	25.16 %	66.67 %	67.14 %	70.63 %
Denmark	21.1 %	15.79 %	12.2 %	26.61 %	26.32 %	24.43 %	53.21 %	57.89 %	63.38 %
Finland	9.33 %	10.2 %	10.07 %	25.33 %	26.53 %	26.19 %	65.33 %	62.24 %	63.48 %
France	9.33 %	9.07 %	9.51 %	29.36 %	26.55 %	27.52 %	61.31 %	64.18 %	62.8 %
Germany	7.52 %	6.19 %	5.56 %	27.32 %	27.4 %	25.14 %	65.15 %	66.41 %	69.3 %
Greece	10.16 %	13.72 %	11.86 %	37.5 %	31.78 %	29.79 %	52.34 %	54.41 %	58.42 %
Ireland	16.92 %	13.04 %	8.06 %	21.54 %	26.09 %	33.64 %	61.54 %	61.96 %	58.07 %
Italy	10.23 %	8.47 %	5.59 %	32.46 %	30.97 %	36.45 %	57.31 %	60.56 %	57.99 %
Luxembourg	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Netherlands	13.27 %	9.9 %	8.8 %	17.26 %	20.14 %	17.84 %	67.26 %	66.89 %	66.98 %
Portugal	6.14 %	6.51 %	5.24 %	34.3 %	40.72 %	39.79 %	59.57 %	52.77 %	54.89 %
Spain	5.72 %	6.11 %	4.99 %	34.14 %	30.55 %	32.58 %	60.14 %	63.38 %	62.48 %
Sweden	5.1 %	7.83 %	8 %	28.03 %	21.88 %	24.64 %	67.52 %	69.38 %	67.2 %
UK	9.17 %	8.75 %	4.36 %	21.29 %	19.98 %	23.35 %	69.21 %	72.7 %	72.14 %
UE-15	7.96 %	7.9 %	6.22 %	28.44 %	27.96 %	29.15 %	63.54 %	64.01 %	64.35 %
Average	9.87 %	8.91 %	7.65 %	28.15 %	26.95 %	27.79 %	62.58 %	63.95 %	64.06 %

Note: When data are not available, the earliest or the most recent year available in the data set is reported

Table 16. Own-account workers by business sector

Data Source: Eurostat

	Agriculture and fishing			Industry			Services		
Country	**1992**	**1998**	**2004**	**1992**	**1998**	**2004**	**1992**	**1998**	**2004**
Austria	66.06 %	63.85 %	39.68 %	4.98 %	5.63 %	11.11 %	28.96 %	30.52 %	49.3 %
Belgium	13.39 %	9.56 %	10.11 %	16.34 %	16.25 %	14.96 %	70.47 %	74.19 %	75 %
Denmark	35.48 %	25 %	21.84 %	15.32 %	15.18 %	15.08 %	48.39 %	60.71 %	62.87 %
Finland	47.2 %	42.25 %	33.64 %	16.82 %	14.87 %	14.94 %	35.98 %	42.4 %	51.16 %
France	39.71 %	32.68 %	32.76 %	14.06 %	15.37 %	15.66 %	46.11 %	51.88 %	51.52 %
Germany	18.87 %	11.59 %	9.29 %	15.94 %	15.8 %	16.14 %	65.19 %	72.61 %	74.57 %
Greece	43.98 %	38.41 %	33.71 %	13.77 %	13.5 %	13.79 %	42.16 %	48.07 %	52.47 %
Ireland	57.29 %	46.6 %	38.86 %	11.98 %	15.71 %	19.86 %	30.73 %	38.22 %	41.53 %
Italy	20.21 %	14.82 %	9.43 %	21.39 %	21.11 %	19.71 %	58.4 %	64.08 %	70.86 %
Luxembourg	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Netherlands	13.27 %	9.9 %	8.8 %	17.26 %	20.14 %	17.84 %	67.26 %	66.89 %	66.98 %
Portugal	44.62 %	48.15 %	49.5 %	15.75 %	16.79 %	14.86 %	39.75 %	35.06 %	35.67 %
Spain	27.89 %	23.54 %	18.8 %	19.59 %	18.81 %	21.28 %	52.51 %	57.65 %	59.91 %
Sweden	23.9 %	21.85 %	17.56 %	17.92 %	19.63 %	17.83 %	58.18 %	58.89 %	64.61 %
UK	9.09 %	5.81 %	5.46 %	36.49 %	29.8 %	31.84 %	54.11 %	64.28 %	62.59 %
UE-15	23.8 %	21.6 %	17.4 %	20 %	18.9 %	19.8 %	55.9 %	58.9 %	62.2 %
Average	32.3 %	27.7 %	23.1 %	17.2 %	17.2 %	17.7 %	50.3 %	54.9 %	58.7 %

Note: When data are not available, the earliest or the most recent year available in the data set is reported

Figure 5 shows that Belgium, Germany, Italy and UK are countries where the proportion of self-employed in the agriculture and fishing sector was below the EU average, whereas this proportion was above the average in the case of Austria, Finland, France Greece, Ireland and Portugal, . On the other hand, in the case of industry, Austria, Belgium, Denmark, Finland, Greece and Netherlands are below the average. And finally, in the service sector case, Austria, Finland, France, Greece, Ireland, Netherlands and Portugal are the countries where the proportion of self-employed workers in this sector is below the average.

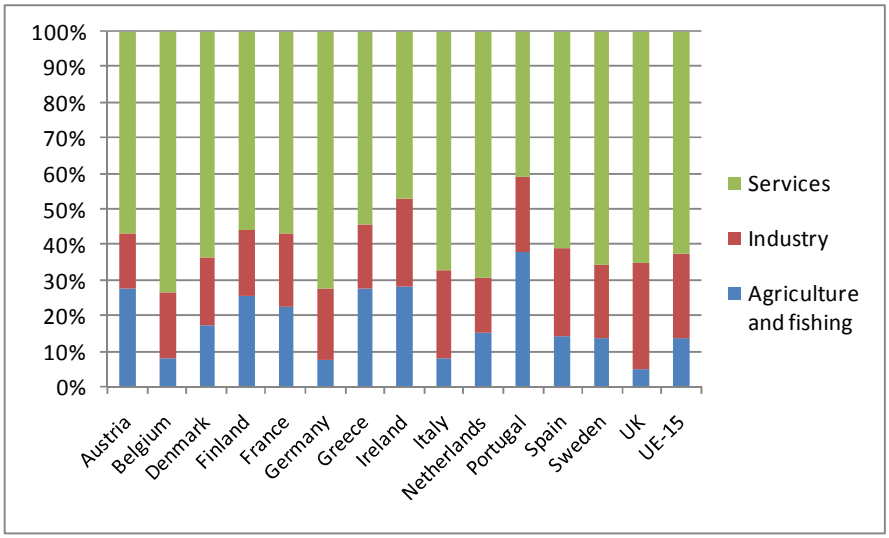

Fig. 5. Distribution of self-employment by business sector, 2004

Data Source: Eurostat

4.2 Self-employment Patterns in Spain

4.2.1 Introduction

This section presents the observed patterns of self-employment in Spain, first using the COMPENDIA data set, and then by means of data drawn from the Spanish Labour Force Survey over the 1980-2004 period.

Thus, COMPENDIA data set show how Spain is among the European countries with the highest rates of self-employment and its evolution over recent decades has been similar to most OECD countries.[6] The pattern of self-employment (business ownership) rate also decreased until the mid-Seventies, halted until the mid-eighties and increased afterwards, that is, a clear U-shaped trend. In this sense, the knowledge of the underlying factors inducing individuals to enter self-employment may help not just to improve the effectiveness of the design of entrepreneurial policy, but also to explain this Spanish stylized fact.

By using data from the Spanish Labour Force Survey, Figure 6 shows the evolution of the number of self-employed, own-account workers and employers in Spain during the 1980-2004 period.

[6] See Table 1 and Figure 1.

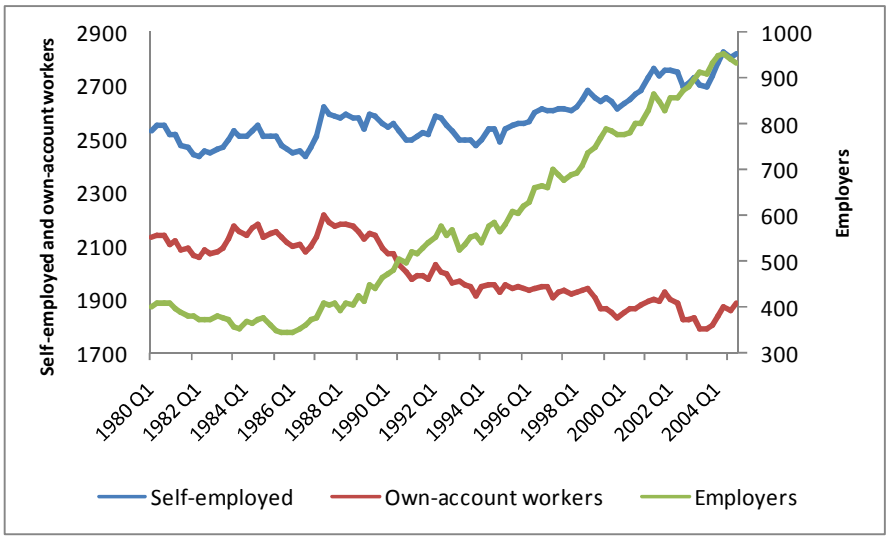

Fig. 6. Evolution of self-employment, own-account workers and employers

Data Source: I.N.E., Spanish Labour Force Survey

In the case of Spain, in terms of full-period growth, the number of individuals that are self-employed rose by only 11.4% between 1980 and 2004 whereas paid-employment increased by 66.78% in the same period. As mentioned above, this is due to the opposite effects between self-employed with and without employees. In this sense, own-account workers decreased by 11.39% whereas employers rose by 132.18%. In terms of year-on-year growth rate, the number of self-employment grew by an average of 0.40% (own-account workers decreased by an average of 0.56% whereas employers increased by an average of 3.62%) compared to 1.99% for paid-employment.

More interesting than the evolution of the numbers in each category is the analysis of these numbers as the proportion of the total labour force. Figure 7 depicts self-employment, own-account work and employer rates over the period in question.

Self-employment rate decreased from 21.09% to 16.29%, which implies a 22.75% drop. The last drop can be broken down to an increase of 61.01% in the employer rate and a decrease of 38.55% in the own-account work rate. This means that most recent increases in self-employment has been in the employer category, rather than among the self-employed without paid help.

The rest of the section focuses on the characteristics of the self-employed in Spain during the 1980-2004 period. In particular, subsections 2 to 5 present data on self-employment rates and its distributions by gender, age, educational attainment and business sector, respectively, and a distinction is made between self-employed without employees or own-account workers and self-employed with employees or employers. Finally, subsection 6 summarizes the results and concludes.

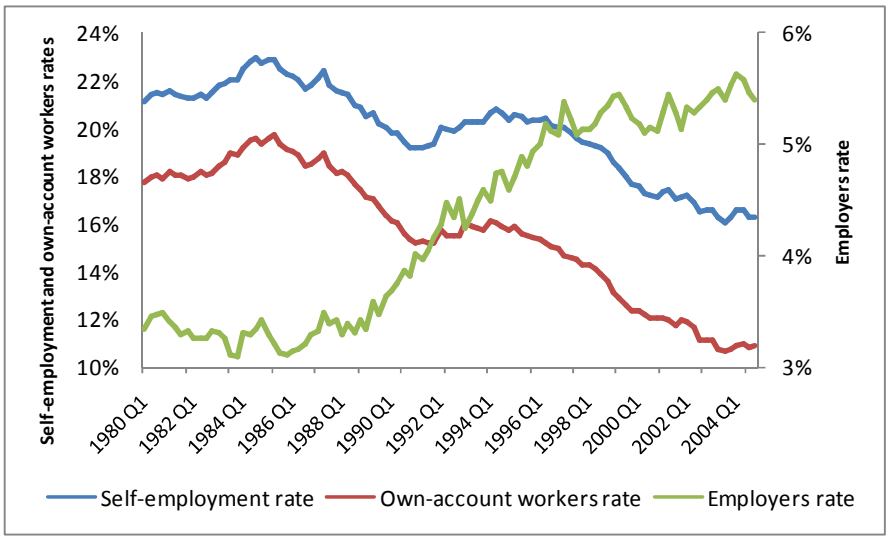

Fig. 7. Evolution of self-employment, own-account work and employers as proportion of total labour force

Data Source: I.N.E. Spanish Labour Force Survey

4.2.2 Self-employment by Gender

In terms of differences by gender, the European labour market is not only noted for the lower of females but also by the higher differential between males and females in the case of self-employment. Figures 8 to 10 present self-employment, own-account and employer rates by gender respectively and shows that self-employment in Spain is male dominated. The number of men that are self-employed increased by 2.44% in the whole period, whereas the self-employment rate as a proportion of the total workforce decreased by 18.32%. This may be due to the fact that the number of men that are self-employed was almost invariant throughout the period in question, and the new entrants in the workforce thus went to paid-employment. The number of own-account workers decreased by 20.11% and the rate fell by 36.29%. On the other hand, the number of employers rose by 105% and its rate went up by 63.44%. In the case of women, the number of self-employed increased by 25.26%, but the self-employment rate decreased by 33.28%. Own-account women dropped by 0.6%, but the female own-account rate fell by 47%. On the other hand, the number of women who went into business with employees went up by 310%, which shows that its rate compared to the female workforce was up by 118.08%.

Figures 11 to 13 present the distribution of self-employment, own-account workers and employers by gender, respectively. It can be observed that there are higher proportions of men than women in the three cases considered, with the gender gap being higher in the case of employers. However, the evolution of these series suggests a progressive decline of this gender differential. As mentioned above, the gender gap is higher in the case of employers and this suggests the need for gender differences to be specifically treated in order to enhance female participation within self-employment.

Therefore, in addition to the traditional factors that explain the lower female participation in the labour market, other specific factors must exist that explain the lower propensity of women to choose self-employment in their occupational decision.

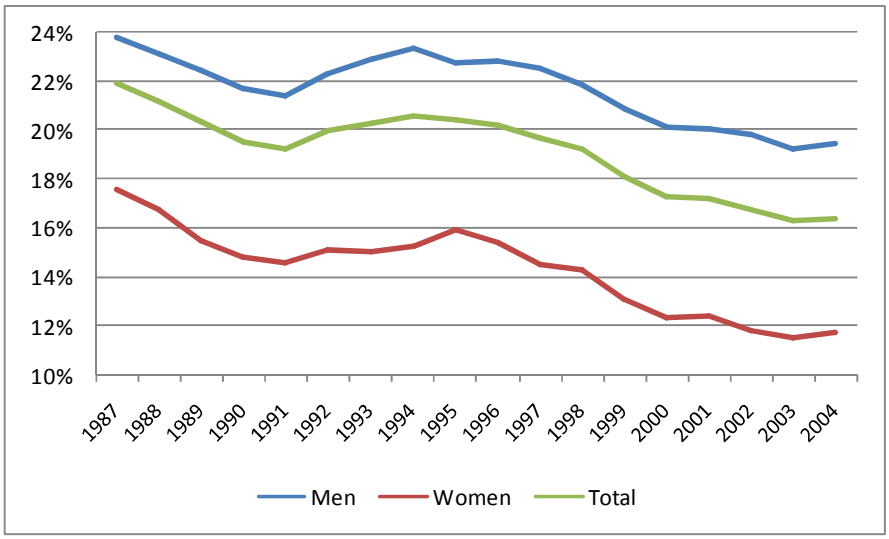

Fig. 8. Evolution of self-employment rate by gender

Data Source: I.N.E., Spanish Labour Force Survey

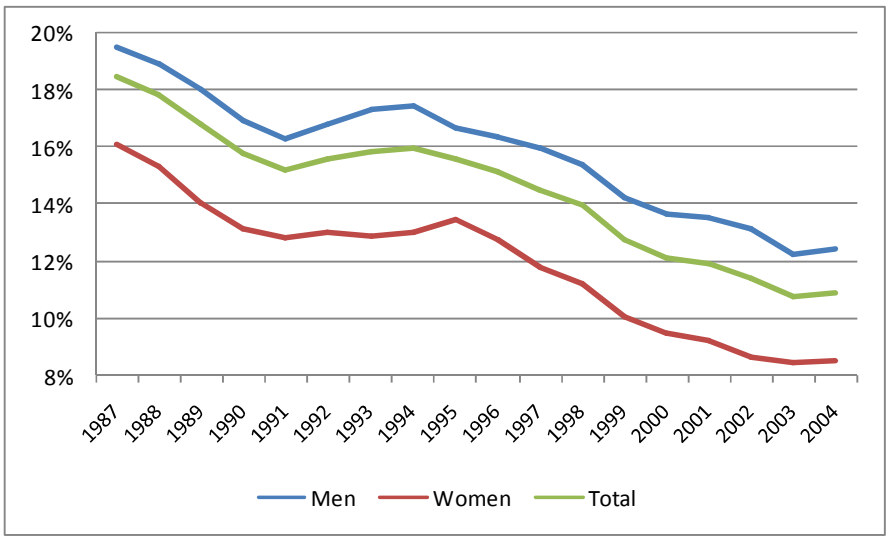

Fig. 9. Evolution of own-account workers rate by gender

Data Source: I.N.E., Spanish Labour Force Survey

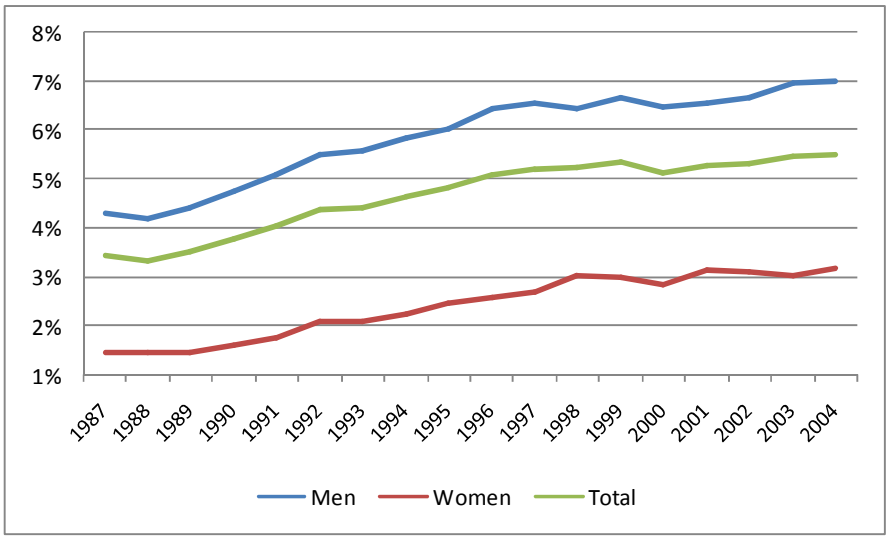

Fig. 10. Evolution of employers rate by gender

Data Source: I.N.E., Spanish Labour Force Survey

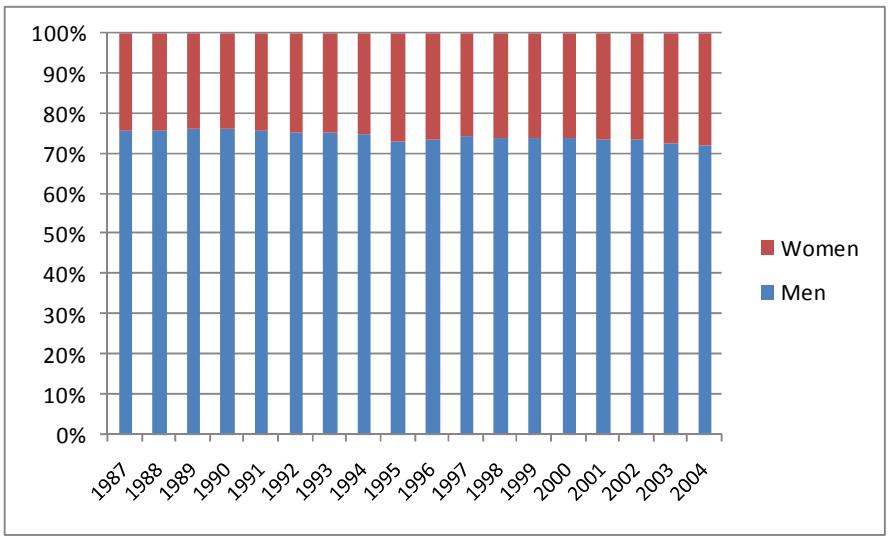

Fig. 11. Distribution of self-employment by gender

Data Source: I.N.E., Spanish Labour Force Survey

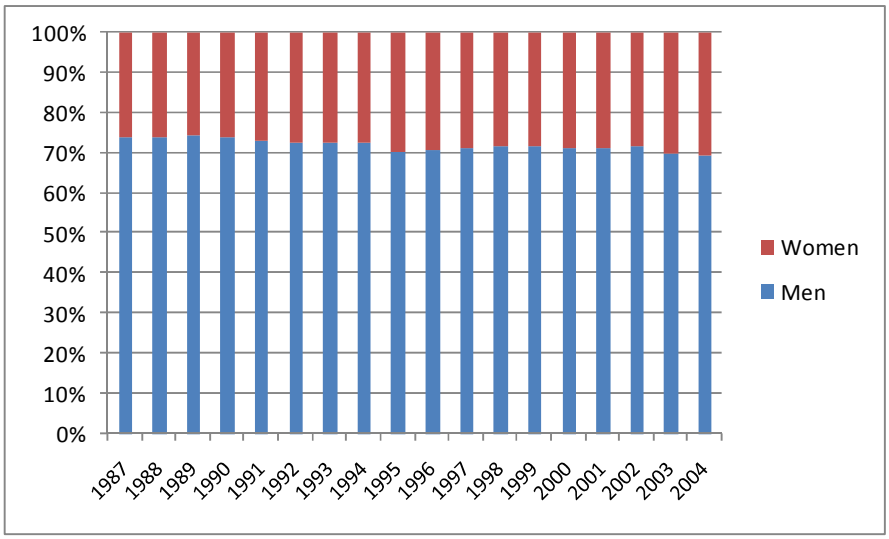

Fig. 12. Distribution of own-account workers by gender

Data Source: I.N.E., Spanish Labour Force Survey

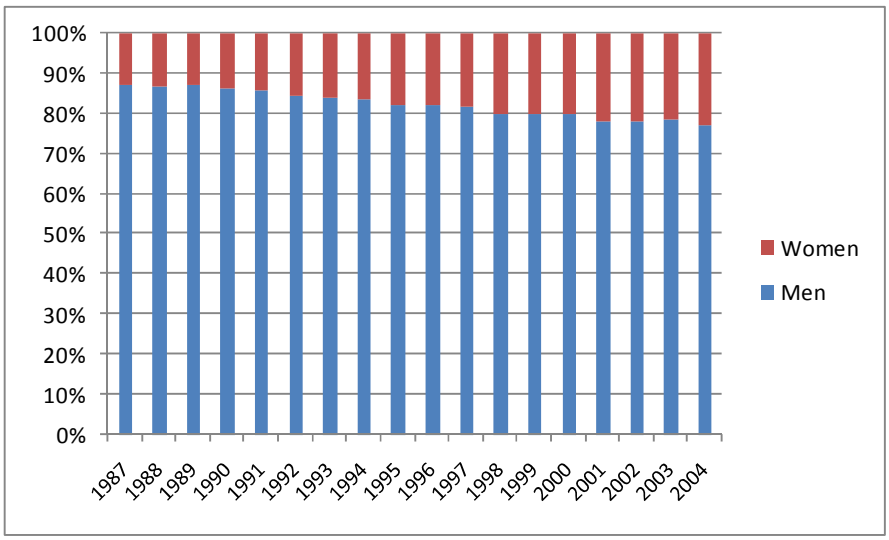

Fig. 13. Distribution of employers by gender

Data Source: I.N.E., Spanish Labour Force Survey

4.2.3 Self-employment by Age

One of the concerns revealed in the diagnoses of the European Commission is the progressive aging of self-employment in Europe.[7] In Spain, evidence is not found of this phenomenon. However, if the self-employment rates by age group are observed, some consequences of how the Social Security system is designed in Spain become apparent, along with difficulties that young people face to set up their own businesses. Figures 14 to 16 present the rates of self-

[7] This concern has materialised in the measures facilitating the transfer of companies from parents to children.

employment, own-account workers and employers, by age group over the 1987-2004 period. In the three cases in question, the self-employment rate is much higher in the older brackets, whereas it is below the global rate in the bracket of the younger workers. In terms of the number of people that set up their own businesses, the age group that increased at a higher rate over the whole period is the 30-39 bracket, with an increase of 30.69% in the case of self-employment, 5.82% in the case of own-account workers and 142.48% in the case of employers. On the other hand, the 16-19 bracket is the age group where there was the greatest decrease in the case of self-employment and own-account workers (67.95% and 71.28%, respectively), whereas the oldest group of entrepreneurs with employees increased at the lowest rate (34.90%).

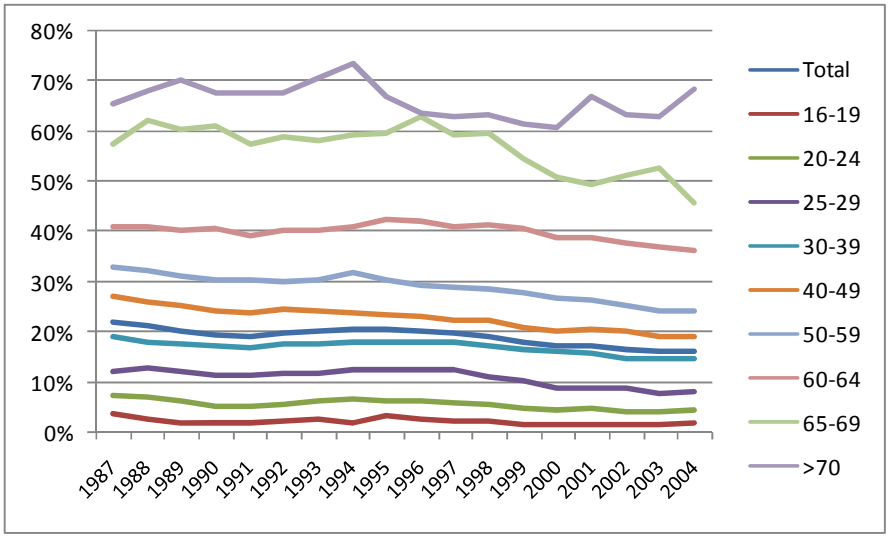

Fig. 14. Evolution of self-employment rate by age

Data Source: I.N.E., Spanish Labour Force Survey

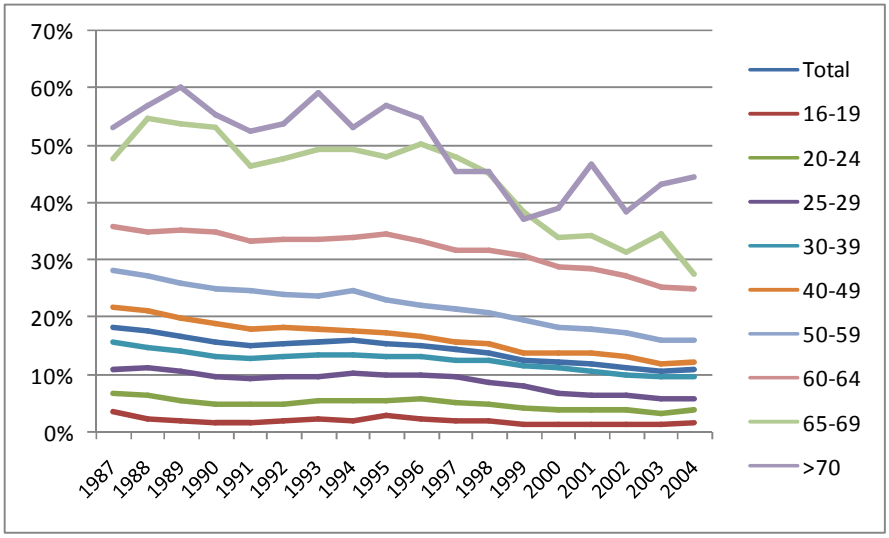

Fig. 15. Evolution of own-account workers rate by age

Data Source: I.N.E., Spanish Labour Force Survey

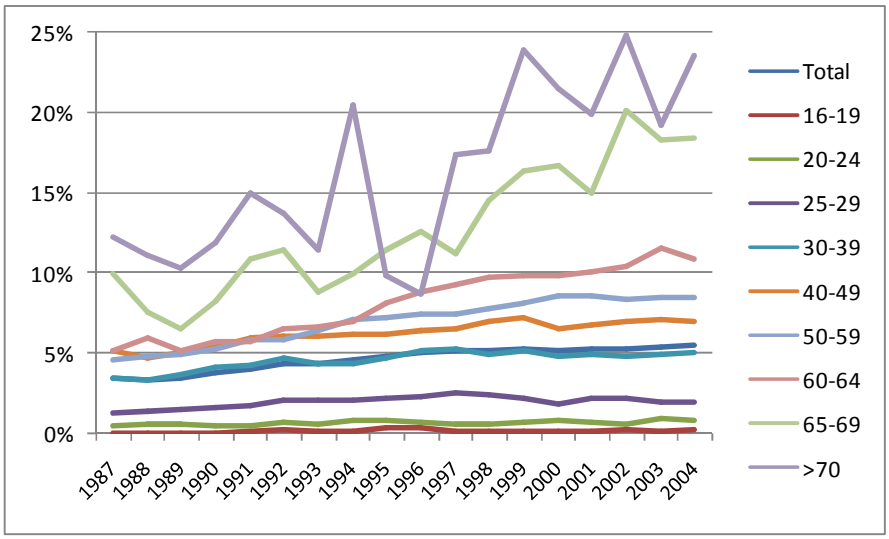

Fig. 16. Evolution of employers rate by age

Data Source: I.N.E., Spanish Labour Force Survey

Figures 17 to 19 present the distribution by age out of total self-employment, total employers and total own-account workers, respectively. The structure of self-employment by age shows that the majority of self-employed is in the middle-age bracket. In terms of the evolution of the series, the proportion of middle-age self-employed is increasing whereas the proportion of young and old self-employed is declining.

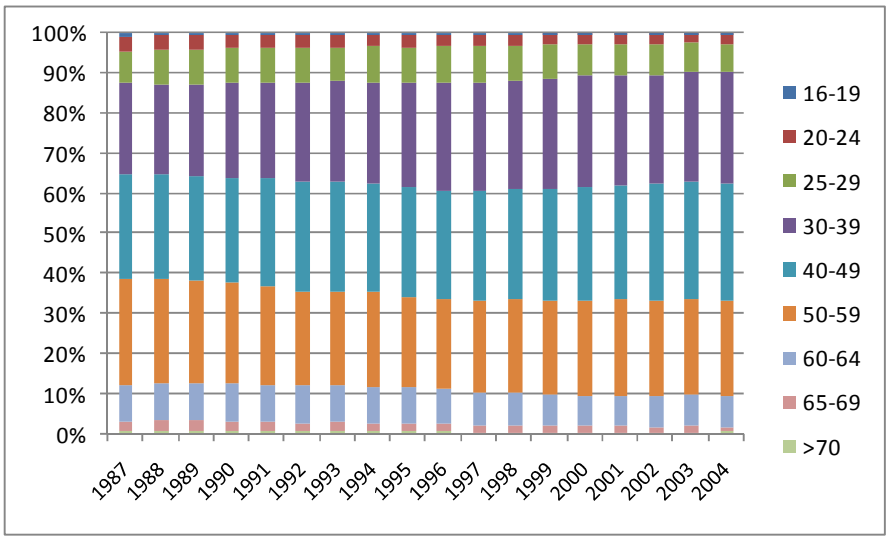

Fig.17. Distribution of self-employment by age

Data Source: I.N.E., Spanish Labour Force Survey

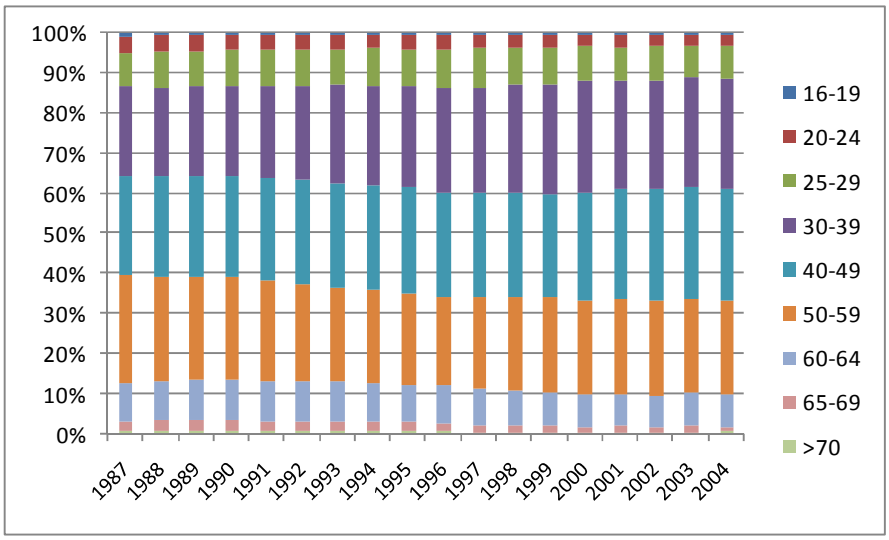

Fig.18. Distribution of own-account workers by age

Data Source: I.N.E., Spanish Labour Force Survey

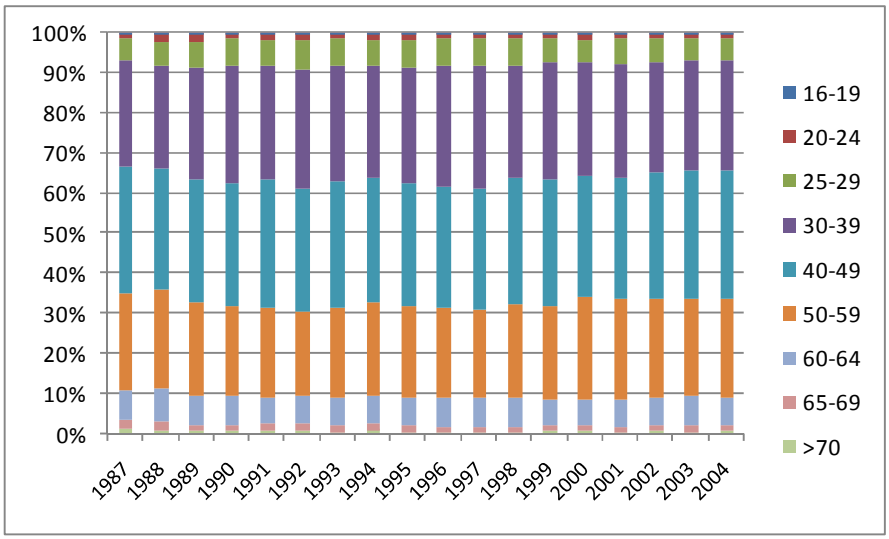

Fig.19. Distribution of employers by age

Data Source: I.N.E., Spanish Labour Force Survey

4.2.4 Self-employment by Educational Attainment

Some researchers postulate that specific knowledge of products and production factors markets, of technology, etc is needed to start up a business. In short, innate or acquired skills are needed to start a business. From this perspective, and in the absence of more suitable proxies, the educational level of the self-employed can prove to be a good indicator to test, in some way, the veracity of this statement. Figures 20 to 25[8] show the notable differences in the breakdown

[8] The methodological changes introduced in the classifications by educational level make it impossible to perform comparisons with data from 1999 onwards. The figure therefore only shows the evolution of the series until 1999.

of self-employed workers depending on educational level. Figures 20 to 22 present the rates of the self-employment, own-account workers and employers by educational level, respectively. In the self-employment case, the rate is above average in the low skill-levels, whereas it is below average for the highest levels of education. Traditionally, uneducated own-account workers were prevalent. However this is not the case for entrepreneurs with employees, where the tertiary level is among the predominant ones.

Throughout the period, the number and rate of self-employment increased in the secondary and tertiary levels, whereas they decreased in the cases of primary education and no education. The number of own-account workers with tertiary education increased by 87.27% whereas the rate declined by 7.82%. It is worth nothing that in the case of employers, the number and the rate rose in all levels, with the highest increase in number being in technical secondary education level (596%) and the highest increase in rate in the no-education level (195.27%).

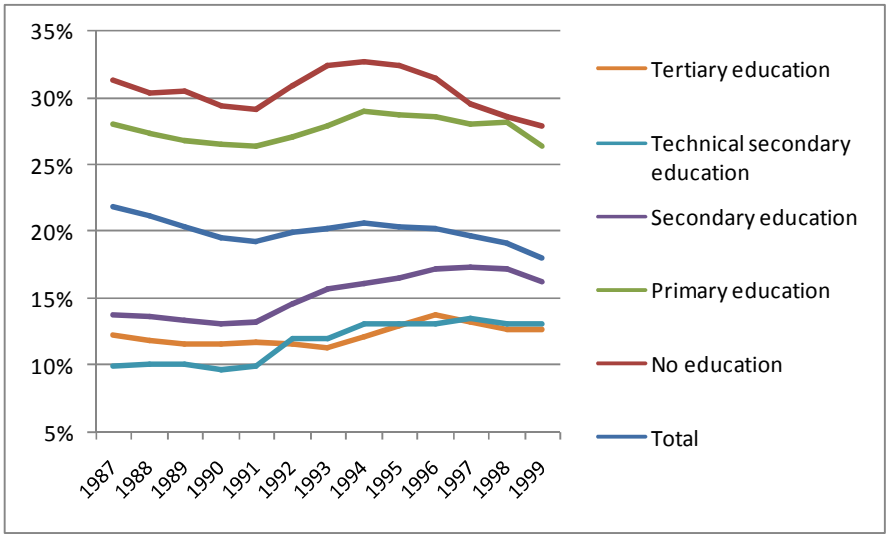

Fig.20. Evolution of self-employment rate by educational attainment

Data Source: I.N.E., Spanish Labour Force Survey

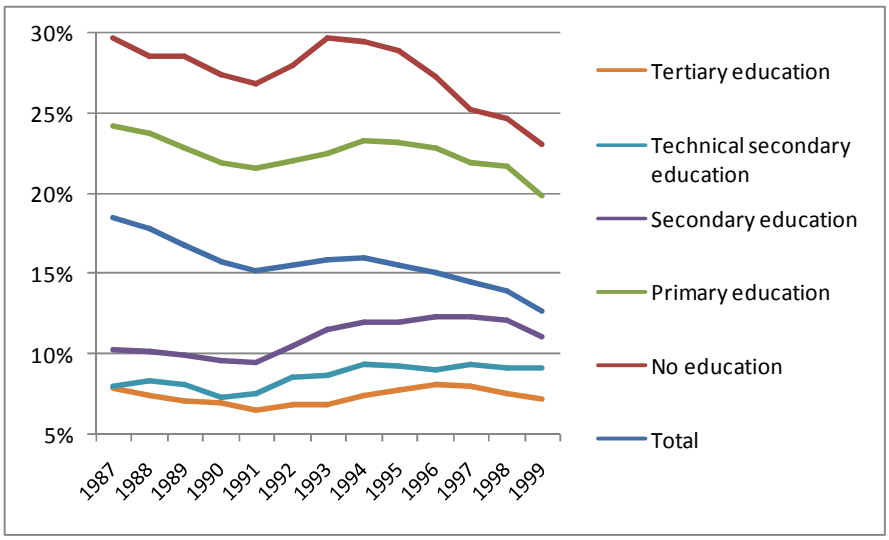

Fig.21. Evolution of own-account workers rate by educational attainment

Data Source: I.N.E., Spanish Labour Force Survey

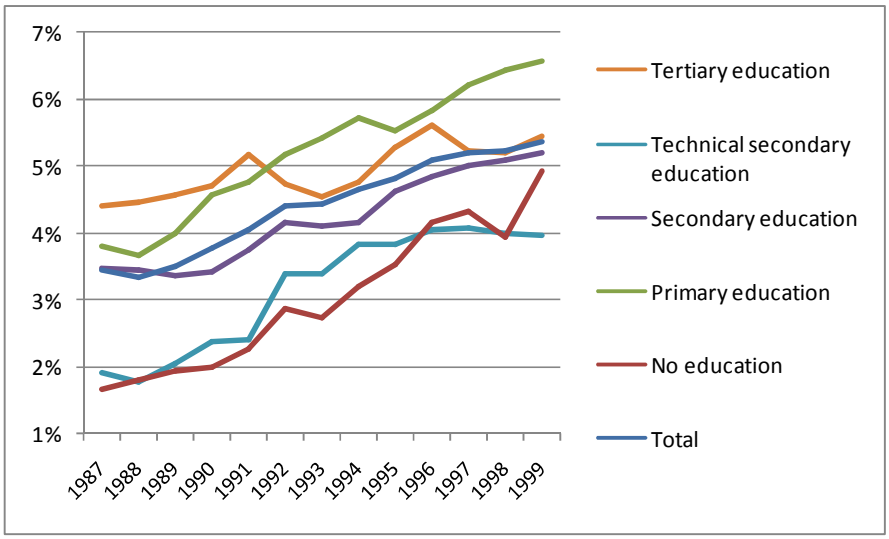

Fig.22. Evolution of employers rate by educational attainment

Data Source: I.N.E., Spanish Labour Force Survey

In Figures 23 to 25, showing the distribution of self-employment, own-account workers and employers by educational attainment, the majority of self-employed, particularly in the case of own-account workers, can be seen to be low-skilled workers.

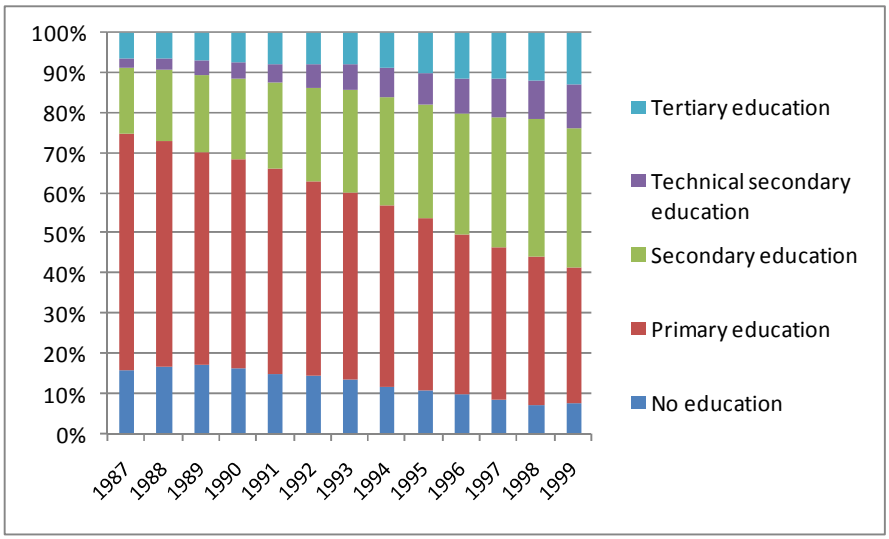

Fig.23. Distribution of self-employment by educational attainment

Data Source: I.N.E., Spanish Labour Force Survey

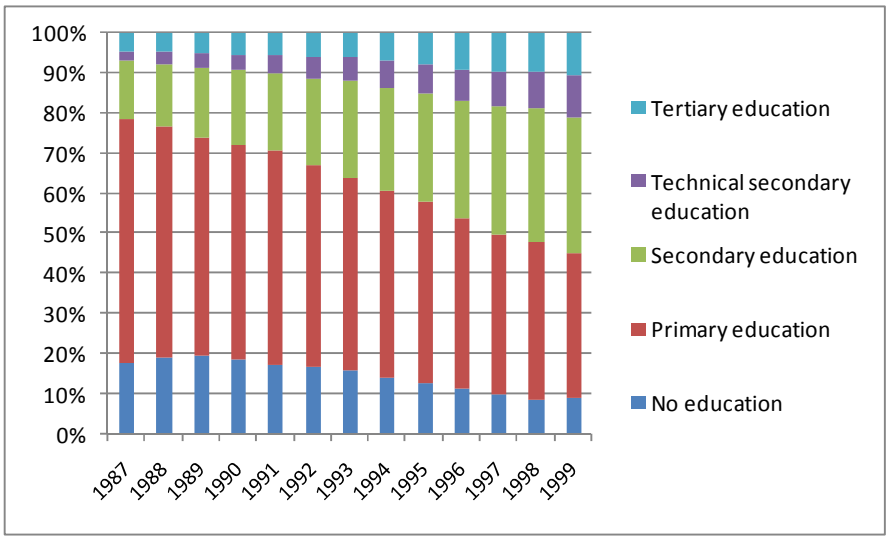

Fig.24. Distribution of own-account workers by educational attainment

Data Source: I.N.E., Spanish Labour Force Survey

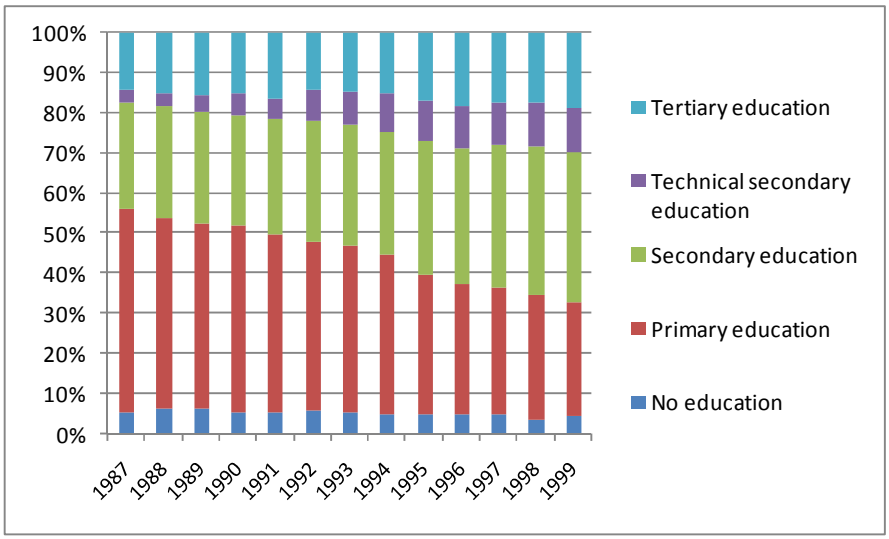

Fig.25. Distribution of employers by educational attainment

Data Source: I.N.E., Spanish Labour Force Survey

The ongoing change in the educational pattern is worth noting. Low-skilled individuals are being replaced by high-skilled ones, particularly in the case of self-employment without employees. This may be representative of a change in the skills needed to be self-employed.

4.2.5 Self-employment by Business Sector

Finally, Figures 26 to 28 show the evolution of self-employed people, own-account workers and employers by business sector. In spite of the ongoing decrease in the rate of primary sector self-employment, it continues to be the sector with the greatest percentage of self-employed workers, 47.71% on average (44.19% in the case of own-account workers and 3.51% in the case of employers). On the contrary, the self-employment rate in the industrial sector represents on

average 9.26% of the sector workforce (5.22% in the own-account case and 4.04% in the employer case). Finally, in both the services and construction sectors, the participation rates are relatively stable and present a continuous decline, except for the case of entrepreneurs with employees, that rose by 36% and 71.86% respectively in the period in question.

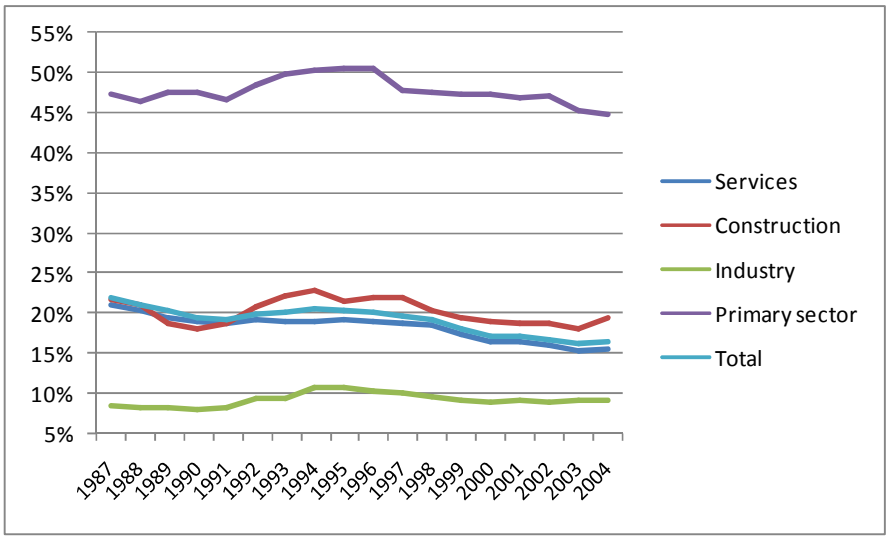

Fig. 26. Evolution of self-employment rate by business sector

Data Source: I.N.E., Spanish Labour Force Survey

Fig. 27. Evolution of own-account workers rate by business sector

Data Source: I.N.E., Spanish Labour Force Survey

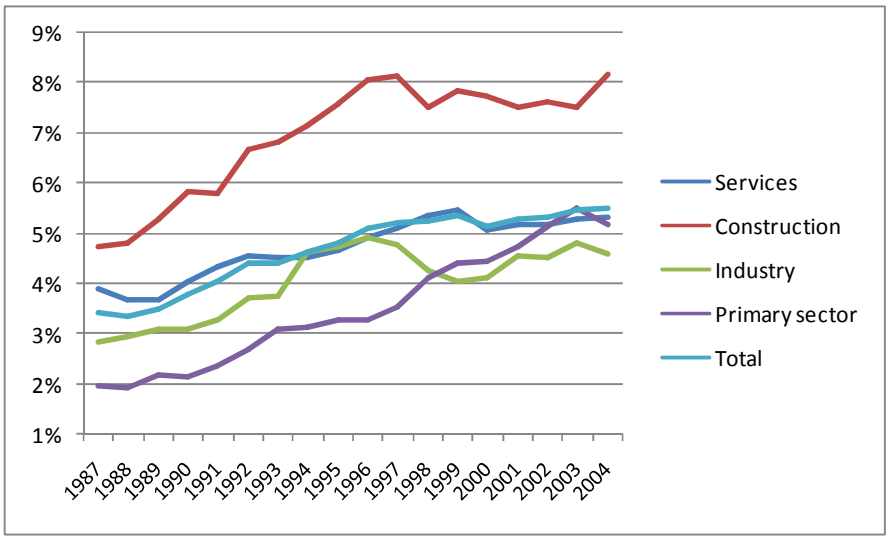

Fig. 28. Evolution of employers rate by business sector

Data Source: I.N.E., Spanish Labour Force Survey

Figures 29 to 31 show the distribution of self-employment, own-account and employers by business sector. In these three cases, the largest share of self-employed people worked in the services sector, which accounted for 56.97% of all self-employed, 60.41% of all employers and 56% of all own-account workers on average. The second position considers the primary sector in the self-employment and own-account cases, with a proportion of 22% and 27% on average respectively, whereas in the employer case, the services sector is followed by the industrial sector, with 18.41% on average of entrepreneurs with employees. Finally, it is worth noting the proportion of the primary sector out of total entrepreneurship where there is a declining trend in all cases, whereas it is increasing in the services sector.

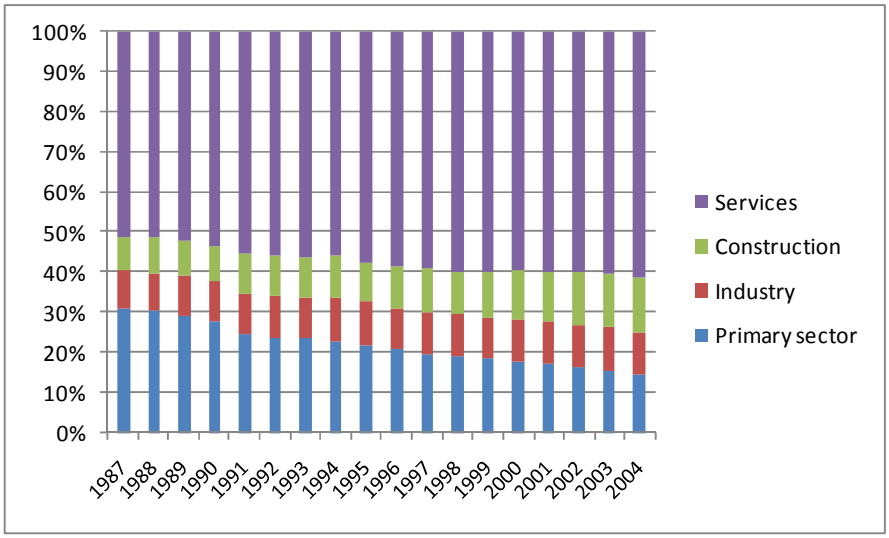

Fig. 29. Distribution of self-employment by educational attainment

Data Source: I.N.E., Spanish Labour Force Survey

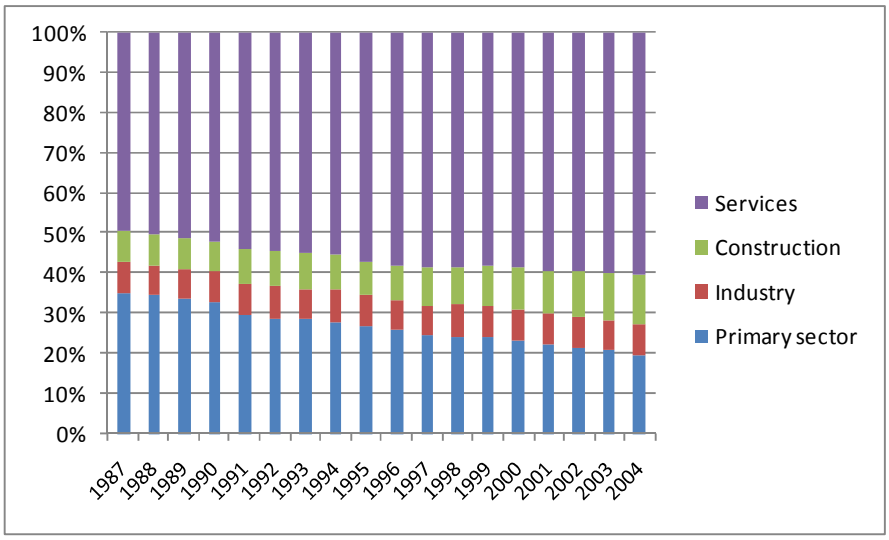

Fig. 30. Distribution of own-account workers by educational attainment

Data Source: I.N.E., Spanish Labour Force Survey

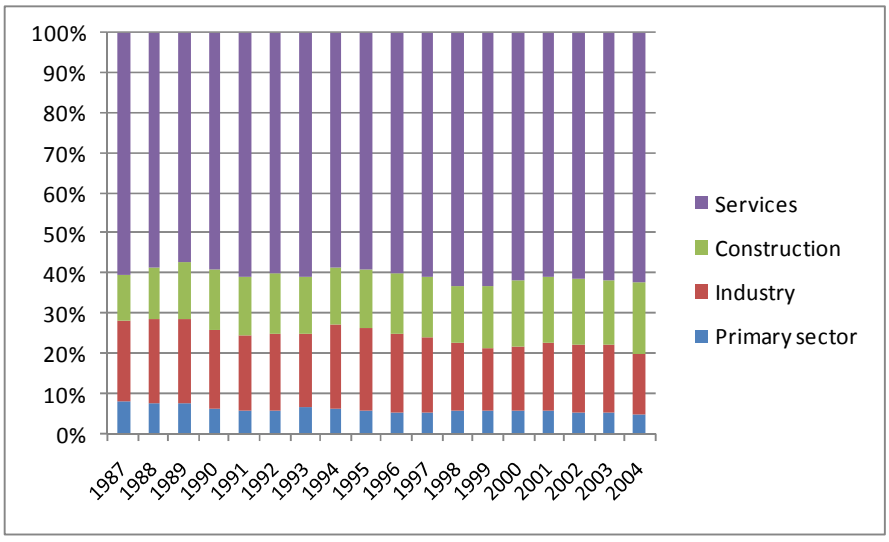

Fig. 31. Distribution of employers by educational attainment

Data Source: I.N.E., Spanish Labour Force Survey

4.3 Conclusions

In summary, the principal findings derived from the analysis of European and Spanish self-employment data can be enumerated as follows.

In all EU member states there are higher proportions of men than women in self-employment, with the gender gap being higher in the case of employers. However, the evolution of these series suggests that this gender differential is progressively declining.

The majority of self-employed are in the middle-age bracket. The evolution of the series shows that the tendency is to increase the medium age of the self-employed, so that the proportion of young and middle-age self-employed is declining whereas the proportion of older self-employed is increasing.

In the case of education, the analysis is not so homogeneous between countries and occupations. In countries such as Belgium, Germany and Spain, low-skilled individuals are being substituted by high-skilled ones, particularly in the case of self-employment without employees. This may be representative of a change in the skills needed to be self-employed.

Within the EU, the largest share of self-employed people work in the services sector on average, which accounted for 59.71% of all self-employed, 64.06% of all employers and 58.75% of all own-account workers in 2004.

Turning to the Spanish case, the fall in the rate of self-employment has been due to the decrease in the rate of participation of the own-account workers, a reduction that is not only attributable to the decline in the relative importance of the primary sector. The information likewise suggests that there are factors that heighten the low female participation. Despite the predominance of low-skilled own-account workers, this trend also seems to be inverted. Finally, the low self-employment rate among young workers and the high rate among the older groups are indicative of the possible existence of factors specifically affecting these age brackets.

Even though the aforementioned tables and figures have usefully illustrated the evolution in self-employment numbers and rates, they are unable to tell us anything about the process underlying this evolution. In the case of a decrease of the self-employment rate, it could potentially be caused by a decrease in the flows into self-employment, while the outflows remain unchanged. It could equally have been caused by an increase in the outflow rate, while inflows remain relatively stable. To investigate changes in these processes, longitudinal data is necessary so that individual movements into and out of self-employment can be traced over time.

This all indicates that research is needed into the specific factors regarding self-employment transitions and duration in Spain and Europe, and to try to the influence of factors such as age, gender, activity sector or education, apart from other factors regarding the economic environment. This task constitutes the central core of this study.

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Part II
Transitions into Self-employment

Chapter 5. The Emergence of New Entrepreneurs in Europe[1]

5.1 Introduction

Having faced high and persistent unemployment rates for two decades, it is hardly surprising that European entrepreneurship policy has always been biased in favour of promoting transitions from unemployment to self-employment, which has been used as an instrument of the active labour market policy.[2] This appears to be in line with the usual politicians' view that a higher rate of self-employment promises innovation and growth for the economy. However, as richer countries present lower self-employment rates, the contribution of a higher self-employment rate with the economic growth is not such an obvious conjunction (see Figure 1).[3]

It is clear from a comparison of the self-employment rate and GNI *per capita* in the OECD countries that richer countries have lower self-employment rates (excluding the agricultural sector). For example, self-employment rates in Greece and Portugal are the highest in the EU, but their GNI *per capita* are the lowest. The EU's richest countries, Denmark, Ireland, and the Netherlands, have much lower self-employment rates.

There are several reasons for why it is not appropriate to associate a large number of self-employed in an economy as a sign of economic progress. On the one hand, the high number of self-employed in an economy may, instead, be associated with the existence of certain barriers to the access to other types of employment in such a way that self-employment sometimes becomes a means to avoid regulations.

Furthermore, as mentioned above, entrepreneurship promotion programmes have been subordinated to the objectives of the active labour market policies, so that incentives, guarantees or even tax reductions were oriented to increase the rate of self-employment as a way to reduce unemployment. However, the introduction of these incentives alters the occupational choice of individuals. Thus, the occupational decisions from long-term unemployed will be more sensitive

[1] This work benefited from my research stay at the *Max-Planck-Institut für Ökonomik* in Jena in 2005 where an earlier version of this chapter was presented. In 2006, drafts of this chapter were also presented in Valencia, at the IVIE-FBBVA Seminar on Capital, Growth and Productivity, and in Punta Umbría (Huelva), at the Workshop on Entrepreneurship Statistics, sponsored by the *Instituto de Estadística de Andalucía*. I wish to thank Javier Álvarez, André van Stel, José Ignacio García and Simon Parker, for their comments on earlier drafts. I gratefully acknowledge support from the grant provided by the *Fundación Centro de Estudios Andaluces* for the project "*Función empresarial: Determinantes de oferta en clave comparada y distorsiones del sistema fiscal*", REF. ECO-15/2005. Usual disclaimer applies.

[2] As pointed out in Chapter 1, there are two channels through which self-employment can contribute to reduce unemployment. First, there is the direct effect of removing a newly self-employed individual from the unemployment. There is the indirect effect of eventual job creation by entrepreneurs who succeed in running enterprises that require outside labour.

[3] See Blanchflower (2004).

to economic incentives than those choices of well-off individuals. Therefore, if long-duration unemployment tends to be concentrated among the worst individuals, an adverse selection problem can emerge among self-employed people.

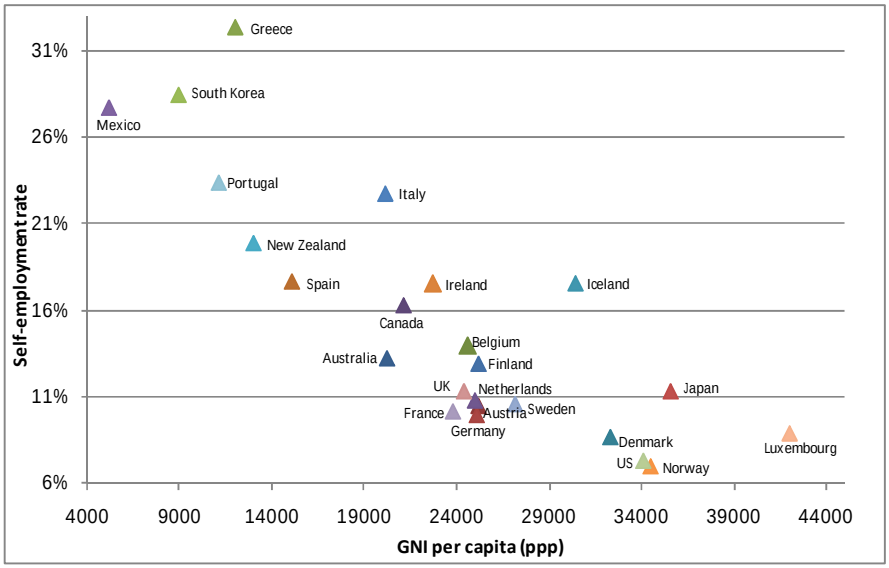

Fig. 1. Self-employment rates and GNI *per capita* in OECD countries, 2000 (ex-communist republics excluded)

Data Source: International Labour Office, Labour Force Survey and World Bank. GNI *per capita*, (US$, purchasing power parities)

Given that the main objective of the entrepreneurship promotion policy was to incentive transitions from unemployment to self-employment, the study of self-employment determinants became an exhaustively explored topic, searching for useful propositions, that is, some guidelines for the design of this policy. In this sense, the decision to become self-employed within the framework of utility maximization was the most common approach to the analysis of the self-employment determinants.

However, most of these studies ignored the existence of different initial status (unemployment or paid employment) and final status (own-account self-employed or employers with employees).[4] If should be noted that if the instruments for the promotion for self-employment were based on the analysis of transitions to self-employment ignoring the existence of different starting and arrival states, prescriptions might be biased in favour of a certain type of transition.

In other terms, let us suppose that the determinants of the transitions from unemployment to self-employment were different –or even contrary- from those affecting a transition from paid-employment. In that case, the use of a unique receipt might be beneficial for one kind of transition and harmless –or even harmful- for the other kind.

Hence, for an adequate entrepreneurship policy design, it becomes necessary to check the possible existence of factors with varying –or even in contradictory impact- on each transition, that is, to test if each transition has its own receipt.

[4] See Carrasco (1999) among other exceptions.

In this sense, the main aim of this chapter is to present an omnicomprehensive study of the determinants of self-employment, considering all possible combinations between initial and final states. To carry out this task, new empirical evidence is presented on the basis of discrete choice models estimates in which the probability of becoming an entrepreneur depends on a set of individual characteristics and economic factors. To this end, micro data for the European Community Household Panel (ECHP), covering the period 1994-2001 is used. Our results i) might contribute to the improvement of the effectiveness of the European entrepreneurial promotion policy, helping to design different instruments for different transitions, and ii) reflect the existence of country specific effects which, far from the scope of this work but unquestionably interesting for future research, stress the need to search for the underlying determining factors.

Although our approach is similar to other empirical works devoted to the analysis of transitions to self-employment, it differs from those, at least in two ways. First, it looks for the existence of different determining factors of each type of self-employment in order to contribute to the development of more precise entrepreneurial policies. Second, the availability of a EU-specific full panel survey allows us to control for unobserved heterogeneity and to test the possible existence of idiosyncratic factors.

The organization of this chapter is as follows. Section 2 is dedicated to a very brief theoretical discussion. Section 3 reviews the literature and Section 4 describes the data. In section 5, the empirical framework is described and section 6 presents the main empirical results of this chapter. Finally, a discussion about the concluding remarks of the chapter is contained in section 7.

5.2 A Brief Theoretical Discussion

Why do some individuals choose to become entrepreneurs and what characteristics create successful ones? What implications does this aspect of occupational choice have for income distribution and for the distribution of talents across occupations?[5] Most of the past work on entrepreneurship has been strictly empirical[6], but it is useful to have theory to guide the empirics and to assist in interpretation of the results. For example, Otani (1996) examines the theoretical relation of firm size to entrepreneurial ability. Holmes and Schmitz (1990) discuss specialization by arguing that certain agents specialize in entrepreneurial skills. The work developed by De Meza and Southey (1996) who build a model where new entrants are excessively optimistic is also interesting. Finally, Lazear (2003) proposes an interesting model where individuals with balanced skills are more likely than others to become entrepreneurs. This model provides implications for the proportion of entrepreneurs by occupation, by income and yields a number of predictions for the distribution of income by entrepreneurial status.

However, as most previous studies on self-employment and entrepreneurship, the theoretical approach underlying this chapter is based on the standard theory on-the-job search[7] (which does not include the option of self-employment) where the individual chooses the labour market state that yields the highest expected utility. Thus, a model of a rational agent which enters into self-employment at time j if the expected utility associated to this occupation $E\left(U_{ij}^{SE}\right)$ exceeds the

[5] Murphy *et al*. (1991) utilized the term "allocation of talent" by their revealing analysis among wage-employment.
[6] This literature is reviewed in Section 3.
[7] See Mortensen (1986).

expected utility of paid-employment $E\left(U_{ij}^{W}\right)$[8] is considered. The fact that individuals receive no utility from being unemployed is also considered. Consequently, several (and possibly different) factors will affect their relative returns from self-employment versus wage work or unemployment, which is discussed in section 3.

5.3 Determinants of Entry into Self-employment[9]

Over the last two decades, there has been an expansion of the research on the economics of entrepreneurship and particularly on self-employment. Some relevant references are Acs and Audretsch (1988), Evans and Jovanovic (1989), Evans and Leigthon (1989a, 1989b), and Fairlie and Meyer (1996) for the US; and Blanchflower and Oswald (1990, 1998) for the UK. The extensive review of the determinants of self-employment and entrepreneurship presented by Parker (2004) is also interesting. Focusing on the Spanish case, Alba-Ramirez (1994), and Carrasco (1999) report interesting empirical studies.

As pointed out above, most previous studies on self-employment consider a model where a rational agent enters into self-employment if the expected utility associated to this occupation exceeds the expected utility of paid-employment. Some factors that affect participation in entrepreneurship are discussed below.

First, a higher value for earnings as a self-employed should, *ceteris paribus*, increase the utility of self-employed relative to paid-employed work and make it more likely that an individual chooses to be self-employed. However, empirical results fail to obtain a clear positive effect from relative earnings.[10]

Furthermore, one possible impediment to becoming an entrepreneur is simply the lack of capital. An approach in the literature has emphasized the role of liquidity constraints in the decision of starting-up a new business.[11] This hypothesis has been supported by most (but not all) existing empirical studies. Using US data, Evans and Jovanovic (1989), Evans and Leighton (1989b) and Fujii and Hawley (1991) find that the probability of self-employment increases with the individual's net worth. Similarly, Holtz-Eakin *et al*. (1994) find that windfalls in the form of inheritance and family gifts also increase this probability. On the other hand, Gill (1988), reports a significant but negative effect over the likelihood of participation in entrepreneurship. Levenson and Willard (2000) find that just a tiny proportion of entrepreneurs do not get bank loans (and some of these will be weak projects). Finally, Hurst and Lusardi (2004) find a significant relationship between wealth and entrepreneurship participation only for the top 20% of the wealth distribution, which is *a priori* the least affected by the lack of capital. By using British data, the hypothesis has been tested by several researchers, most of whom report positive effect of the presence of capital. As illustrative examples, see Rees and Shah (1986), Dolton and Makepeace (1990), Clark and Drinkwater (2000), and Parker (2003). Furthermore, Blanchflower and Oswald (1998) find similar results to those obtained by Holtz-Eakin *et al*. (1994) using British data. For other countries, Bernhardt (1994) estimated positive and significant effect of the presence of capital for a sample of Canadian white, full-time non-agricultural

[8] See for example Rees and Shah (1986), Evans and Jovanovic (1989), Evans and Leigthon (1989b) or Taylor (1996).

[9] See Parker (2004) for an extensive and deeper review of the determinants of entrepreneurship.

[10] See Rees and Shah (1986), Taylor (1996), Gill (1998), Blanchflower and Oswald (1990) or Parker (2003).

[11] Parker (2002) surveyed this literature.

males. De Wit (1993) and De Wit and Van Winden (1989, 1990, 1991) reported insignificant positive effects using Dutch data. In recent works, Earle and Sakova (2000) reported negative effects using household data from six Eastern European transition economies; Johansson (2000), based on Finnish data from the Longitudinal Employment Statistics, observed how a higher level of wealth increases the transitions from wage-employment to self-employment and Grilo and Thurik (2004) supported the lack of significance of this variable across data from the EU-15 members. The works developed by Lindh and Olhsson (1996) for Sweden, Carrasco (1999) for Spain and Georgellis and Wall (2000)[12] for Germany are also interesting.

The role of human capital (age, experience, and education) has also been explored across entrepreneurial literature. One might expect older and/or more experienced people to become entrepreneurs[13] with a higher probability than younger and/or less experienced individuals, for the following reasons among others: i) human (and physical[14]) capital requirements of entrepreneurship are often unavailable to younger workers, ii) older individuals might choose self-employment to avoid mandatory retirement provisions sometimes found in paid-employment, and iii) older people have had time to build better networks, and to have indentified valuable opportunities in entrepreneurship (Calvo and Wellisz, 1980).[15] As regards the influence of previous experience in labour market, it becomes necessary to distinguish between different types of experience. Thus, previous self-employment experience may indicate the accumulation of business skills. However, it also may suggest lack of these business skills and past failure experiences.[16] Regarding previous paid-employment, the greater the labour experience, the more human capital one has. However, the greater the labour experience, the more outside options one also has, and there is a higher probability that these options will compare favourably to self-employment. Consequently, expected results are unambiguous as well.[17] Finally, previous unemployment experience may result in skill depreciation or perhaps reflect a lack of business acumen which indicates a higher probability of failure. Also related with previous labour experience, Boden (1996) reported that employees of small firms (less than 100 employees) were more likely to switch to self-employment than employees of large firms, which may be indicative of (indirect) entrepreneurial learning. In this line, Storey (1994) argued that presumably larger firms offer fewer entrepreneurial role models. However, this negative relationship between the size of the firm and probability of switching into self-employment might also reflect more favourable working conditions in larger firms in terms of earnings and security to keep the job. Finally, regarding the linkages between entrepreneurship and education, either a negative or a positive relationship can be proposed. On one hand, more educated workers might choose occupations in which entrepreneurship is more common.[18] Furthermore, education could serve as a filter in such a way that the more educated tend to be better informed, implying that they are more efficient at assessing self-employment opportunities. Moreover, there are many opportuni-

[12] Using fourteen waves of the German Socio-Economic Panel.

[13] In fact, both variables are usually found to be positively associated with self-employment.

[14] Entrepreneurship may in fact not be an option for younger individuals because they will have had less time to obtain the capital needed to start a business.

[15] Thus, most empirical studies test if age has a non-linear effect on duration, by including both a linear and a quadratic term in the analysis.

[16] Evans and Leighton (1989b) estimated that previous self-employment experience had a positive and significant impact on the probability of white male Americans entering self-employment. This result is consistent with Jovanovic's (1982) dynamic selection theory that entrepreneurs learn about their abilities over time, which they do only from having engaged in entrepreneurship. See also Carroll and Mosakowski (1987), Van Praag and Van Ophem (1995), Quadrini (1999) and Lin *et al*. (2000).

[17] Evans and Leighton (1989b) estimated that previous employment had no effect on the probability of white male Americans entering self-employment.

[18] See Evans and Leighton (1989b), or Form (1985).

ties for self-employment in knowledge-based industries.[19] On the other hand, the skills that make "good" entrepreneurs are not necessarily those which result in the acquisition of formal education.[20]

As far as gender differences are concerned, females are still a minority of the self-employed workforce in all developed countries.[21] Along the same line, it is now well established that self-employed females earn less on average than self-employed men (or even employees of either gender).[22] Focusing on its causes, it might be argued that female self-employed workers have fewer years of experience than female employees or males[23], or that they tend to operate on a smaller scale of business.[24]

Focusing on the importance of personal characteristics (marital status, children) and family circumstances, one might expect a higher number of married people to be entrepreneurs compared to single people. The justifications are clear: spouses are a further way to overcome the existence of capital constraints; once in business, spouses can work at below-market rates, be trustworthy workers (Borjas, 1986), or offer emotional support. On the other hand, married people will be less willing to take risks. Broussard *et al*. (2003) found that the self-employed in the US have between .2 and .4 more children compared to the non-self-employed. The authors argue that having more children can increase the likelihood that an inside family member will be a good match at running the business. With respect to the dependence of the family background of an individual, the argument is that parental labour market status may act as a proxy for intergenerational transfers of wealth, education, entrepreneurial human capital and ability.[25]

Other issues of interest are the existing relationships between entrepreneurship and ethnic minorities or immigration. In this sense, empirical studies observed different self-employment rates across different ethnical and racial groups.[26] Thus, Hout and Rosen (2000) found that the offspring of self-employed fathers are more likely than others to become self-employed and argued that the historically low rates of self-employment among African-Americans and Latinos may contribute to their low contemporary rates. Moreover, self-employed minority workers tend to earn less on average than their white self-employed counterparts.[27] Focusing now on immigration[28], it has been suggested that immigrants are likelier than "natives" to be entrepreneurs. It might be argued that those who wish to immigrate temporarily in order to accumulate wealth see in entrepreneurship the most effective means to this end. Besides, immigrants turn to entre-

[19] See Keeble *et al*. (1993).
[20] See Casson (2003).
[21] See Becker (1984), Evans and Leighton (1989a), Aronson (1991), Devine (1994), Fairlie and Meyer (1996) for an analysis in the US, Cowling (2000) for the EU, Cowling and Taylor (2001) for the UK, or Georgellis and Wall (2000) for Germany.
[22] See Becker (1984), Haber *et al*. (1987), Devine (1994), and Aronson (1991).
[23] See Aronson (1991) or Lee and Rendall (2001).
[24] See Aronson (1991), or Carter *et al*. (1997). These last authors argued, however, that this did not seem to be attributable to females being disadvantaged with respect to access to credit.
[25] Laband and Lentz (1983), Evans and Leighton (1989b), Lentz and Laband (1990), De Wit and Van Winden (1989, 1990), Taylor (1996), Ahn and Ugidos (1996), Kremer (1997), Fairlie (1999), Hout and Rosen (2000), Dunn and Holtz-Eakin (2000), or Fernández and Rogerson (2001) are illustrative examples of the previous assumption. They find that parents' self-employment experience have a strong and positive effect on the probability of becoming self-employed.
[26] See Clark and Drinkwater (1998), Fairlie and Meyer (1996), Fairlie (1999), and Fairlie and Meyer (2000).
[27] See Borjas and Bronars (1989) or Flota and Mora (2001).
[28] As examples of this literature, see Light (1984), Borjas (1986), Brock and Evans (1986), Borjas and Bronars (1989), Portes and Zhou (1996) and Lofstrom (2002) among others.

preneurship as they are disadvantaged with respect to access to paid-employment. In this sense, language difficulties, discrimination, or possession of non-validated foreign qualifications seem to be the main causes. Thus, Fairlie and Meyer (2003) found for the US that self-employed immigrants did displace self-employed native non-blacks.

The effect of the receipt of any type of unemployment benefits on the probability of becoming self-employed is also an interesting issue. It is a well-known fact that the receipt of these benefits reduces the probability of entering employment (self-employment included).[29] However, the controversy appears when we try to interpret this result. Is it due to a disincentive effect of benefits or to their role as a proxy for the attachment of the individual to the wage labour market? On the other hand, if we focus now on the effect of other government benefits such as retirement ones, Blau (1987) and Robson (1998b) present some evidence supporting the notion that higher state retirement benefits promote self-employment.

The correlation between cyclical variables (such as unemployment or GDP rates) and self-employment has also been widely examined in the literature. However, the theory provides an ambiguous prediction. The "recession-push" theory supports the idea that unemployment reduces the opportunities of gaining paid-employment and the expected gains from job search, which "pushes" people into self-employment.[30] To put this in perspective, when economic conditions are bad, the supply of self-employment increases. This theory is suggestive of a positive relationship between self-employment and unemployment. The majority of time-series studies support this hypothesis.[31] In contrast, most cross-section econometric studies appear to support the "prosperity-pull" hypothesis.[32] At times of high unemployment, the products and services of the self-employed face a lower market demand. This reduces self-employment incomes and also possibly the availability of capital, while increases the risk of bankruptcy. Thus, individuals are "pulled" out of self-employment. At the same time, self-employment may become riskier because if the venture fails, it is less likely that the self-employed worker can find a job in paid-employment. As a result, a negative relationship between self-employment and unemployment is suggested. What apparently complicates the story, however, are the mixed results generated by those panel data studies that combine cross-section and time-series elements.[33] Furthermore, in the same sense, there are recent works trying to conciliate the existing results in the literature

[29] Carrasco (1999) observes how unemployment benefits affect negatively both transitions from unemployment to paid-employment and to self-employment, but the effect is stronger on the probability of switching into self-employment.

[30] Binks and Jennings (1986) propose a secondary and complementary effect. Firms close down in recessions. Hence the availability and affordability of second-hand capital equipment increases, reducing entry barriers.

[31] Harrison and Hart (1983), Foreman-Peck (1985), Binks and Jennings (1986), Hudson (1987) and Hamilton (1989) are UK examples. US examples include Highfield and Smiley (1987), Ray (1975), Steinmetz and Wright (1989), Hudson (1989) and Audretsh and Acs (1994). Other examples include Bögenhold and Staber (1991), Meager (1994), Storey (1991, 1994), Robson (1991, 1996, 1998a, 1998b); Black *et al*. (1996), Parker (1996), Cowling and Mitchell (1997), Storey and Jones (1987), Foti and Vivarelli (1994), Georgellis and Wall (2000); Lin *et al*. (2000), Cullen and Gordon (2002); Acs *et al*. (1994), and Parker and Robson (2000).

[32] See Hamilton (1989), Blanchflower and Oswald (1998), Taylor (1996), and Clark and Drinkwater (1998, 2000) for the UK; Van Praag and Van Ophem (1995), and Bruce (2000) for the US; Lindh and Ohlsoon (1996) for Sweden; Carrasco (1999) for Spain; and Reynolds *et al*. (1994) for an international picture.

[33] See Acs *et al*. (1994), and Parker and Robson (2000) for relatively large time-series dimension exercises, and Blanchflower (2000), and Schuetze (2000) for relatively large cross-section dimension exercises.

by providing new evidence on the relationship between business cycle and entrepreneurship such as Carre *et al*. (2002) and Audretsch *et al*. (2005).

Finally, for brevity and focus, some other remarkable determinants of entrepreneurship are excluded from this survey. These include social capital; health and disability; psychological factors; risk attitudes; regional factors; and government policy variables among others.[34]

5.4 Data

The data used come from the European Community Household Panel (ECHP).[35] The ECHP is a panel of households referring to the EU-15[36], covering the period 1994-2001. Every year all members of the selected households in each country are interviewed about issues relating to demographics, labour market, income and living conditions. The fact that a relatively long period of data is available allows us to study the influence of, not just personal and demographic characteristics, but also changes in the business cycle. The same questionnaire is used for all countries, which makes the information directly comparable.

The main problem faced when using this sample is how to distinguish between employers[37] and own-account workers.[38] This information is not directly available in our sample. However, the ECHP asks about the "number of regular paid employees in the local unit in current job. Thus, those self-employed with 0 employees are considered as own-account workers and employers otherwise.[39]

Despite the fact that women have lower self-employment rates, our samples include men and women aged 21 to 59. Workers in the agricultural sector are also excluded because this sector is

[34] See Parker (2004) for an extent review or these "other remarkable" determinants.

[35] ECHP data are used in accordance with the permission of European Commission-Eurostat; contract ECHP/2006/09, held with the *Universidad de Huelva*.

[36] France, Luxembourg and Sweden have to be excluded for different reasons. Firstly, during the period 1997-2001, own-account workers cannot be distinguished from employers in France due to the high number of missing values observed in the variable which enables such a distinction –number of regular paid employees in the local unit in current job- to be made. Regarding Sweden and Luxembourg, the information related to first waves is not collected, and missing values in relevant variables in other waves are presented. With respect to the UK, the ECPH offers two alternative surveys to obtain the information: i) the ECPH itself –just conducted during waves 1-3 for the UK- and ii) the BHPS. However, this second option does not make any distinction between those unemployed individuals and those out of labour force. Therefore, the analysis of the transitions from unemployment to self-employment cannot be performed by including this country. Tables A5 and A6 (Appendix A) present the distribution of observations across countries for our exercises, and Tables B1-B4 (Appendix B) summarizes the mean values of all self-employment entrants from full-time paid-employment and unemployment.

[37] The International Classification by Status in Employment (ICSE-1993) defines employers as those workers who, working on their own account or with one or a few partners, hold a self-employment job and have contracted one or more persons to work for them in their business as employee(s). The remuneration in the job is directly dependent upon the profits and the incumbents make the operational decisions affecting the enterprise.

[38] The International Classification by Status in Employment (ICSE-1993) defines own-account workers as those who, working on their own account or with one or more partners, hold a self-employment job and have not contracted on a continuous basis any employees to work for them.

[39] The criterion is not completely satisfactory as the information relating to the number of employees in the establishment is not available for some individuals who declare to be self-employed. However, the number of observations with this problem is small and their exclusion does not affect our results in a significant way.

structurally different from the rest of the economy.[40] Moreover, all self-employed individuals which are not full-time workers, that is, working under 30 hours per week, are also excluded from our final sample.[41] Regarding wealth variables, self-employment incomes are corrected by Purchasing Power Parity (comparability across countries) and Harmonised Consumer Price Index (comparability across time). Finally, as national unemployment rates are tested as determining factors of the entrants to self-employment, standardised unemployment rates for Europe need to be used to avoid comparability problems.

5.5 Econometric Framework

In order to provide a framework for the empirical analysis to study the determinants of labour market transitions, standard binary logit models and multinomial models (Maddala, 1983) are used. Thus, as usual, the probability of switching from the starting status to the final is assumed to depend on a set of observed individual characteristics and economic variables X at *t-1*.[42] Thus, an individual who is not self-employed at time *t-1* will be observed in self-employment at time t if the utility derived from self-employment exceeds that obtained from the starting status, that is, either paid employment or unemployment. Consequently, the probability of switching can be written as:

$$\begin{aligned}\Pr\left(Y_{i,t}=1\right)&=\Pr\left(S_{i,t}=1\mid S_{i,t-1}=0\right)=\\&=\Pr\left(U_{i,t}^{SE}>U_{i,t}^{SS}\;\middle|\;U_{i,t-1}^{SE}\le U_{i,t-1}^{SS}\right)=\\&=\Pr\left(\beta' X_{i,t-1}+u_i+\varepsilon_{i,t}>0\right)=F\left(\beta' X_{i,t-1}+u_i\right),\end{aligned}$$

where $Y_{i,t} = 1$ if the individual who was paid-employed (or unemployed) in period *t-1* becomes self-employed in period t, and and $Y_{i,t} = 0$ if the individual continues as paid-employed (or unemployed in the second specification) in period t.[43] $S_{i,t-1} = 1$ indicates self-employment in time t and $S_{i,t-1} = 0$ non self-employment in time *t-1*. The vector $X_{i,t-1}$ represents individual characteristics and economic conditions in the previous year to move into the new status, β is the associated vector of coefficients to be estimated, u_i is a disturbance term that includes the time-

[40] Firstly, the "agricultural industries", defined to include agriculture, hunting, forestry and fishing, are structurally different from the rest of the economy, in that self-employment is the natural employment status in these industries. Moreover, the reported earnings of self-employed farmers are well known to be notoriously inaccurate.

[41] We decided not to include part-time self-employed within our estimations. This is due to the fact that those individuals doing both jobs (self-employment and paid-employment) at the same time might face short-term problems in one of the two activities, and look for complementary incomes just for a specific period of time. That would make the determinants of the transitions of those individuals simultaneously doing both jobs different from the determinants of those who opt for a single activity. We believe, therefore, part-time self-employment needs to be independently analyzed. Clearly, this topic has already been included in our future research agenda.

[42] One of the wealth variables used is the annual capital and property incomes at the individual level lagged one year (period t-2). It is lagged due to the obvious endogeneity problem of the changes in wealth related to business start-up itself. In this sense, inheritance is also used in order to avoid endogeneity issues regarding wealth.

[43] The labour force status is observed once per year. Thus, if there are additional changes in status within the year, they are missed. It is assumed that there are just a few of these, and that their exclusion does not affect the results.

invariant unobserved heterogeneity (the person-specific effect)[44], $\varepsilon_{i,t}$ is a random error term representing not person-specific unobserved variables, and F(.) follows a logit distribution[45] with:

$$F(z)=\frac{\exp(z)}{1+\exp(z)}$$

Regarding the multinomial logit specifications, standard errors are adjusted for intra-individual correlation, and can be expressed as a function $\Pr(Y_{i,t}=k|X_{i,t-1})$ where k = 0, 1, 2, taking value 1 if the individual who was paid-employed (or unemployed in the second specification) in period *t-1* becomes employer, value 2 if the individual becomes an own-account worker, and 0 if the individual continues as paid-employed (or unemployed) in period *t*. The probability that individual *i,* experiences a transition from paid-employment (or unemployment) to employer is:

$$\Pr(Y_{i,t}=1)=\frac{\exp(\beta_1' X_{i,t-1})}{1+\exp(\beta_1' X_{i,t-1})+\exp(\beta_2' X_{i,t-1})}$$

And the probability that the individual switches from paid-employment (or unemployment) to own-account work is:

$$\Pr(Y_{i,t}=2)=\frac{\exp(\beta_2' X_{i,t-1})}{1+\exp(\beta_1' X_{i,t-1})+\exp(\beta_2' X_{i,t-1})}$$

5.6 Results

This section presents the main results of the empirical analysis of some transitions inside the European labour market by considering different states: unemployed, paid-employed and self-employed. Our results come from the estimation of some binary and multinomial logit models[46] using a sample from ECHP micro data. Transitions from paid employment to self-employment are first considered and the final state is distinguished in terms of transitions to own-account

[44] Assume we have two observations y_{i1} and y_{i2} of individual *i* taken at two different points in time. Consequently, u_{i1} and u_{i2} would not be independently distributed as they are measured for the same individual. They would tend to be quite similar. As a result, there is a tendency to underestimate the true error variation across all respondents and overestimate the statistical significance of our coefficients. That is the reason why u_i is assumed as a disturbance term that includes the time-invariant unobserved heterogeneity (the person-specific effect). In this sense, as we will work with random-effects models, this term will be assumed as a normally distributed random variable with mean 0 and variance u_n.

[45] The same exercises has been reproduced by using a probit specification of F(.). However, this estimation does not alter our empirical conclusions in any significant way.

[46] See Maddala (1983), Lancaster (1990), Jenkins (1995), Wooldridge (2002) or Greene (2003) for more details of this methodology. Well known applications to the participation or the survival in entrepreneurship of binary models are Evans and Leighton (1989b), Blanchflower and Oswald (1998), Bates (1990), and Cressy (1996). Multinomial logit framework also has been applied to entrepreneurship by several studies such as Barron and Mellow (1981), Cooper *et al* (1994), Proterba and Summers (1995), Earle and Sakova (2000) and Van Gelderen *et al* (2001). The advantage of this methodology is its simplicity as compared with that based on duration models.

worker and to employer. Secondly, the transitions from unemployment to self-employment are then studied and the final state distinguished as described above.

5.6.1 Transitions from Paid-employment to Self-employment

The theoretical argument of this sort of transitions is quite intuitive. Thus, in words of Lucas (1978), "there might exist a particular type of human capital which is productive both in managing and in working for others, and which can be acquired most effectively by working initially as an employee".

Following this idea, binary and multinomial logit models are estimated, where the probability of transition depends of a set of explanatory variables related to gender, human capital (age, experience, education), other personal characteristics (marital status, children), and family background (presence of self-employed relatives). Variables trying to measure incomes and trying to capture the business cycle are also included. We are interested in transitions from full-time paid employment to self-employment. From this initial sample, the subsample is selected of individuals who are full-time employees (defined as working 30 or more hours per week) during a particular year and either continue in the same state or switch into self-employment next year. Our final sample, after removing cases with missing data for any of the relevant variables, yields 180,705 observations of which 2,410 (1.33 percent) refer to transitions.[47]

The first two columns of Tables A1 and A2 (see Appendix A) show the logit estimation results of the probability of transition into self-employment, conditional on being in full-time paid employment. The last four columns report multinomial estimates in order to account for the differences in the transition probabilities to self-employment –own-account workers and employers-. Tables A7 and A8 (see Appendix A) also compare predicted probabilities for individuals with given characteristics of entering into self-employment from paid employment and from unemployment.[48] Finally, predicted probabilities of transitions for individuals living across different countries are presented in Table A9 (see Appendix A).

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[47] We refer here to the main exercise performed. However, a complementary one is also estimated where we control for individuals having born abroad, the size of the firm, job status and for those beneficiaries of inheritance, gift or lottery winnings. However, the inclusion of these variables implies to exclude Germany, The Netherlands and the UK from this complementary analysis. Tables A5 and A6 (Appendix A) present the distribution of observations across countries for these main and complementary exercises. Tables B1 and B2 (Appendix B) summarizes the mean values of all self-employment entrants from full-time paid-employment.

[48] These Tables summarise main results of the study of these transitions by providing a measure of the relative importance of some relevant explanatory variables included in our analyses such as gender, education, previous spell(s) as self-employed, liquidity constraints or business cycle among others. It therefore becomes necessary to clarify the probabilities estimated to explain its apparently low values. Firstly, it should be remembered that two consecutive periods are necessary in order to observe a transition. This means that there are seven pairs of consecutive periods to observe transitions during the eight observed spells. Secondly, the probability of switching from an initial state (paid employed or unemployed at t-1 period) to a final state (self-employed) at t period is estimated. Thus, all "non-transitional" observations add 0 values to the explained variable and just those "transitional" observations add 1 value to the dependent variable. This exactly means that an observed individual who does not switch across the considered period is adding seven 0 values to the dependent variable. However, an observed individual who switches within the fifth period –for instance– is adding three 0 values and just one 1 value to the dependent variable. Thus, 0 values are much more likely to appear and this fact "pushes down" predicted switching probabilities. Therefore, if we wanted to estimate the probability of switching throughout the considered period (and not for each pair of consecutive periods), just one observation (and not seven as we do) should be kept for each individual, taking the explained variable as a 0

We begin by considering the effects of gender differences.[49] The results show that males exhibit a higher probability of transition into self-employment.[50] In this sense, our result is quite consistent with previous entrepreneurial literature related with gender-differences. Foreigners are also observed to be as likely to switch as those not born abroad.[51]

The probability of entering self-employment from paid-work is found not to be homogeneously affected by age.[52] The probability of entering self-employment is significantly affected by this variable. In particular, we observe that the probability of entering self-employment increases with age. However, the negative quadratic term begins to dominate the positive linear term at roughly age of 34, indicating that past this age, people become more likely to opt out of entrepreneurship in favour of wage earning, *ceteris paribus*.

Our focus now moves to the personal characteristics and family background of the individuals. The marital status or the existence of children might *a priori* affect an individual's willingness to pursue risky ventures. Thus, those cohabiting individuals are more likely to become entrepreneurs, while the number of children under fourteen does not affect the transitions to self-employment. There is also evidence that the presence of self-employed relatives increases the transition probability.[53] This is in line with the view that intergenerational transfers of human capital and entrepreneurial ability increases the transition probability. Furthermore, while transitions to own-account work are significantly affected by the presence of relatives working either as an employer or own-account worker[54], just relatives working as employers –and not as own-account workers- significantly affect transitions to employer.[55]

value if this individual does not switch during the seven pairs of periods observed, and taking 1 if this individual does. However, by doing so, statistical problems are much bigger. In this sense, all "transitional" observations might be kept for all those individuals who switch. However, which observations should be kept for non-switching individuals? Is there any random way to do so? Does not it happen that we are missing all the information contained in all the observations we drop?

[49] A dummy variable is used in order to capture gender effects with pool data on men and women (this type of strategy can be seen for example in Blanchflower and Meyer (1994), or Blanchflower (2000). An alternative approach consists of running separate estimations for men and women (see Alba-Ramírez (1994), Rosa *et al*. (1996), Georgellis and Wall (2000), or Burke *et al*. (2002), among others).

[50] The probability if switching to self-employment decreases by 47.2% for females (see Table A7, Appendix A).

[51] The effect of whether or not an individual has been born abroad can be observed in Table A2 (Appendix A).

[52] It is straightforward to include standard functional forms among the explanatory variables. For example, in the model $\Pr(Y_{i,t}=1)=G(\beta_0+ \beta_1X_1+\beta_2X_1^2+...+ \beta_nX_n)$ the partial effect of X_1 on $\Pr(Y_{i,t}=1)$ is $\partial\Pr(Y_{i,t}=1)/\partial X_1=g(X\beta)(\beta_1+2\beta_2X_1)$ where $X\beta = \beta_0+ \beta_1X_1+\beta_2X_1^2+...+ \beta_nX_n$. It follows that if the quadratic in X_1 has a hump shape or a U shape, the turning point in the response probability is $|\beta_1/2\beta_2|$ (because $g(X\beta)>0$). As $\partial^2\Pr(Y_{i,t}=1)/\partial X_1^2=g'(X\beta)(\beta_1+2\beta_2X_1)^2 + g(X\beta)(2\beta_2)$, then $\partial^2\Pr(Y_{i,t}=1)/\partial X_1^2$ evaluated at the critical point $X_1=|\beta_1/2\beta_2|$ equals $g(X\beta)(2\beta_2)$. Thus, this turning point finds the maximum value of $\Pr(Y_{i,t}=1)$ if $\beta_2<0$ and the minimum value if $\beta_2>0$ (because $g(X\beta)>0$).

[53] The probability of switching to self-employment has a 104% increase with the existence of relatives working as employer, while the same probability increases by 34% with the presence of own-account worker relatives (see Table A7, Appendix A).

[54] Transitions to own-account work increases by 84 and 49% when relatives work as employer or own-account worker respectively (see Table A7, Appendix A).

[55] The probability of switching to employer increases by 97% when there exist a relative who works as employer (see Table A7, Appendix A).

Another interesting result relates to education variables. We do not just find that university studies are positively associated with the probability of self-employment with employees[56], but also that relatives with university studies are strongly associated with this probability.[57] This last result also agrees with the intergenerational transfers of human capital view commented above. In the case of transitions to self-employed without employees, none of these variables measuring formal education significantly affect transitions.

When the effect of the individual labour market experience is captured, those waged-workers belonging to the industrial sector have the lowest probability of switching to self-employment.[58] However, as far as the multinomial framework is concerned, those working for construction present the higher probabilities of becoming an employer across different sectors.[59] There is also evidence showing that paid-workers in small and medium firms are more likely to become employers[60] –but not to become own-account workers-, which may be indicative of (indirect) entrepreneurial learning in those firms. These results are fully consistent with those existing in the literature (Storey, 1994 and Boden, 1996). Consistent with the entrepreneurial learning interpretation, higher job status (supervisory or intermediate) is found to strongly increase the probabilities of switching to employer –but not to own-account work[61]-. On the other hand, this negative relationship between the size or the firms and the probability of switching into self-employment might also reflect more favourable working conditions in large firms. Consistent with this second interpretation, we also obtain that workers in the private sector, and those without indefinite contract are more likely to switch.[62] We also observe how the effect of the number of years of experience is different for those who switch to employer with respect to those who become self-employed without employees. Therefore, more experienced paid-employed are more likely to switch to employer as these transitions occur with less probability when the experience increases or decreases.[63] On the other hand, less experienced individuals are more likely to switch to own-account work.[64]

With regards to the number of working hours, this variable is seen to increase the probability of becoming an employer but does not significantly affect the transitions to own-account work.[65] We are tempted to link this result with psychological factors such as job satisfaction. In this

[56] Transitions from paid-employment to employer increases by almost 36% when paid-employees present higher education (see Table A7, Appendix A).

[57] Paid-employees with relatives with university studies are almost 27% more likely to switch to employer than those without (see Table A7, Appendix A).

[58] The probability of switching to self-employment decreases by 53% when the individual works for industry (see Table A7, Appendix A).

[59] Individuals working in construction present between 30 and 50% higher probabilities of switching to employer than those working for other sectors (see Table A7, Appendix A).

[60] The effect related to firm size can be observed in Table A2 (Appendix A). Thus, individuals working for firms with at least 20 employees are 71.5% less likely to switch to self-employment, than those working for smaller firms (see Table A8, Appendix A).

[61] The effect related to job status can be observed in Table A2 (Appendix A). Supervisors' probabilities of becoming employer increases by 147%, when compared with non-supervisors (see Table A8, Appendix A).

[62] The probability of switching to self-employment decreases by almost 50% when the individual has an indefinite contract (see Table A7, Appendix A).

[63] Transitions to employer decreases by 22 and 6% when job tenure increases and decreases (see Table A7, Appendix A).

[64] Transitions to own-account work increases by 63% when individuals present low job experience –about 2 years-, compared with those with high job experience –about 19 years- (see Table A7, Appendix A).

[65] Transitions to employer increases by 42% when individuals work about 50 hours per week, compared with those working 35 hours (see Table A7, Appendix A).

sense, it might be argued that those dissatisfied workers (e.g. as a result of an excess of the total number of working hours) are more likely to switch to a different state (self-employment included).

With respect to the presence of previous spells of self-employment, European workers are much more likely to become self-employed when they have been in self-employment in the past.[66] This is one of the most interesting results because it shows the absence of some kind of "stigma of failure" which might be expected from all those who were self-employed in the past, and "failed". On the other hand, it shows that this previous experience becomes knowledge and encouragement to try it again.

Let us now examine the possible existence of liquidity constraints. We find that the coefficients measuring work incomes, or initial assets –proxied by home ownership- present no effects.[67] However, the presence of capital incomes increases the transition to self-employment, whatever the final destination[68], while those receiving inherit, gift or lottery winnings are more likely to switch to employer[69], but transitions to self-employment without employees do not change in a significant manner. Hence, these results support the liquidity constraint hypothesis and might be explained by the fact that employers face higher needs of wealth than own-account workers.[70]

Regarding the business cycle effect, proxied by means of the unemployment rate[71], we do not find any evidence of this effect in transitions to employer. However, focusing on transitions to own-account work, a negative relationship is obtained between unemployment rate and the probability of transition, supporting "prosperity-pull" argument.[72]

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[66] Evans and Leighton (1989b) also find that the probability or entry is higher for those individuals who have had prior self-employment experience. See also Carroll and Mosakowski (1987), Van Praag and Van Ophem (1995), Quadrini (1999) and Lin *et al*. (2000). In particular, the probability of switching to employer for those who were employers in the past increases 962% while previous spells of own-account work increases this probability around 100%. Furthermore, those paid-employees with previous experience as own-account workers are 455% more likely to switch to self-employment without employees again, while if past experience within self-employment was as employer, the probabilities of entering own-account work increases by 188% (see Table A7, Appendix A).

[67] Home ownership might be important for the decision to start a new business as a house is often used as collateral when an individual wants to take a loan in a bank. Regarding the effects of wages for the time before an individual enter self-employment, they can go either way. On one hand, people with low earnings tend to enter self-employment as these earnings might be viewed as the opportunity cost of entering self-employment. In this case, high earnings would tend to depress the probability of becoming entrepreneur, since the individual has a lot to lose. However, wages earned prior entering self-employment can also be regarded as a measure of the labor market quality of an individual, indicative of the fact that an individual has good possibilities of discovering profitable business opportunities as an entrepreneur.

[68] Each additional €1,000 in this concept increase the probabilities of self-employment by 2.6% (see Table A7, Appendix A).

[69] This variable, which exactly measures the presence of inherit, gift or lottery winnings within the household, increases the probability of becoming employer by 90% (see Table A8, Appendix A).

[70] Carrasco (1999) also reports that becoming own-account worker is a decision less affected by income variables, when compared with the decision to become an employer.

[71] We attempted to control for business cycle conditions by using unemployment and GDP (both variables in levels and growth rates) obtaining similar results.

[72] Transitions to own-account work decreases by 84% when individuals face high unemployment rates –19.8% for instance- compared with those facing low unemployment rates –2.3% for example- (see Table A7, Appendix A).

Finally, when focusing on country specific effects, the fact that these dummies are significant might be interpreted as a sign of the presence of specific regional factors affecting the probability of entering self-employment. Thus, using Spain as the reference country, Italy is the country where the transition from wage-employment to self-employment is more likely while we find the lower probabilities across Austria, Belgium, Denmark, Germany, The Netherlands and the UK. As far as Finland, Greece, Ireland and Portugal are concerned, no statistically significant difference with Spain is found. However, when we distinguish between own-account workers and employers as final states, Italy and Finland emerge as the countries where transitions to employer are more likely, while transitions to own-account work are more common within Spain.[73]

5.6.2 Transitions from Unemployment to Self-employment

Compared to employed people, unemployed people suffer a double disadvantage in relation to business start-up finance: not only do they tend to have fewer savings, but they also tend to have greater difficulties in accessing commercial loans (Metcalf and Benson, 2000). In this line, self-employment policies based on positive discrimination in favour of unemployed would be justified. However, European self-employment programs for the unemployed seems to be a result of i) having faced high and persistent unemployment rates for two decades, and ii) the belief that higher rates of self-employment contribute to innovation and economic growth. According to this argument, the justification of these programmes is still unclear. In other words, there are still no strong reasons in the literature to believe in general that self-employment is preferable to conventional employment through subsidies[74], as an alternative to unemployment.[75] An obvious risk of these measures is that they can distort occupational choice, by encouraging non-skilled individuals to enter self-employment in the short term. However, these individuals may return to unemployment when economic conditions change or even, when incentives disappear.[76] Thus, new studies in the literature defend the idea that some unemployment stimulation programmes may actually be harmful (Van Stel and Storey, 2004).

Consequently, the existent relation between unemployment and self-employment is still a topic of controversy and interest in the literature.[77] During this exercise, our interest lies in transitions from unemployment to self-employment. Hence, the subsample is selected of individuals who are unemployed during a particular period and either continue as unemployed or switch into self-employment during the following period. After filtering, the final sample used for estimation has 11,393 observations where 666 (5.8 percent) of them refer to transitions.[78]

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[73] See Table A9 (Appendix A). France, Luxembourg and Sweden are excluded from this specification. These results must be cautiously interpreted, taking into account the distribution of observations across countries for our exercises (see Tables A5 and A6 –Appendix A-).

[74] Employment subsidies are active labour market programmes which help unemployed workers to be hired at an initially reduced cost for the employer.

[75] As exception, Carling and Gustafson (1999) suggest the increase in the supply of skilled unemployed workers as one of the justifications for the Swedish case. Thus, they find that the risk of re-unemployment is more than twice as high for the subsidized employment programme compared with the self-employment programme.

[76] In line with this argument of distortion of occupational choice, Carrasco (1999) reports that the probabilities of entering self-employment from unemployment exceed that probability for those paid-employees. However, she also observes that those individuals with unemployment experience in the past are more likely to exit self-employment, precisely into unemployment.

[77] See Reize (2004), and Audretsch *et al*. (2005).

[78] This refers to the main exercise performed. However, a complementary one is also estimated where we control for individuals having born abroad and for those receiving inherit, gift or lottery winnings. However, the inclusion of these variables means that Germany and The Netherlands and the UK are excluded from this complementary analysis. Tables A5 and A6 (Appendix A) present the distribution of

The first two columns of Tables A3 and A4 (see Appendix A) show the logit estimation results of the probability of transition into self-employment, conditional on being unemployed. In the last four columns, multinomial estimates are reported in order to account for the differences in the transition probabilities into self-employment (both for own-account worker and employer), using the same explanatory variables as in the previous exercise.[79] As commented above, Tables A7 and A8 (see Appendix A) also compare predicted probabilities for individuals with given characteristics of entering into self-employment from paid employment and from unemployment. Finally, predicted probabilities of transitions for individuals living across different countries are presented in Table A9 (see Appendix A).

Thus, consistent with that obtained by Carrasco (1999), our results show that the probability of switching from unemployment to self-employment is 13.3%, which is more than 5 times the probability of switching from paid-employment (2.4%).[80]

One of the most interesting results refers to the variable unemployment benefits. The fact that receiving unemployment benefits decreases the probability of entering employment (self-employment included) is well known.[81] This variable is strongly significant which seems to justify recent efforts aimed at allowing benefits to be used in an entrepreneurial adventure (subsidies capitalization). However, receiving benefits seems to be less harmful for those becoming employers –precisely those *a priori* facing higher needs of capital investment- than those switching to own-account work.[82] In this line, and also related with the possible existence of liquidity constraints, those unemployed individuals receiving capital and property incomes are more likely to switch to employer while the transitions to own-account work are not significantly affected by this variable.[83] On the other hand, initial assets, measured by the proxies home ownership and inherit, gift or lottery winnings, seem to increase the transitions to own-account work and not transitions to self-employment with employees.[84] In short, despite the different strength of variables measuring wealth, our results are consistent with the existence of liquidity constraints.

With respect to the effect of the endowments of human capital, the effect of age is consistent with that obtained for paid workers entering into self employment. Thus, the overall effect of age is nonlinear, i.e., there is a concave relationship between age and the probabilities of entering self-employment from unemployment (the turning point is reached when individuals are 36.7 years old). Other interesting result is related with education variables. In particular, there is

observations across countries for these main and complementary exercises. Tables B3 and B4 (Appendix B) summarizes the mean values of all self-employment entrants from unemployment.

[79] Obviously, variables such as the presence or absence of unemployment benefits, or the unemployment duration are now included and all those variables referred to the previous employment are excluded.

[80] See Table A7 (Appendix A).

[81] The effect of unemployment benefits on labour market transitions has been widely explored. Atkinson and Micklewright (1991) surveyed the literature. There are also several studies for Spain, such as Alba-Ramírez and Freeman (1990), Alba-Ramírez (1999), or Bover *et al*. (2002). With respect to its effects over the probability of self-employment, Carrasco (1999) studys the transitions from unemployment to employment, by distinguishing self-employment from paid-employment as final states. Thus, she observes how the probabilities to switch decreases when unemployment benefit is being received for both destinations.

[82] Transitions to own-account work decreases by 51% when unemployed receive benefits while transitions to employer decreases by 34% in the same situation (see Table A7, Appendix A).

[83] Each additional €1,000 in this concept increase the probabilities of becoming employer by 5.8% (see Table A7, Appendix A).

[84] The presence of inherit, gift or lottery winnings within the household, increases the probability of becoming own-account worker by 147% (see Table A8, Appendix A).

evidence that non-educated unemployed individuals have a lower probability of entering self-employment. Furthermore, this result is also significant when the final state is disaggregated in terms of employers and own-account workers.[85] Focusing now on the presence of previous spells of self-employment, the unemployed are more likely to become self-employed when they have been in self-employment in the past, which is a new sign about the absence of the "stigma of failure".[86] Finally, past spells as paid-employees reduce the probabilities of entering own-account work, while does not alter transitions to employer in a significant way.[87]

The dummies describing gender differences and personal characteristics indicate that males[88], married individuals and those with lower number of children under fourteen are more likely to switch into self-employment.[89] Foreigners are also seen to be as likely to enter self-employment from unemployment as those not born abroad.[90] When we try to capture the effect of intergenerational transfers of human capital and entrepreneurial ability, there is further evidence supporting that the presence of self-employed relatives increases the probability of transition.[91]

Another interesting result we observe is that unemployment duration decreases the probability of becoming self-employed.[92] With respect to the effect of the aggregated conditions, no evidence was found regarding the relationship between business cycle and this sort of transitions.

Finally, in regards to country specific effects, and again using Spain as the reference, Portugal is seen to be the country where the transition from unemployment to self-employment is more likely while lower probabilities were found across The Netherlands and Italy. However, when the distinction was between own-account workers and employers as final states, Spain is

[85] However, the probability of switching to employer increases 128% while the probability of switching to own-account worker increases 72% when the individual presents university studies (see Table A7, Appendix A).

[86] The probability of switching to employer for those who were employers in the past increases 332% while previous spells of own-account work increases this probability to around 118%. Moreover, those unemployed with previous experience as own-account workers are 78% more likely to switch to self-employment without employees again, while if past experience within self-employment was as employer, the probabilities of entering own-account work increases by 47% (see Table A7, Appendix A).

[87] This result might be related with the negative effect of unemployment benefits over the probabilities of entering self-employment. As we commented before, the key question is: Is it due to a disincentive effect of benefits or to their role as a proxy for the attachment of the individual to the wage labour market? Our result does not necessarily support the second hypothesis, but does confirm that previous paid-employment experiences, decreases the transitions to self-employment (see Table A7, Appendix A).

[88] The probability of switching to self-employment from unemployment decreases by 71.5% for females (see Table A8, Appendix A).

[89] However, the number of children under fourteen only marginally reduces the transitions to self-employment.

[90] The effect of whether or not an individual has been can be observed in Table A4 (Appendix A).

[91] The probability of switching to self-employment increases by 69% increase when there are relatives working as employer, while the same probability increases by 34% with the presence of own-account worker relatives (see Table A7, Appendix A). Furthermore, transitions to own-account work are significantly affected by the presence of relatives working either as employer or own-account worker. Thus, transitions to own-account work increases by 62.5 and 49% when relatives work as employer or own-account worker respectively (see Table A7, Appendix A). However, just relatives working as employers –and not as own-account workers- significantly affect transitions to employer. The probability of switching to employer increases by 79% when there are relatives working as employer (see Table A7, Appendix A).

[92] Transitions to self-employment decreases by almost 41% when unemployment duration is about 11 years, compared with those whose unemployment duration is about 3 years (see Table A7, Appendix A).

the country where transitions to employer are less likely, while transitions to own-account work are more common within Denmark, Portugal and Spain.[93]

5.7 Conclusions and Economic Policy Corollaries

According to our initial hypotheses, new evidence has been obtained supporting two basic ideas: i) the existence of several factors affecting each considered transition with different intensity, both in terms of starting and arrival states; ii) the presence of idiosyncratic factors decreasing the probability of transition in some European countries, which might be related to specific-countries institutional characteristic, or different business environments, but there is a clear need for further research in order to determine the exact underlying factors.

Regarding starting states, the determinants of self-employment show great similarities between transitions from paid-employment and unemployment. However, the probability of transition for unemployed people is much higher (five times higher) than the ones for paid-employed. This result supports the idea that self-employment is seen as an alternative to unemployment. Furthermore, those unemployed entering self-employment are, in particular, the better skilled (i.e. individuals with higher endowments of human capital and lower length of previous unemployment spells). Hence, our results do not support the adverse selection hypothesis.

Also regarding human capital, it was noted how all informal processes of acquisition of this capital (i.e. previous experience in the labour market or intergenerational transfers) present stronger effects than those attached to formal education. In this line, transitions from paid-employment are those where the effect of human capital is more decisive.

Our results also support the existence of liquidity constraints, regardless of starting status. Consequently, financial aids, subsidies or even the possibility to capitalize benefits for unemployed would make the decisions to become entrepreneurs more likely.

When the final states (i.e. employers and own-account workers) are also taken into account, the probabilities of switching to employer are irrespective of starting status, while the probability of transition for unemployed people to own-account self-employment is much higher (eight times higher) than the ones for paid-employed. Furthermore, the effect of liquidity constraints is much higher for transitions to employer than for transitions to own-account self-employment.

Finally, all these questions raise the need to consider the precision of the existing European entrepreneurial promotion policy not just across objectives or aims, but also in terms of policy instruments.

5.8 References

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[93] See Table A9 (Appendix A). France, Luxembourg, Sweden and the UK are excluded from this specification. These results must be cautiously interpreted, taking into account the distribution of observations across countries for our exercises (see Tables A5 and A6, Appendix A).

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Appendix A: Main Results

Table A1. Transitions from paid-employment to self-employment (Main exercise)

	Binomial		Multinomial			
	SELF-EMPLOYED (SE)		EMPLOYER (EMP)		OWN-ACCOUNT WORKER (OA)	
	Prob [$SE_t \mid U_{t-1}$]		Prob [$EMP_t \mid U_{t-1}$]		Prob [$OA_t \mid U_{t-1}$]	
Number of observations	180705		180705			
Number of transitions	2410		1237		775	
Variables	**Coef.**	**t-stat.**	**Coef.**	**t-stat.**	**Coef.**	**t-stat.**
Constant	-7.9788	(-15.4)***	-8.8682	(-13.72)***	-6.9213	(-9.33)***
Demographic characteristics						
Male	0.6502	(9.94)***	0.5684	(6.78)***	0.7111	(7.04)***
Age	0.0792	(3.38)***	0.0589	(1.91)*	0.0806	(2.29)**
Age (squared)	-0.0012	(-3.9)***	-0.001	(-2.49)**	-0.0011	(-2.41)**
Cohabiting (1)	0.2101	(3.08)***	0.195	(2.17)**	0.2107	(1.96)**
Number of children under 14	-0.0145	(-0.48)	-0.0287	(-0.77)	0.006	(0.13)
Relative(s) working as employer(s)	0.7412	(8.11)***	0.7038	(6.19)***	0.6353	(3.96)***
Relative(s) working as own-account worker(s)	0.3019	(2.87)***	0.1773	(1.25)	0.4083	(2.73)***
Education						
Secondary education (2)	0.0113	(0.18)	0.0303	(0.38)	0.003	(0.03)
University studies (2)	0.2368	(3.13)***	0.3138	(3.12)***	0.1243	(1.15)
Relatives with university studies	0.1722	(2.67)***	0.2415	(2.88)***	0.0617	(0.66)
Employment characteristics						
Private sector (3)	1.6016	(15.64)***	1.6317	(11.99)***	1.4652	(9.22)***
Industrial sector (4)	-0.7695	(-9.88)***	-0.78	(-8.07)***	-0.6941	(-5.54)***
Financial services (4)	-0.3682	(-3.84)***	-0.4134	(-3.34)***	-0.2564	(-1.72)*
Wholesale, hotels. restaurants & transport (4)	-0.3168	(-4.22)***	-0.3873	(-4.16)***	-0.1783	(-1.53)
Other services (4)	-0.2276	(-2.31)**	-0.3514	(-2.81)***	0.001	(0.01)
Hours of work	0.0275	(9.66)***	0.0376	(11.21)***	0.0067	(1.3)
Years of employment experience	-0.0069	(-0.4)	0.0309	(1.35)	-0.0629	(-2.3)**
Years of employment experience (squared)	-0.0007	(-0.88)	-0.002	(-1.92)*	0.0013	(1.06)
Indefinite contract (5)	-0.6785	(-10.26)***	-0.6263	(-7.18)***	-0.6618	(-6.47)***
Previous experience						
Observed previous spell(s) as employer	2.3181	(30.23)***	2.5767	(27.37)***	1.2723	(8.34)***
Observed previous spell(s) as own-account worker	1.3704	(13.44)***	0.7849	(4.83)***	1.7828	(13.2)***
Observed previous spell(s) as paid-employed	-0.0691	(-1.21)	-0.1183	(-1.62)	-0.0015	(-0.02)
Observed previous spell(s) as inactive	0.105	(1.13)	0.0633	(0.49)	0.1274	(0.96)
Incomes						
Dwelling owner	0.0437	(0.75)	0.1101	(1.48)	-0.0845	(-0.97)
Annual capital and property incomes (1 lag)	2.6E-05	(4.22)***	2.4E-05	(3.48)***	1.8E-05	(1.98)**
Monthly work incomes	2.4E-05	(0.76)	4E-05	(1.47)	4.8E-07	(-0.01)
Business cycle						
Annual unemployment rate	-0.0221	(-1.53)	0.0058	(0.33)	-0.0523	(-2.7)***
Country						
Austria (6)	-0.7349	(-3.29)***	-0.3909	(-1.4)	-1.124	(-3.62)***
Belgium (6)	-0.9586	(-5.01)***	-0.5338	(-2.28)**	-1.6555	(-5.05)***
Denmark (6)	-0.5722	(-2.83)***	-0.0818	(-0.35)	-1.2518	(-4.2)***
Finland (6)	0.1465	(1.1)	0.4025	(2.46)**	-0.2468	(-1.23)
France (6)	*No observations*		*No observations*		*No observations*	
Germany (6)	-0.9378	(-5.95)***	-0.4771	(-2.42)**	-1.6356	(-6.55)***
Greece (6)	0.0759	(0.6)	0.1726	(1.08)	-0.084	(-0.47)
Ireland (6)	-0.1766	(-1.14)	0.022	(0.12)	-0.4108	(-1.99)**
Italy (6)	0.4049	(3.67)***	0.9196	(6.65)***	-0.8412	(-4.54)***
Luxembourg (6)	*No observations*		*No observations*		*No observations*	
Netherlands (6)	-1.0426	(-4.96)***	-1.8455	(-5.41)***	-0.8145	(-3.14)***
Portugal (6)	-0.1062	(-0.62)	0.3308	(1.53)	-0.7255	(-3.05)***
Sweden (6)	*No observations*		*No observations*		*No observations*	
United Kingdom (6)	-0.4816	(-2.93)***	-0.9991	(-4.37)***	-0.2332	(-1.09)
Reference categories: (1) Non-cohabiting individuals, (2) No education or primary education, (3) Public sector, (4) Construction sector, (5) Non-indefinite contract, (6) Spain						
Log likelihood	-9339.7		-10482			

Notes:
(***) 1 % significativity level; (**) 5 % significativity level; (*) 10 % significativity level

Table A2. Transitions from paid-employment to self-employment (Complementary exercise)

	Binomial		Multinomial			
	SELF-EMPLOYED (SE)		EMPLOYER (EMP)		OWN-ACCOUNT WORKER (OA)	
	Prob [$SE_t \mid U_{t-1}$]		Prob [$EMP_t \mid U_{t-1}$]		Prob [$OA_t \mid U_{t-1}$]	
Number of observations	104156		104156			
Number of transitions	1570		1040		530	
Variables	**Coef.**	**t-stat.**	**Coef.**	**t-stat.**	**Coef.**	**t-stat.**
Constant	-7.8988	(-13.57)***	-8.4856	(-11.83)***	-7.9781	(-8.58)***
Demographic characteristics						
Male	0.7087	(9.49)***	0.6707	(6.92)***	0.7377	(6.04)***
Born abroad	0.1071	(0.76)	-0.0357	(-0.19)	0.2749	(1.24)
Age	0.0834	(3.16)***	0.0473	(1.42)	0.13	(2.88)***
Age (squared)	-0.0013	(-3.77)***	-0.0008	(-2.01)**	-0.0018	(-3.12)***
Cohabiting (1)	0.2268	(2.99)***	0.1983	(2.03)**	0.2617	(2.06)**
Number of children under 14	-0.0328	(-0.94)	-0.048	(-1.14)	-0.0128	(-0.22)
Relative(s) working as employer(s)	0.5939	(6.12)***	0.6305	(5.17)***	0.4088	(2.26)**
Relative(s) working as own-account worker(s)	0.2588	(2.35)**	0.193	(1.31)	0.342	(2.06)**
Education						
Secondary education (2)	0.0901	(1.25)	0.0621	(0.69)	0.1203	(0.99)
University studies (2)	0.2748	(2.94)***	0.2834	(2.34)**	0.2181	(1.47)
Relatives with university studies	0.1318	(1.75)*	0.2183	(2.33)**	-0.0369	(-0.3)
Employment characteristics						
Private sector (3)	0.9078	(7.63)***	0.8643	(5.7)***	0.9635	(4.96)***
Industrial sector (4)	-0.4662	(-5.36)***	-0.4975	(-4.6)***	-0.4039	(-2.71)***
Financial services (4)	-0.4386	(-3.87)***	-0.5293	(-3.74)***	-0.2063	(-1.07)
Wholesale, hotels. restaurants & transport (4)	-0.3132	(-3.81)***	-0.402	(-3.98)***	-0.1274	(-0.93)
Other services (4)	-0.2252	(-2.05)**	-0.3228	(-2.33)**	-0.0119	(-0.06)
Small firm (1-4 employees) (5)	0.6519	(7.6)***	0.9608	(9.67)***	-0.2864	(-1.52)
Medium firm (5-19 employees) (5)	0.1255	(1.48)	0.2267	(2.14)**	-0.101	(-0.71)
Supervisory (6)	1.2955	(17.31)***	1.305	(13.81)***	1.2131	(9.85)***
Intermediate (6)	0.7006	(9.87)***	0.7497	(8.33)***	0.5604	(4.65)***
Hours of work	0.0184	(5.3)***	0.0257	(6.06)***	-0.0014	(-0.21)
Years of employment experience	0.0062	(0.32)	0.0446	(1.82)*	-0.0674	(-2.11)
Years of employment experience (squared)	-0.0012	(-1.34)	-0.0027	(-2.42)**	0.0017	(1.16)
Indefinite contract (7)	-0.6143	(-8.71)***	-0.6143	(-6.65)***	-0.5486	(-4.94)***
Previous experience						
Observed previous spell(s) as employer	2.1172	(27.1)***	2.3796	(24.4)***	1.1742	(7.08)***
Observed previous spell(s) as own-account worker	1.2453	(11.25)***	0.7935	(4.61)***	1.7403	(11.05)***
Observed previous spell(s) as paid-employed	-0.0753	(-1.18)	-0.0919	(-1.13)	-0.0504	(-0.48)
Observed previous spell(s) as inactive	0.0883	(0.84)	0.0992	(0.7)	0.05	(0.31)
Incomes						
Inherit, gift or lottery winnings	0.5445	(3.47)***	0.6846	(3.79)***	0.2127	(0.7)
Dwelling owner	-0.0016	(-0.02)	0.0154	(0.19)	-0.0646	(-0.62)
Annual capital and property incomes (1 lag)	2.4E-05	(3.48)***	2E-05	(2.52)**	2.8E-05	(3.71)***
Monthly work incomes	5.3E-05	(0.88)	2.7E-05	(0.37)	1.7E-05	(1.84)*
Business cycle						
Annual unemployment rate	-0.0025	(-0.16)	0.0225	(1.2)	-0.0314	(-1.44)
Country						
Austria (8)	-0.5312	(-2.28)**	-0.2215	(-0.75)	-0.8952	(-2.67)***
Belgium (8)	-0.7137	(-3.61)***	-0.2661	(-1.08)	-1.4593	(-4.24)***
Denmark (8)	-0.4013	(-1.9)*	0.0044	(0.02)	-0.9961	(-3.12)***
Finland (8)	0.0024	(0.02)	0.21	(1.28)	-0.2812	(-1.35)
France (8)	*No observations*		*No observations*		*No observations*	
Germany (8)	*No observations*		*No observations*		*No observations*	
Greece (8)	-0.0348	(-0.27)	0.1204	(0.72)	-0.2289	(-1.18)
Ireland (8)	-0.0412	(-0.26)	0.1284	(0.68)	-0.2651	(-1.24)
Italy (8)	0.3312	(2.92)***	0.8629	(6.01)***	-0.8891	(-4.59)***
Luxembourg (8)	*No observations*		*No observations*		*No observations*	
Netherlands (8)	*No observations*		*No observations*		*No observations*	
Portugal (8)	0.0495	(0.27)	0.5011	(2.16)**	-0.5784	(-2.2)**
Sweden (8)	*No observations*		*No observations*		*No observations*	
United Kingdom (8)	*No observations*		*No observations*		*No observations*	
Reference categories: (1) Non-cohabiting individuals, (2) No education or primary education, (3) Public sector, (4) Construction sector, (5) Large firm (> 19 employees), (6) Non-supervisory, (7) Non-indefinite contract, (8) Spain						
Log likelihood	-6786.1		-7651.9			

Notes:
(***) 1 % significativity level; (**) 5 % significativity level; (*) 10 % significativity level

Table A3. Transitions from unemployment to self-employment (Main exercise)

	Binomial		Multinomial			
	SELF-EMPLOYED (SE)		EMPLOYER (EMP)		OWN-ACCOUNT WORKER (OA)	
	Prob [$SE_t \mid U_{t-1}$]		Prob [$EMP_t \mid U_{t-1}$]		Prob [$OA_t \mid U_{t-1}$]	
Number of observations	11393		11393			
Number of transitions	666		266		400	
Variables	**Coef.**	**t-stat.**	**Coef.**	**t-stat.**	**Coef.**	**t-stat.**
Constant	-7.624	(-8.99)***	-9.3112	(-7.23)***	-7.4012	(-7.43)***
Demographic characteristics						
Male	1.3579	(13.59)***	1.4926	(9.43)***	1.204	(9.71)***
Age	0.2245	(5.74)***	0.1921	(3.08)***	0.2294	(4.8)***
Age (squared)	-0.0031	(-5.99)***	-0.0029	(-3.51)***	-0.003	(-4.79)***
Cohabiting (1)	0.6179	(5.04)***	0.8365	(3.94)***	0.4743	(3.02)***
Number of children under 14	-0.1033	(-1.75)*	-0.1482	(-1.37)	-0.0788	(-1.07)
Relative(s) working as employer(s)	0.6395	(4.1)***	0.6673	(3.1)***	0.5727	(2.72)***
Relative(s) working as own-account worker(s)	0.3438	(2.3)**	0.0761	(0.29)	0.4526	(2.72)***
Education						
Secondary education (2)	0.3237	(3.1)***	0.3319	(2.14)**	0.3076	(2.3)**
University studies (2)	0.7822	(5.92)***	0.937	(4.53)***	0.6581	(4.03)***
Relatives with university studies	-0.0282	(-0.23)	0.1149	(0.59)	-0.1081	(-0.7)
Unemployment characteristics						
Unemployment duration	-0.0606	(-5.25)***	-0.0494	(-2.58)***	-0.0685	(-4.02)***
Previous experience						
Observed previous spell(s) as employer	1.0919	(5.47)***	1.6093	(6.58)***	0.5306	(1.8)*
Observed previous spell(s) as own-account worker	0.8115	(3.77)***	0.8942	(2.48)**	0.6917	(2.54)**
Observed previous spell(s) as paid-employed	-0.2705	(-2.43)***	-0.172	(-1.03)	-0.3285	(-2.38)**
Observed previous spell(s) as inactive	0.1608	(1.54)	0.3847	(2.67)***	0.0055	(0.04)
Incomes						
Dwelling owner	0.249	(2.43)**	0.2325	(1.5)	0.2459	(1.9)*
Annual capital and property incomes (1 lag)	4.1E-05	(1.83)*	5.8E-05	(2.74)**	2.1E-05	(0.64)
Receiving unemployment benefits	-0.6764	(-5.35)***	-0.4722	(-2.03)**	-0.7686	(-5.08)***
Business cycle						
Annual unemployment rate	-0.0008	(-0.03)	0.031	(0.72)	-0.0149	(-0.55)
Country						
Austria (3)	0.1762	(0.37)	1.475	(2.02)**	-0.468	(-0.8)
Belgium (3)	-0.0812	(-0.21)	1.5156	(2.88)***	-1.7655	(-2.33)**
Denmark (3)	0.3225	(0.78)	0.9529	(1.41)	0.0926	(0.21)
Finland (3)	-0.326	(-1.16)	0.2642	(0.55)	-0.5089	(-1.65)*
France (3)	*No observations*		*No observations*		*No observations*	
Germany (3)	-0.1622	(-0.53)	1.0004	(1.99)**	-0.7174	(-2.05)**
Greece (3)	0.0896	(0.38)	0.8701	(2.27)**	-0.2237	(-0.88)
Ireland (3)	0.252	(0.92)	1.2001	(2.62)***	-0.1642	(-0.52)
Italy (3)	-0.3761	(-1.85)*	0.931	(2.9)***	-1.1287	(-4.81)***
Luxembourg (3)	*No observations*		*No observations*		*No observations*	
Netherlands (3)	-1.8196	(-2.31)**	*No observations*		-1.7721	(-2.25)**
Portugal (3)	0.7837	(2.27)**	1.8967	(3.47)***	0.2514	(0.66)
Sweden (3)	*No observations*		*No observations*		*No observations*	
United Kingdom (3)	*No observations*		*No observations*		*No observations*	
Reference categories: (1) Non-cohabiting individuals, (2) No education or primary education, (3) Spain						
Log likelihood	-2267.5		-2663.4			

Notes:
(***) 1 % significativity level; (**) 5 % significativity level; (*) 10 % significativity level

Table A4. Transitions from unemployment to self-employment (Complementary exercise)

	Binomial		Multinomial			
	SELF-EMPLOYED (SE)		EMPLOYER (EMP)		OWN-ACCOUNT WORKER (OA)	
	Prob [$SE_t \mid U_{t-1}$]		Prob [$EMP_t \mid U_{t-1}$]		Prob [$OA_t \mid U_{t-1}$]	
Number of observations	9996		9996			
Number of transitions	609		237		372	
Variables	**Coef.**	**t-stat.**	**Coef.**	**t-stat.**	**Coef.**	**t-stat.**
Constant	-7.7408	(-8.8)***	-9.4931	(-7.12)***	-7.4128	(-7.22)***
Demographic characteristics						
Male	1.3994	(13.24)***	1.5735	(9.17)***	1.2295	(9.45)***
Born abroad	-0.1993	(-0.92)	-0.3819	(-1.12)	-0.0796	(-0.29)
Age	0.2238	(5.51)***	0.1842	(2.82)***	0.2282	(4.65)***
Age (squared)	-0.003	(-5.66)***	-0.0027	(-3.15)***	-0.0029	(-4.61)***
Cohabiting (1)	0.6994	(5.4)***	0.9822	(4.43)***	0.5217	(3.15)***
Number of children under 14	-0.1259	(-2.01)**	-0.1896	(-1.55)	-0.0899	(-1.16)
Relative(s) working as employer(s)	0.6808	(4.3)***	0.7687	(3.54)***	0.5659	(2.63)***
Relative(s) working as own-account worker(s)	0.3669	(2.42)**	0.1024	(0.38)	0.4707	(2.78)***
Education						
Secondary education (2)	0.3519	(3.21)***	0.4331	(2.63)***	0.2763	(1.96)**
University studies (2)	0.7746	(5.52)***	0.9607	(4.38)***	0.6293	(3.65)***
Relatives with university studies	-0.055	(-0.41)	0.0529	(0.25)	-0.1027	(-0.64)
Unemployment characteristics						
Unemployment duration	-0.0641	(-5.41)***	-0.0492	(-2.54)**	-0.0744	(-4.2)***
Previous experience						
Observed previous spell(s) as employer	0.9142	(4.35)***	1.5033	(5.87)***	0.2979	(0.99)
Observed previous spell(s) as own-account worker	0.8004	(3.64)***	0.804	(2.1)**	0.7252	(2.66)***
Observed previous spell(s) as paid-employed	-0.3019	(-2.55)**	-0.1516	(-0.83)	-0.3903	(-2.71)***
Observed previous spell(s) as inactive	0.255	(2.33)**	0.4793	(3.12)***	0.0979	(0.71)
Incomes						
Inherit, gift or lottery winnings	0.7889	(2.61)***	0.093	(0.15)	1.0609	(3.34)***
Dwelling owner	0.1911	(1.78)*	0.2326	(1.42)	0.1554	(1.21)
Annual capital and property incomes (1 lag)	3E-05	(1.2)	4.5E-05	(1.8)*	1.2E-05	(0.32)
Receiving unemployment benefits	-0.6575	(-4.89)***	-0.3512	(-1.43)	-0.7924	(-4.97)***
Business cycle						
Annual unemployment rate	0.0021	(0.08)	0.0317	(0.73)	-0.0103	(-0.37)
Country						
Austria (3)	0.2156	(0.44)	1.4301	(1.92)**	-0.3711	(-0.62)
Belgium (3)	-0.0493	(-0.13)	1.514	(2.82)***	-1.7135	(-2.25)**
Denmark (3)	0.274	(0.65)	0.8752	(1.28)	0.0644	(0.14)
Finland (3)	-0.3831	(-1.35)	0.1594	(0.33)	-0.533	(-1.71)*
France (3)	*No observations*		*No observations*		*No observations*	
Germany (3)	*No observations*		*No observations*		*No observations*	
Greece (3)	0.1283	(0.53)	0.8897	(2.32)**	-0.1608	(-0.62)
Ireland (3)	0.3087	(1.11)	1.194	(2.56)***	-0.0718	(-0.22)
Italy (3)	-0.3667	(-1.78)*	0.9671	(3.01)***	-1.1185	(-4.67)***
Luxembourg (3)	*No observations*		*No observations*		*No observations*	
Netherlands (3)	*No observations*		*No observations*		*No observations*	
Portugal (3)	0.8001	(2.29)**	1.8851	(3.42)***	0.2954	(0.77)
Sweden (3)	*No observations*		*No observations*		*No observations*	
United Kingdom (3)	*No observations*		*No observations*		*No observations*	
Reference categories: (1) Non-cohabiting individuals, (2) No education or primary education, (3) Spain						
Log likelihood	-2052.3		-2406.2			

Notes:
(***) 1 % significativity level; (**) 5 % significativity level; (*) 10 % significativity level

Table A5. Number of transitions within the labour market across the European Union 15 (Main exercise)

	Number of transitions from Paid-employment TO			Number of transitions from Unemployment TO		
	Paid-employment	**Employer**	**Own-account Work**	**Unemployment**	**Employer**	**Own-account Work**
European Union 15	*178693*	*1237*	*775*	*10727*	*266*	*400*
Austria	10946	38	30	177	6	6
Belgium	10035	36	12	269	11	2
Denmark	10585	49	21	248	5	12
Finland	8731	78	41	589	7	16
France	*No observations*	*No observations*	*No observations*	*No observations*	*No observations*	*No observations*
Germany	23584	100	34	940	23	23
Greece	12161	132	102	1145	38	68
Ireland	9575	60	44	496	14	18
Italy	21782	300	52	3401	101	66
Luxembourg	*No observations*	*No observations*	*No observations*	*No observations*	*No observations*	*No observations*
Netherlands	15879	14	63	263	*No observations*	2
Portugal	19237	193	97	420	21	29
Spain	19328	189	151	2779	40	158
Sweden	*No observations*	*No observations*	*No observations*	*No observations*	*No observations*	*No observations*
United Kingdom	16850	48	128	*No observations*	*No observations*	*No observations*

Table A6. Number of transitions within the labour market across the European Union 15 (Complementary exercise)

	Number of transitions from Paid-employment TO			Number of transitions from Unemployment TO		
	Paid-employment	**Employer**	**Own-account Work**	**Unemployment**	**Employer**	**Own-account Work**
European Union 15	*102586*	*1040*	*530*	*9387*	*237*	*372*
Austria	10758	37	30	173	6	6
Belgium	7873	34	11	266	11	2
Denmark	7182	48	20	248	5	12
Finland	8629	77	40	589	7	16
France	*No observations*	*No observations*	*No observations*	*No observations*	*No observations*	*No observations*
Germany	*No observations*	*No observations*	*No observations*	*No observations*	*No observations*	*No observations*
Greece	9752	130	99	1111	36	67
Ireland	7508	58	43	481	14	18
Italy	17411	282	50	3328	98	64
Luxembourg	*No observations*	*No observations*	*No observations*	*No observations*	*No observations*	*No observations*
Netherlands	*No observations*	*No observations*	*No observations*	*No observations*	*No observations*	*No observations*
Portugal	16837	189	91	419	21	29
Spain	16636	185	146	2772	39	158
Sweden	*No observations*	*No observations*	*No observations*	*No observations*	*No observations*	*No observations*
United Kingdom	*No observations*	*No observations*	*No observations*	*No observations*	*No observations*	*No observations*

Table A7. Predicted probabilities of switching, for individuals with given characteristics (Main exercise)

	Transitions to Self-employment FROM				Transitions to Employer FROM				Transitions to Own-account Work FROM			
	E [a]	Δ% [b]	U [a]	Δ% [b]	E [a]	Δ% [b]	U [a]	Δ% [b]	E [a]	Δ% [b]	U [a]	Δ% [b]
Standard individual (S.I.) [c]	*0.0244*	-----	*0.1333*	-----	*0.0174*	-----	*0.024*	-----	*0.0102*	-----	*0.0886*	-----
S.I. but female	0.0129	-47.2 %	0.038	-71.5 %	0.01	-42.6 %	0.0059	-75.5 %	0.0051	-50.3 %	0.0289	-67.4 %
S.I. with university studies	0.0308	25.9 %	0.2516	88.8 %	0.0236	35.8 %	0.0548	127.9 %	0.0115	12.4 %	0.1528	72.4 %
S.I. with relatives with university studies	0.0289	18.2 %	0.1301	-2.4 %	0.022	26.6 %	0.0271	12.9 %	0.0108	5.8 %	0.08	-9.7 %
S.I. with observed previous spell(s) as employer	0.2028	729.9 %	0.3143	135.8 %	0.1849	962.7 %	0.1038	331.7 %	0.0295	188.3 %	0.13	46.8 %
S.I. with observed previous spell(s) as own-account worker	0.0898	267.3 %	0.2572	92.9 %	0.0356	104.6 %	0.0523	117.7 %	0.0569	455 %	0.1575	77.8 %
S.I. with observed previous spell(s) as paid-employed	-----	-----	0.105	-21.2 %	-----	-----	0.0208	-13.3 %	-----	-----	0.0657	-25.9 %
S.I. with observed previous spell(s) as unemployed	0.0228	-6.5 %	-----	-----	0.0155	-11 %	-----	-----	0.0102	0.041 %	-----	-----
S.I. with observed previous spell(s) as inactive	0.0271	10.8 %	0.153	14.8 %	0.0185	6.3 %	0.0349	45.2 %	0.0116	13.3 %	0.088	-0.6 %
S.I. with relative(s) working as employer	0.0499	104.4 %	0.2257	69.3 %	0.0342	96.8 %	0.0429	78.6 %	0.0188	83.8 %	0.1439	62.5 %
S.I. with relative(s) working as own-account worker	0.0328	34.1 %	0.1782	33.7 %	0.0206	18.4 %	0.0246	2.5 %	0.0153	49.2 %	0.1323	49.4 %
S.I. working in the industrial sector [d]	0.0115	-53.1 %	-----	-----	0.0081	-53.5 %	-----	-----	0.0052	-49.3 %	-----	-----
S.I. working in financial services [d]	0.017	-30.3 %	-----	-----	0.0116	-33.3 %	-----	-----	0.008	-22 %	-----	-----
S.I. working in wholesale, hotels, restaurants or transport [d]	0.0179	-26.7 %	-----	-----	0.0119	-31.6 %	-----	-----	0.0086	-15.7 %	-----	-----
S.I. working in other services [d]	0.0196	-20 %	-----	-----	0.0123	-29.3 %	-----	-----	0.0103	0.6 %	-----	-----
S.I. with indefinite contract [d]	0.0126	-48.6 %	-----	-----	0.0094	-45.8 %	-----	-----	0.0054	-47.7 %	-----	-----
S.I. with low working hours [d, e]	0.0207	-15.2 %	-----	-----	0.0139	-20.2 %	-----	-----	0.0099	-3.6 %	-----	-----
S.I. with high working hours [d, e]	0.031	26.8 %	-----	-----	0.0241	38.6 %	-----	-----	0.0108	5.3 %	-----	-----
S.I. with low job experience [d, f]	0.0274	12.2 %	-----	-----	0.0164	-5.8 %	-----	-----	0.0147	43.1 %	-----	-----
S.I. with high job experience [d, f,]	0.019	-22.3 %	-----	-----	0.0136	-21.8 %	-----	-----	0.0082	-19.8 %	-----	-----
S.I. but receiving benefits [g]	-----	-----	0.0725	-45.6 %	-----	-----	0.0159	-33.9 %	-----	-----	0.0435	-50.9 %
S.I. with low unemployment duration [g, h]	-----	-----	0.1536	15.2 %	-----	-----	0.0269	12 %	-----	-----	0.1045	18 %
S.I. with high unemployment duration [g, h]	-----	-----	0.0995	-25.4 %	-----	-----	0.019	-21 %	-----	-----	0.063	-28.8 %
S.I. but receiving €1,000 more in capital and property incomes	0.0251	2.6 %	0.1381	3.6 %	0.0178	2.4 %	0.0254	5.8 %	0.0104	1.8 %	0.0902	1.8 %
S.I. with low monthly work incomes [d, i]	0.0241	-1.4 %	-----	-----	0.017	-2.4 %	-----	-----	0.0103	0.1 %	-----	-----
S.I. with high monthly work incomes [d, i]	0.0251	2.9 %	-----	-----	0.0182	4.9 %	-----	-----	0.0102	-0.1 %	-----	-----
S.I. with low unemployment rate [j]	0.0282	15.4 %	0.1342	0.7 %	0.0167	-4.1 %	0.0177	-26.4 %	0.0145	41.2 %	0.1015	14.6 %
S.I. with high unemployment rate [j]	0.0193	-20.9 %	0.1325	-0.6 %	0.0186	6.8 %	0.0308	28 %	0.0058	-43.1 %	0.079	-10.8 %

Notes:

[a] E = Employee, U = Unemployed, and OA = Own-Account Worker.

[b] Percentage change related to the standard.

[c] S. I.= Standard individual: male, cohabiting, one children aged fewer 14, no education or primary education, no relatives with university education within the sample, not previous experience as employer, own-account worker, unemployed or inactive, within the sample, not relatives working as employer or own-account worker, receiving mean capital and property incomes. In transitions from employment, individuals work in the private sector, without indefinite contracts, and in the construction sector. With respect to transitions from unemployment, individuals are not receiving benefits. Other variables equals to average values respectively.

[d] Not applicable in transitions from unemployment.

[e] Low and high working hours are 35 and 50 (the 10^{th} and 90^{th} centiles respectively).

[f] Low and high job experience are 2 and 19 years (the 10^{th} and 90^{th} centiles respectively).

[g] Not applicable in transitions from employment.

[h] Low and high unemployment duration are 3 and 11 years, half and double the average ones respectively.

[i] Low and high monthly work incomes are half and double the average ones respectively.

[j] Low and high unemployment rates are 2.3 % and 19.8 % respectively, which are the lowest and the highest values for our sample period.

Table A8. Predicted probabilities of switching, for individuals with given characteristics (Complementary exercise)

	Transitions to Self-employment FROM				Transitions to Employer FROM				Transitions to Own-account Work FROM			
	E [a]	Δ% [b]	U [a]	Δ% [b]	E [a]	Δ% [b]	U [a]	Δ% [b]	E [a]	Δ% [b]	U [a]	Δ% [b]
Standard individual (S.I.) [c]	*0.0565*	-----	*0.1354*	-----	*0.0383*	-----	*0.046*	-----	*0.0205*	-----	*0.0882*	-----
S.I. but born abroad	0.0625	10.6 %	0.1137	-16 %	0.0367	-4 %	0.0321	-30.3 %	0.0268	31 %	0.0832	-5.6 %
S.I. working whose job status is supervisory [d]	0.1031	82.4 %	-----	-----	0.0947	147.4 %	-----	-----	0.0145	-28.9 %	-----	-----
S.I. working in a large size firm (>19 employees) [d]	0.0161	-71.5 %	-----	-----	0.0108	-71.7 %	-----	-----	0.0064	-69 %	-----	-----
S.I. with inherit, gift or lottery winnings within the household	0.0936	65.6 %	0.2564	89.3 %	0.0728	90.2 %	0.0431	-6.3 %	0.0243	18.7 %	0.2176	146.7 %

Notes:

[a] E = Employee, U = Unemployed, and OA = Own-Account Worker.

[b] Percentage change related to the standard.

[c] S. I.= Standard individual: male, born in the country of present residence, cohabiting, one children aged fewer 14, no education or primary education, no relatives with university education within the sample, not previous experience as employer, own-account worker, unemployed or inactive, within the sample, not relatives working as employer or own-account worker, receiving mean capital and property incomes, and without any inherit, gift or lottery winnings within the household. In transitions from employment, individuals work as non-supervisory in the private sector, in small firms, with indefinite contracts, and in the construction sector. With respect to transitions from unemployment, individuals are not receiving benefits. Other variables equals to average values respectively.

[d] Not applicable in transitions from unemployment.

Table A9. Predicted probabilities of switching, for individuals with given characteristics (Main exercise)

	Transitions to Self-employment FROM				Transitions to Employer FROM				Transitions to Own-account Work FROM			
	E [a]	Δ% [b]	U [a]	Δ% [b]	E [a]	Δ% [b]	U [a]	Δ% [b]	E [a]	Δ% [b]	U [a]	Δ% [b]
Standard individual (S.I.) [c]	*0.0244*	-----	*0.1333*	-----	*0.0174*	-----	*0.024*	-----	*0.0102*	-----	*0.0886*	-----
Standard individual but living in Austria	0.0168	-31.3 %	0.1727	29,6 %	0.0144	-17.1 %	0.0978	306.9 %	0.0072	-29.8 %	0.0886	0.04 %
Standard individual but living in Belgium	0.0135	-44.9 %	0.139	4,3 %	0.0126	-27.8 %	0.1084	350.9 %	0.0043	-58.5 %	0.0258	-70.9 %
Standard individual but living in Denmark	0.0197	-19.4 %	0.1946	46 %	0.0196	12.4 %	0.0565	135.1 %	0.0063	-38.5 %	0.1512	70.7 %
Standard individual but living in Finland	0.0396	62 %	0.1122	-15.8 %	0.031	78.3 %	0.0314	30.7 %	0.0168	64.3 %	0.0917	3.5 %
Standard individual but living in France	*No observations*		*No observations*		*No observations*		*No observations*		*No observations*		*No observations*	
Standard individual but living in Germany	0.0137	-43.8 %	0.1295	-2.8 %	0.0133	-23.6 %	0.0645	168.3 %	0.0043	-57.7 %	0.0732	-17.4 %
Standard individual but living in Greece	0.037	51.4 %	0.1607	20.5 %	0.0247	42.2 %	0.0545	126.7 %	0.0199	94.1 %	0.1154	30.3 %
Standard individual but living in Ireland	0.029	18.6 %	0.1838	37.9 %	0.0215	23.4 %	0.0737	206.6 %	0.0145	41.2 %	0.1191	34.5 %
Standard individual but living in Italy	0.0507	107.3 %	0.1073	-19.5 %	0.0513	195.1 %	.,062	157.8 %	0.0092	-10.5 %	0.05	-43.6 %
Standard individual but living in Luxembourg	*No observations*		*No observations*		*No observations*		*No observations*		*No observations*		*No observations*	
Standard individual but living in the Netherlands	0.0124	-49.3 %	0.0276	-79.3 %	0.0034	-80.5 %	*No observations*		0.0099	-3.5 %	0.0287	-67.6 %
Standard individual but living in Portugal	0.031	26.9 %	0.2771	107.9 %	0.0291	67.4 %	0.1303	441.9 %	0.0105	2.7 %	0.159	79.4 %
Standard individual but living in Spain	0.0344	40.7 %	0.149	11.8 %	0.0209	19.9 %	0.0229	-4.8 %	0.0217	111.5 %	0.1448	63.4 %
Standard individual but living in Sweden	*No observations*		*No observations*		*No observations*		*No observations*		*No observations*		*No observations*	
Standard individual but living in the United Kingdom	0.0215	-11.9 %	*No observations*		0.0078	-55.1 %	*No observations*		0.0175	70.5 %	*No observations*	

Notes:
[a] E = Employee, U = Unemployed, and OA = Own-Account Worker.
[b] Percentage change related to the standard.
[c] S. I.= Standard individual: male, cohabiting, one children aged fewer 14, no education or primary education, no relatives with university education within the sample, not previous experience as employer, own-account worker, unemployed or inactive, within the sample, not relatives working as employer or own-account worker, receiving mean capital and property incomes. In transitions from employment, individuals work in the private sector, in medium firms, with indefinite contracts, and in the construction sector. With respect to transitions from unemployment, individuals are not receiving benefits. Other variables equals to average values respectively.

Appendix B: Data Description

Variable definitions referring to exercises developed with the European Community Household Panel (ECHP) are reported below.

Explained variables

Transitions from paid-employment to self-employment:

Binomial case

Dependent variable equals 1 for individuals who are full-time waged workers in period *t-1* and become self-employed in period *t*. The variable equals 0 for individuals who are full-time waged workers in periods *t-1* and *t*.

Multinomial case

Dependent variable equals 1 for individuals who are full-time waged workers in period *t-1* and become employers in period *t*. The variable equals 2 for individuals who are full-time waged workers in period *t-1* and become own-account workers in period *t*. Finally, the variable equals 0 for individuals which are full-time waged workers in periods *t-1* and *t*.

Transitions from unemployment to self-employment:

Binomial case

Dependent variable equals 1 for individuals who are unemployed in period *t-1* and become self-employed in period *t*. The variable equals 0 for individuals who are unemployed in periods *t-1* and *t*.

Multinomial case

Dependent variable equals 1 for individuals who are unemployed in period *t-1* and become employers in period *t*. The variable equals 2 for individuals who are unemployed in period *t-1* and become own-account workers in period *t*. Finally, the variable equals 0 for individuals who are unemployed in periods *t-1* and *t*.

Explanatory variables

Demographic characteristics:

Male	Dummy equals 1 for males.
Born abroad	Dummy equals 1 for born abroad individuals.
Age	Age reported by the individual, ranging from 21 to 59.
Cohabiting	Dummy equals 1 for cohabiting individuals and 0 otherwise.
Number of children under 14	Number of children aged under than 14 living within the household.
Relative(s) working as employer(s)	Dummy equals to 1 if there are any in the household.
Relative(s) working as own-acc. worker(s)	Dummy equals to 1 if there are any in the household.

Education:

No education or primary education	Dummy equals 1 for illiterate, no schooling individuals, or individuals with primary schooling as highest education level achieved, and 0 otherwise.
Secondary education	Dummy equals 1 for individuals with secondary schooling as highest education level achieved and 0 otherwise.
University studies	Dummy equals 1 for individuals with university studies and 0 otherwise.
Relatives with university studies	Dummy equals 1 if there are any in the household.

Employment characteristics:	
Private sector	Dummy equals 1 for individuals working in the private sector (versus the public sector).
Construction sector	Dummy equals 1 for individuals whose codes of main activity of the local unit of the business is F (construction), by the "Nomenclature of Economic Activities" (NACE-93).
Industrial sector	Dummy equals 1 for individuals whose codes of main activity of the local unit of the business are C (mining and quarrying), D (manufactures) and E (electricity, gas and water supply), by the "Nomenclature of Economic Activities" (NACE-93).
Wholesale, hotels, restaurants & transport	Dummy equals 1 for individuals whose codes of main activity of the local unit of the business are G (wholesale and retail trade; repair of motor vehicles, motorcycles and personal/household goods), H (hotels and restaurants) and I (transport, storage and communication), by the "Nomenclature of Economic Activities" (NACE-93).
Financial services	Dummy equals 1 for individuals whose codes of main activity of the local unit of the business are J (Financial intermediation) and K (real estate, renting and business activities), by the "Nomenclature of Economic Activities" (NACE-93).
Other services	Dummy equals 1 for individuals whose codes of main activity of the local unit of the business are L (public administration and defense; compulsory social security), M (education), N (health and social work) and O-Q (other community, social and personal service activities; private households with employed persons; extra-territorial organizations and bodies), by the "Nomenclature of Economic Activities" (NACE-93).
Small firm (0-4 employees)	Dummy equals 1 for individuals working in small firms.
Medium firm (5-19 employees)	Dummy equals 1 for individuals working in medium firms.
Large firm (> 19 employees)	Dummy equals 1 for individuals working in large firms.
Supervisory	Dummy equals 1 for individuals whose job status is supervisory.
Intermediate	Dummy equals 1 for individuals whose job status is intermediate.
Non-supervisory	Dummy equals 1 for individuals whose job status is non-supervisory.
Years of employment experience	Number of years in present job.
Hours of work	Hours of work per week.
Indefinite contract	Dummy equals 1 for full-time waged-workers with indefinite contract and 0 otherwise.
Non-indefinite contract	Dummy equals 1 for full-time waged-workers with non-indefinite contract and 0 otherwise.
Unemployment characteristics:	
Unemployment duration	Number of years as unemployed.
Observed previous experience:	
Previous spell(s) as employer	Dummy equals 1 for individuals with observed previous spell(s) as employer.

Previous spell(s) as own-account worker	Dummy equals 1 for individuals with observed previous spell(s) as own-account worker.
Previous spell(s) as paid-employee	Dummy equals 1 for individuals with observed previous spell(s) as paid-employee.
Previous spell(s) as unemployed	Dummy equals 1 for individuals with observed previous spell(s) as unemployed.
Previous spell(s) as inactive	Dummy equals 1 for individuals with observed previous spell(s) as inactive.
Incomes:	
Inherit, gift or lottery winnings	Dummy equals 1 for households where anyone inherits any property capital, or receive a gift or lottery winnings, worth €2,000 or more during period *t-1*, and 0 otherwise.
Dwelling owner	Dummy equals 1 for households owning the dwelling in period *t-1*, and 0 otherwise.
Capital and property incomes (1 lag)	Capital and property incomes, and private transfers received during period *t-2*, converted to average euros of 1996, being corrected by Purchasing Power Parity (across countries) and Harmonised Consumer Price Index (across time).
Monthly work incomes	Work incomes earned during the previous month to the interview, converted to average euros of 1996, being corrected by Purchasing Power Parity (across countries) and Harmonised Consumer Price Index (across time).
Receiving unemployment benefits	Dummy equals 1 for individuals receiving unemployment benefits in period *t-1*, and 0 otherwise.
Business cycle:	
Annual unemployment rate	Standardized annual unemployment rate (source: OCDE)
Country dummies	*Dummies* equal 1 for individuals living in the named country, and 0 otherwise.

Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden and United Kingdom.

Table B1. Descriptive statistics of the transitions from employment to self-employment (Main exercise)

	All observations	Non switching observations	Switching to Employer observations	Switching to Own-account Worker observations
Number of observations	180705	178693	1237	775
Demographic characteristics				
Females	26.1 %	26.1 %	19.2 %	19.9 %
Average age	38.6 years	38.6 years	36.4 years	36.5 years
Age 21-30 years	24.9 %	24.8 %	31.4 %	32.7 %
Age 31-40 years	32.4 %	32.4 %	37.2 %	34.3 %
Age 41-50 years	28.7 %	28.8 %	21.8 %	22.7 %
Age 51-59 years	14 %	14 %	9.6 %	10.3 %
No education / Very basic education	35 %	35 %	40.7 %	43.6 %
Primary schooling / Secondary schooling	37.8 %	37.9 %	34.1 %	29.6 %
University studies	27.2 %	27.1 %	25.2 %	26.8 %
Relatives with university studies	22 %	22 %	23.7 %	24.3 %
Cohabiting	75.7 %	75.7 %	74.5 %	75 %
Average number of children under 14	0.63 children	0.63 children	0.68 children	0.69 children
Relative(s) working as employer(s)	3.7 %	3.6 %	10.4 %	6.5 %
Relative(s) working as own-acc. worker(s)	4 %	4 %	5.2 %	7.1 %
Employment characteristics				
Private sector	66.4 %	66.1 %	92.8 %	90.6 %
Construction sector	7.9 %	7.8 %	21.3 %	20.4 %
Industrial sector	27 %	27.1 %	23 %	20.4 %
Financial services	10.5 %	10.4 %	12.1 %	12.5 %
Wholesale. hotels. restaurants & transport	20.7 %	20.6 %	28.8 %	28.8 %
Other services	33.9 %	34.1 %	14.8 %	17.9 %
Indefinite contract	89.7 %	89.9 %	75.7 %	71.7 %
Average hours of work per week	41.1 hours	41.1 hours	45.2 hours	43.3 hours
Average years of experience as employee	9.7 years	9.7 years	7.5 years	6.1 years
Previous experience				
Previous spell(s) as employer	1.3 %	1.1 %	25.3 %	9.7 %
Previous spell(s) as own-account worker	1 %	0.9 %	6.6 %	14.3 %
Previous spell(s) as unemployed	30.7 %	30.6 %	38.8 %	43.2 %
Previous spell(s) as inactive	6.1 %	6.1 %	8.1 %	11 %
Incomes				
Dwelling owner	71.7 %	71.7 %	74.9 %	72.6 %
Receiving capital and property incomes	39.4 %	39.4 %	34.9 %	40.8 %
Average annual capital and property incomes	€346	€343	€718	€400
Average annual capital and property incomes (those who receive)	€878	€870	€2,055	€982
Average monthly work income	€1,220	€1,221	€1,188	€1,172
Country				
Austria	6.1 %	6.1 %	3.1 %	3.9 %
Belgium	5.6 %	5.6 %	2.9 %	1.5 %
Denmark	5.9 %	5.9 %	3.9 %	2.7 %
Finland	4.9 %	4.9 %	6.3 %	5.3 %
France	*No observations*			
Germany	13.1 %	13.2 %	8.1 %	4.4 %
Greece	6.9 %	6.8 %	10.7 %	13.2 %
Ireland	5.4 %	5.4 %	4.8 %	5.7 %
Italy	12.2 %	12.2 %	24.3 %	6.7 %
Luxembourg	*No observations*			
Netherlands	8.8 %	8.9 %	1.1 %	8.1 %
Portugal	10.8 %	10.8 %	15.6 %	12.5 %
Spain	10.9 %	10.8 %	15.3 %	19.5 %
Sweden	*No observations*			
United Kingdom	9.4 %	9.4 %	3.9 %	16.5 %

Table B2. Descriptive statistics of the transitions from employment to self-employment (Complementary exercise)

	All observations	Non switching observations	Switching to Employer observations	Switching to Own-account Worker observations
Number of observations	104156	102586	1040	530
Demographic characteristics				
Females	26.2 %	26.4 %	18.5 %	20.4 %
Born abroad	3.7 %	3.7 %	3.5 %	5.1 %
Average age	37.8 years	37.9 years	36.2 years	35.6 years
Age 21-30 years	28 %	27.9 %	32.5 %	36 %
Age 31-40 years	32 %	32 %	36.3 %	34.9 %
Age 41-50 years[)]	27.4 %	27.5 %	21.8 %	20.4 %
Age 51-59 years	12.6 %	12.6 %	9.4 %	8.7 %
No education / Very basic education	38.5 %	38.4 %	43.7 %	46 %
Primary schooling / Secondary schooling	38.4 %	38.5 %	33.8 %	33.2 %
University studies	23.1 %	23.1 %	22.5 %	20.8 %
Relatives with university studies	19.9 %	19.8 %	22.2 %	19.1 %
Cohabiting	72.5 %	72.5 %	73.2 %	72.1 %
Average number of children under 14	0.64 children	0.64 children	0.69 children	0.72 children
Relative(s) working as employer(s)	5 %	5 %	10.9 %	7.2 %
Relative(s) working as own-acc. worker(s)	5.2 %	5.2 %	5.9 %	8.3 %
Employment characteristics				
Private sector	74.8 %	74.5 %	92.9 %	91.3 %
Construction sector	9.4 %	9.3 %	22.3 %	22.2 %
Industrial sector	29.4 %	29.5 %	23.1 %	20.4 %
Financial services	10.1 %	10.1 %	10.1 %	9.8 %
Wholesale. hotels. restaurants & transport	22.5 %	22.4 %	29.7 %	30.6 %
Other services	28.6 %	28.7 %	14.8 %	17 %
Small firm (0-4 employees)	14.1 %	13.8 %	38.1 %	38.5 %
Medium firm (5-19 employees)	26.2 %	26.1 %	34.5 %	31.3 %
Large firm (>19 employees)	59.7 %	60.1 %	27.4 %	30.2 %
Supervisory	10.8 %	10.7 %	24.4 %	7.9 %
Intermediate	16.3 %	16.4 %	13.5 %	12.1 %
Non-supervisory	72.9 %	72.9 %	62.1 %	80 %
Indefinite contract	86.2 %	86.4 %	73.2 %	65.1 %
Average hours of work per week	40.9 hours	40.9 hours	42.5 hours	42.4 hours
Average years of experience as employee	9.9 years	10 years	7.8 years	6.5 years
Previous experience				
Previous spell(s) as employer	1.9 %	1.5 %	27.5 %	12.1 %
Previous spell(s) as own-account worker	1.2 %	1.1 %	6.8 %	15.7 %
Previous spell(s) as unemployed	36.2 %	36.1 %	41 %	48.3 %
Previous spell(s) as inactive	7.2 %	7.2 %	8.3 %	10.4 %
Incomes				
Inherit. gift or lottery winnings	2.3 %	2.3 %	3.7 %	2.3 %
Dwelling owner	75.8 %	75.8 %	76.3 %	73.8 %
Receiving capital and property incomes	31.8 %	31.8 %	31.1 %	35.7 %
Average annual capital and property incomes	€319	€316	€631	€433
Average annual capital and property incomes (those who receive)	€1,005	€994	€2,031	€1,215
Average monthly work income	€1,107	€1,108	€1,093	€1,013
Country				
Austria	10.4 %	10.5 %	3.5 %	5.7 %
Belgium	7.6 %	7.7 %	3.3 %	2.1 %
Denmark	7 %	7 %	4.6 %	3.8 %
Finland	8.4 %	8.4 %	7.4 %	7.5 %
France	*No observations*			
Germany	*No observations*			
Greece	9.6 %	9.5 %	12.5 %	18.7 %
Ireland	7.3 %	7.3 %	5.6 %	8.1 %
Italy	17 %	17 %	27.1 %	9.4 %
Luxembourg	*No observations*			
Netherlands	*No observations*			
Portugal	16.4 %	16.4 %	18.2 %	17.2 %
Spain	16.3 %	16.2 %	17.8 %	27.5 %
Sweden	*No observations*			
United Kingdom	*No observations*			

Table B3. Descriptive statistics of the transitions from unemployment to self-employment (Main exercise)

	All observations	Non switching observations	Switching to Employer observations	Switching to Own-account Worker observations
Number of observations	11393	10727	266	400
Demographic characteristics				
Females	52 %	53.5 %	24.1 %	29.2 %
Average age	33.1 years	33.8 years	33 years	34.6 years
Age 21-30 years	48 %	48.1 %	50.7 %	42.2 %
Age 31-40 years	25.6 %	25.5 %	27.1 %	29.8 %
Age 41-50 years)	16.9 %	16.8 %	16.2 %	19.8 %
Age 51-59 years	9.5 %	9.6 %	6 %	8.2 %
No education / Very basic education	48.1 %	48.4 %	39.9 %	44.2 %
Primary schooling / Secondary schooling	37.9 %	38 %	40.6 %	34.5 %
University studies	14 %	13.6 %	19.5 %	21.3 %
Relatives with university studies	13.7 %	13.5 %	16.2 %	16.8 %
Cohabiting	47.8 %	47.5 %	52.3 %	53.3 %
Average number of children under 14	0.52 children	0.52 children	0.53 children	0.54 children
Relative(s) working as employer(s)	5.7 %	5.5 %	11.3 %	8.3 %
Relative(s) working as own-acc. worker(s)	7.2 %	7.1 %	7.1 %	12.3 %
Unemployment characteristics				
Average unemployment duration	5.5 years	5.5 years	4.8 years	3.9 years
Previous experience				
Previous spell(s) as employer	1.8 %	1.4 %	12 %	5.3 %
Previous spell(s) as own-account worker	1.7 %	1.4 %	6.4 %	6.5 %
Previous spell(s) as paid-employed	55 %	55 %	49.6 %	58.5 %
Previous spell(s) as inactive	31.6 %	31.8 %	34.2 %	25.7 %
Incomes				
Dwelling owner	66.2 %	65.8 %	69.5 %	73.5 %
Receiving capital and property incomes	21.4 %	21 %	26.3 %	28.5 %
Average annual capital and property incomes	€237	€226	€553	€346
Average annual capital and property incomes (those who receive)	€1,109	€1,073	€2,103	€1,214
Receiving unemployment benefits	34.9 %	35.4 %	27.4 %	28.2 %
Average annual unemployment benefits	€1,739	€1,768	€1,259	€1,307
Average annual unemployment benefits (those who receive)	€4,978	€4,996	€4,589	€4,626
Country				
Austria	1.7 %	1.6 %	2.3 %	1.5 %
Belgium	2.5 %	2.5 %	4.1 %	0.5 %
Denmark	2.3 %	2.3 %	1.9 %	3 %
Finland	5.4 %	5.5 %	2.6 %	4 %
France	*No observations*			
Germany	8.7 %	8.8 %	8.6 %	5.8 %
Greece	11 %	10.7 %	14.3 %	17 %
Ireland	4.6 %	4.6 %	5.3 %	4.5 %
Italy	31.3 %	31.7 %	38 %	16.5 %
Luxembourg	*No observations*			
Netherlands	2.3 %	2.5 %	No obs.	0.5 %
Portugal	4.1 %	3.9 %	7.9 %	7.2 %
Spain	26.1 %	25.9 %	15 %	39.5 %
Sweden	*No observations*			
United Kingdom	*No observations*			

Table B4. Descriptive statistics of the transitions from unemployment to self-employment (Complementary exercise)

	All observations	Non switching observations	Switching to Employer observations	Switching to Own-account Worker observations
Number of observations	9996	9387	237	372
Demographic characteristics				
Females	51.9 %	53.5 %	23.2 %	29.3 %
Born abroad	4.7 %	4.7 %	4.2 %	5.1 %
Average age	33.1 years	33.1 years	33.1 years	34.5 years
Age 21-30 years	51.1 %	51.4 %	51.9 %	43.3 %
Age 31-40 years	24.9 %	24.7 %	24.9 %	29 %
Age 41-50 years[)]	15.5 %	15.3 %	16.5 %	19.6 %
Age 51-59 years	8.5 %	8.6 %	6.7 %	8.1 %
No education / Very basic education	50.4 %	50.7 %	41.4 %	46.8 %
Primary schooling / Secondary schooling	35.4 %	35.4 %	40.9 %	32.2 %
University studies	14.2 %	13.9 %	17.7 %	21 %
Relatives with university studies	13.6 %	13.4 %	14.8 %	16.7 %
Cohabiting	44.9 %	44.4 %	52.3 %	53 %
Average number of children under 14	0.51 children	0.51 children	0.5 children	0.54 children
Relative(s) working as employer(s)	6.3 %	6 %	12.7 %	8.6 %
Relative(s) working as own-acc. worker(s)	8 %	7.8 %	7.6 %	12.9 %
Unemployment characteristics				
Average unemployment duration	5.6 years	5.7 years	4.9 years	3.9 years
Previous experience				
Previous spell(s) as employer	1.9 %	1.5 %	12.2 %	4.8 %
Previous spell(s) as own-account worker	1.9 %	1.6 %	6.3 %	7 %
Previous spell(s) as paid-employed	53.5 %	53.4 %	49.8 %	57.8 %
Previous spell(s) as inactive	31.4 %	31.5 %	35.4 %	26.6 %
Incomes				
Inherit. gift or lottery winnings	1.4 %	1.4 %	1.3 %	3.2 %
Dwelling owner	70.9 %	70.6 %	74.3 %	75.3 %
Receiving capital and property incomes	18.9 %	18.6 %	21.5 %	25.8 %
Average annual capital and property incomes	€235	€224	€512	€334
Average annual capital and property incomes (those who receive)	€1,245	€1,209	€2,378	€1,296
Receiving unemployment benefits	30.3 %	30.6 %	25.3 %	25.8 %
Average annual unemployment benefits	€1,416	€1,431	€1,168	€1,193
Average annual unemployment benefits (those who receive)	€4,670	€4,673	€4,615	€4,621
Country				
Austria	1.9 %	1.9 %	2.5 %	1.6 %
Belgium	2.8 %	2.8 %	4.6 %	0.5 %
Denmark	2.7 %	2.6 %	2.1 %	3.2 %
Finland	6.1 %	6.3 %	3 %	4.3 %
France	*No observations*			
Germany	*No observations*			
Greece	12.1 %	11.8 %	15.2 %	18 %
Ireland	5.1 %	5.1 %	5.9 %	4.9 %
Italy	34.9 %	35.5 %	41.4 %	17.2 %
Luxembourg	*No observations*			
Netherlands	*No observations*			
Portugal	4.7 %	4.5 %	8.9 %	7.8 %
Spain	29.7 %	29.5 %	16.4 %	42.5 %
Sweden	*No observations*			
United Kingdom	*No observations*			

Chapter 6. Self-employment in Spain during the Nineties: Transitions into Self-employment[1]

6.1 Introduction

Undoubtedly, unemployment was one of the main problems suffered by Spanish Economy during the last two decades. Indeed, Spanish unemployment reached rates of over 20% both in the middle of the Eighties and the Nineties (see Figure 1). An extensive industrial structural change together with the incidence of negative supply shocks, changes in the demographic and socio-economic structure of the labour force –rises in the labour force participation of women included- and the labour market rigidities[2], are the more common explanations to this higher and persistent unemployment rate.

According to this scenario, the promotion of transitions from unemployment to self-employment became a suitable instrument of an active labour market policy[3], that is, a way to open up new sources of employment which in turn shall help to reduce unemployment.[4] Furthermore, in the view of most politicians, higher self-employment rates promise innovation and growth for the economy. If this cause-effect relationship were so clear, Spain would have been in a competitive advantaged position with regard to other European countries. In fact, Spain has presented one of the higher self-employment rates in Europe during the last two decades. However, Spanish self-employment rates have shown a strong decrease since the middle of the nine-

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[1] This work is based on my Master's thesis in the Quantitative Economics Doctorate (QED) at the *Universidad de Alicante*, under the supervision of Javier Álvarez. A revised version of it was circulated as "Some Empirical Aspects of Self-employment in Spain during the Nineties", SAE wp 20, *Universidad de Huelva*. Earlier versions of this chapter were presented at a seminar at the *Fundación Centro de Estudios Andaluces*, Sevilla, SPAIN, 2003; at the 50th Annual North American Meeting of the Regional Science Association International, Philadelphia, USA, 2003; at the IX Spring Meeting of Young Economist, Warsaw, POLAND, 2004; at the 4th Annual Hawaii International Conference on Business, Hawaii, USA, 2004. I wish to thank Javier Álvarez and André van Stel for their friendship, encouragement and help. I also would like to thank Manuel Arellano, David Audretsch, José Ignacio García, Juan Francisco Jimeno and Simon Parker for their comments on earlier drafts. This work benefited from a research stay at the *Max-Planck-Institut für Ökonomik* in Jena in 2005, and from the grant provided by the *Fundación Centro de Estudios Andaluces* for the project "*Función empresarial: Determinantes de oferta en clave comparada y distorsiones del sistema fiscal*", REF. ECO-15/2005, for which I am grateful. Errors remaining are my own.

[2] Therefore, Spanish labour authorities have implemented important action to make it more flexible. Illustrative examples of these policies mention include the 1984 Employment Promotion Programme (based on fostering fixed-term employment contracts), or the Unemployment Insurance Act in April 1992 (which made eligibility requirements for unemployment insurance more restrictive and curtailed benefit amounts). See Alba-Ramírez (1999) for a study of the effects of this last action on the Spanish labour market.

[3] These transitions are promoted by advice, training, grants, loans and income support, among others.

[4] Promoting transitions from unemployment to self-employment will reduce unemployment directly (new self-employed people) and indirectly (creating further jobs in the newly-founded firms).

ties: it fell from 22.42% in 1984 to 16.54% in 2004, after having remained at around 20% until the middle of the Nineties.[5]

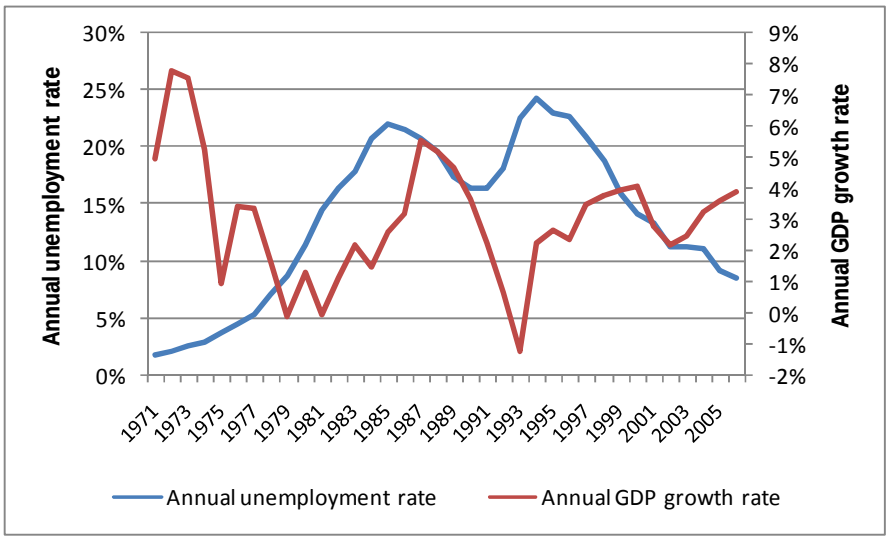

Fig. 1. Unemployment rate and GDP growth rate in Spain, 1971-2006

Data Source: I.N.E., Spanish Labour Force Survey and Spanish National Accounts

The specific self-employment trend in Spain can be explained by the role played by one of its components: own-account workers. Thus, an opposite evolution can be observed of both groups' rates where the rate of employers increased whereas the proportion of own-account workers decreased.[6] This evolution has supposed a radical change in the self-employment composition.[7]

However, the existence of sectoral changes in employment is taken into account, the picture changes substantially. Thus, by excluding the "agricultural industries" from this descriptive analysis, self-employment in Spain can be seen to have followed a bullish pattern.[8] This fact should not be surprising, particularly, if both the significant weight loss of the primary sector in all OECD economies and the fact that the self-employment is the natural employment status within this sector are taken into account.

Hence, all these specific features, together with the external shock produced by the Spanish incorporation to the Single Market in 1986, make Spain an extremely interesting object of study in order to detect the underlying determinants of self-employment.

This chapter updates and extends other microeconometric researches devoted to the analysis of transitions to self-employment in Spain (Alba-Ramírez, 1994, based on the Working and Living Conditions Survey –ECVT 85-, Carrasco, 1999, based on the Household Budget Continuous Survey –HBCS or ECPF[9]-; Aguado *et al*., 2002, Carrasco and Ejrnæs, 2003, Congregado *et al*.,

[5] See Table 2 (Chapter 4).
[6] See Figures A1-A3 (Appendix A).
[7] Thus, in 1980:I own-account workers represented 84% of self-employment of Spain while in 2004:IV only 67% of self-employed were "own-account" self-employed jobs.
[8] Table 1 in Chapter 4 presents an evolution of non-agricultural self-employment in OECD countries using COMPENDIA data set.
[9] The Spanish nomenclature of this survey is "Encuesta Continua de Presupuestos Familiares" (ECPF), that is, Spanish Continuous Family Expenditure Survey which be used hereinafter.

2005, 2006, and Congregado and Millán, 2008, based on the European Community Household Panel –ECHP-). This work follows the spirit of those works. However, the aim, data and exercises differ from those investigations in some ways. Firstly, the eight available waves of the ECHP panel for Spain (1994-2001) are used, and results are reported from an alternative sample from the Spanish Continuous Expenditure Survey (ECPF). The two samples spread over the Nineties period with some overlapping for the second half of the Nineties. This allows us to test whether the effects of the aggregated conditions obtained in the previous chapter for the EU-15 is biased for choosing a reference period of expansion.[10] Secondly, different underlying determinants for different transitions are explicity considered by means of different starting status – unemployed or paid-employed- and final destinations –employers and own-account workers-.

Our main empirical results can be summarized as follows. In general, similar results are obtained with the ECPF and the ECHP samples. Thus, we observe how transitions from unemployment are much more likely than transitions from paid-employment. With respect to the transition from paid employment to self-employment, we find that the probability of switching from paid employment to self-employment is higher among men than women. The middle-aged workers, the most educated workers, the workers with some self-employed relatives, and those with greater capital income have also relatively higher probabilities of becoming self-employed. The analysis of the transitions from unemployment to self-employment shows that the probability of becoming self-employed is also higher for males, and middle-aged workers, increases with education, and decreases with the presence of unemployment benefits and length of any previous periods of unemployment.

The chapter is organised as follows. In Section 2, the dataset is briefly described. Section 3 describes the empirical framework. Section 4 sets out the main empirical results. Finally, a discussion about the concluding remarks of the chapter is contained in Section 5.

6.2 Data

Our analysis as a whole focuses on self-employed individuals, and differentiates between employers and own-account workers. The data used come from the European Community Household Panel (ECHP) and from the Spanish Continuous Expenditure Survey (ECPF). Despite the fact that women have lower self-employment rates, our samples include men and women aged 21 to 59. We select the 21-59 age band as different rules of behaviour can be expected among the youngest and oldest individuals, which can distort the results. Workers in the agricultural sector are also excluded when the ECHP is used as this sector is structurally different from the rest of the economy. Regrettably, the lack of information about the activity sector within the ECPF obstructs the same exclusion.

6.2.1 Spanish Continuous Family Expenditure Survey 1990:I-1997:I[11]

The ECPF is a rotating panel based on a survey conducted by the Spanish National Statistics Office (INE-Instituto Nacional de Estadística). The ECPF reports interviews for about 3,200 households every quarter. One eight of the sample is renewed quarterly and hence an individual

[10] Chapter 5 shows an absence of significant effects over the transitions from unemployment, and just transitions from paid-employment to own-account work are more likely when aggregated conditions are good which support prosperity-pull argument.

[11] Tables B1-B2 (Appendix B) summarizes the mean values of all self-employment entrants from paid-employment and unemployment, for the ECPF sample.

can be followed for up to eight consecutive quarters. The ECPF started in 1985:I and kept its main structure until 1997:I. However, to account for what occur during the Nineties, the waves from 1990:I up to 1997:I are just used. This survey contains an exhaustive set of demographic characteristics, including information about labour market status, income and wealth.[12] The fact that a relatively long period of data is available allows us to study the influence of, not just personal characteristics, but also changes in the aggregate conditions.

6.2.2 European Community Household Panel (Spanish Data) 1994-2001[13]

The ECHP is a panel of households provided by Eurostat and refers to the European Union. At present, it contains eight waves covering the period 1994-2001. Every year the selected households in each country are interviewed about issues relating to demographics, labour market, income and living conditions.

Section 4 in a previous chapter includes a deeper analysis of this dataset, definitions of employers and own-account workers included by the International Classification by Status in Employment (ICSE-1993), and the way we detect both status within our dataset including some filters. Furthermore, corrections of wealth variables to avoid comparability problems –across countries and across time- are also described.[14] Finally, also in order to avoid comparability problems, the unemployment rates included in our analysis are described.

6.3. Econometric Specification[15]

By using discrete choice models, some standard binary logit models are estimated to distinguish among three states for individuals: unemployed, paid-employed and self-employed. Furthermore, multinomial ones are used to distinguish own-account worker and employer, within self-employment destination.

Hence, in order to provide a framework for the empirical analysis we assume, as usual, that the probability of switching from the starting status to the final depends on a set of observed individual characteristics and economic variables *X* at *t-1*. Thus, an individual who is not self-employed at time *t-1* will be observed in self-employment at time *t* if the utility derived from self-employment exceeds that obtained from either paid employment or unemployment. Consequently, the probability of switching can be written as:

$$\begin{aligned}\Pr\left(Y_{i,t}=1\right)&=\Pr\left(S_{i,t}=1\,|\,S_{i,t-1}=0\right)=\\&=\Pr\left(U_{i,t}^{SE}>U_{i,t}^{SS}\;\middle|\;U_{i,t-1}^{SE}\le U_{i,t-1}^{SS}\right)=\\&=\Pr\left(\beta' X_{i,t-1}+u_i+\varepsilon_{i,t}>0\right)=F\left(\beta' X_{i,t-1}+u_i\right),\end{aligned}$$

[12] Another available data set for Spain is the Labour Force Survey (EPA-Encuesta de Población Activa), which allows to observe the labour market situation of an individual for up to six quarters. However, the EPA does not contain information about wealth variables. In this sense, Millán *et al.* (2008) collect, describe and evaluate all the potential statistical sources in order to study self-employment in Spain

[13] By using the ECHP dataset, Tables A6 and A7 (Appendix A) present the distribution of observations across Spanish regions (NUTS 1) for our exercises, and Tables B3-B4 (Appendix B) summarizes the mean values of all self-employment entrants from paid-employment and unemployment.

[14] Regarding some differences, these exercises do not correct self-employment incomes by Purchasing Power Parity (comparability across countries) as Spain is the only country analyzed.

[15] Section 5 in previous chapter includes a deeper analysis of this econometric framework.

where $Y_{i,t} = 1$ if the individual who was paid-employed (or unemployed) in period *t-1* becomes self-employed in period *t*, and and $Y_{i,t} = 0$ if the individual continues as paid-employed (or unemployed in the second specification) in period *t*.[16] $S_{i,t-1} = 1$ indicates self-employment in time t and $S_{i,t-1} = 0$ non self-employment in time *t-1*. The vector $X_{i,t-1}$ represents individual characteristics and economic conditions in the previous year to move into the new status, β is the associated vector of coefficients to be estimated, u_i is a disturbance term that includes the time-invariant unobserved heterogeneity (the person-specific effect), $\varepsilon_{i,t}$ is a random error term representing not person-specific unobserved variables, and F(.) follows a logit distribution.[17]

Regarding the multinomial logit specifications, standard errors for intra-individual correlation are adjusted, and can be expressed as a function $\Pr(Y_{i,t} = k|X_{i,t-1})$ where k = 0, 1, 2, taking the value 1 if the individual who was paid-employed (or unemployed in the second specification) in period *t-1* becomes employer, the value 2 if the individual becomes own-account worker, and 0 if the individual continues as paid-employed (or unemployed) in period *t*.[18]

6.4 Analysis of Transitions

This section presents the empirical analysis of some transitions for the Spanish labour market. Our results come from the estimation of some binary and multinomial logit models using two samples from the ECPF and the ECHP micro data described in section 2. On one hand, the transitions from paid employment to self-employment are considered, distinguishing the final state in terms of transitions to own-account worker and to employer. On the other hand, the transitions from unemployment to self-employment are studied and the final state distinguished as described above.

6.4.1 Transitions from Paid-employment to Self-employment[19]

We are interested in transitions from paid employment to self-employment. From the initial sample of 181,254 observations (115,779 observations when using ECHP), the subsample is selected of individuals who are full-time employees (defined as working 30 or more hours per week) during a particular quarter (year when using ECHP) and either continue in the same state or switch into self-employment next quarter (year when using ECHP). Our final sample, after removing cases with missing data for any of the relevant variables, includes 34,108 observations

[16] The labour force status is observed once per year when using the ECHP –once per quarter when using the ECPF-. Thus, if there are additional changes in status within this period, they are missed. We assume there are just a few of these, and that their exclusion does not affect our results.

[17] The same exercises has been reproduced by using a probit specification of F(.). However, this estimation does not alter our empirical conclusions in any significant way.

[18] When focusing on transitions from unemployment, we cannot distinguish among employers and own-account workers as final states when using the ECPF due to the low number of transitions to employer involved. As a consequence, a binomial exercise is just presented, where our dependent variable takes the value 1 if the individual who was unemployed in period *t-1* becomes self-employed in period *t*.

[19] During the recession period, it was a frequent practice among Spanish firms to convert waged and salaried workers into independent contractors (i.e. own-account workers) in order to lower costs and enhance productivity. Consequently, some of these results might be biased by this fact.

(16,846 observations when using ECHP) of which 235 -0.69 percent- (330 -1.96 percent- when using ECHP) refer to transitions.[20]

The first two columns of Tables A1 and A2 (see appendix A) show the binomial estimation results of the probability of transition from paid-employment to self-employment, using the ECPF and the ECHP, respectively. The last four columns of both tables report multinomial estimates to account for differences in transitions probabilities to own-account work or to employer. Tables A5 and A8 (see Appendix A) predicted probabilities for individuals with given characteristics of entering into self-employment from paid employment and from unemployment. Finally, by means of the ECHP, predicted probabilities of transitions for individuals living across different Spanish NUTS-1 are presented in Table A9 (see Appendix A).

We start by considering the effect of individual characteristics. The results show that, for both samples, males exhibit a higher probability of transition into self-employment.[21] Both samples also reveal that the probability of becoming own-account worker increases –at a decreasing rate- with age, while those becoming employers are not significantly affected by this variable. The ECPF sample reveals that married individuals are more likely to become self-employed. Furthermore, both samples show that the number of children under fourteen decreases the probability of transition.

Turning to the effect of intergenerational transfers of human capital and entrepreneurial ability, the presence of a relative self-employed is found to increase the probability of transition by means of the ECHP sample.[22] On the other hand, as the ECPF does not contain information concerning the self-employment status of an individual's parents, we try to identify the presence of these transfers by observing the spouse status as a proxy.[23] Thus, the effect is especially relevant in the case of employers but the estimates are not statistically significant for own-account workers.[24]

With respect to the education variables, evidence that non-educated individuals have lower probability of becoming self-employed is obtained. However, our results differ in some sense when using both datasets. On one hand, by means of the ECPF, the presence of secondary education or higher studies has a significant and positive effect on the probability of becoming employer.[25] In the case of transitions to own-account work, the variables measuring formal education do not significantly affect these decisions. However, when we intend to capture this effect by means of the ECHP no direct effect of education is observed over those becoming employ-

[20] The differences on these percentages are explained by the fact that the labour force status is observed once per year when using the ECHP, and once per quarter when using the ECPF. Tables B1 and B3 (Appendix B) summarizes the mean values of all self-employment entrants from paid-employment.

[21] The probability of switching to self-employment decreases by 78 % for females, when using our ECPF dataset. Similarly, this probability decreases by 53% by means of the ECPH data. See Tables A5 and A8, respectively (Appendix A). Our result agree with the results obtained by Carrasco and Ejrnaes (2003) who, although did not distinguish the starting state of unemployment from paid-employment, found higher predicted probabilities of entering self-employed on males using a ECHP sample for Spain.

[22] The probability of switching to self-employment increases by 90.4 and 128% with the existence of relatives working as employer and own-account workers, respectively (see Table A8, appendix A).

[23] Falter (2002) observes that those with a self-employment spouse have a higher probability of remaining in business.

[24] Transitions to employer increase with a self-employment spouse by almost 113% (see Table A5, Appendix A).

[25] Transitions from paid-employment to employer increase by 820% when paid-employees present higher education (see Table A5, Appendix A).

ers, but we find that relatives with university studies are strongly associated with this probability.[26] Finally, transitions to self-employment without employees are more likely when individuals present secondary education.

The ECHP contains more information than the ECPF, where the focus is on the effect of the individuals' employment characteristics on the probability of transition. Our estimates on the ECPF show a negative effect of previous employment duration on the probability of transition, which is much stronger for employers.[27] Using the ECHP sample, and consistent with that obtained for the EU-15, evidence was found indicating that paid workers in small and medium firms, in the private sector, with higher job status (supervisory or intermediate) and with indefinite contract, are more likely to become self-employed. The effect is especially relevant in the case of employers.[28] Looking at variables related to labour experience, in both samples, workers are more likely to become self-employed when they have been in self-employment in the past.[29]

In line with previous findings in the literature, we find that the coefficients on the wealth variables have important effects on the probability of transition from paid employment to self-employment. Thus, when using the ECPF sample, we observe how people with low wages tend to enter self-employment as these earnings are viewed as the opportunity cost of entering self-employment.[30] However, non-wage incomes appear to support the liquidity constraint hypothesis, by increasing transitions for both samples.[31]

Regarding the effect of business cycle[32], no evidence of this effect is found in the ECHP. Using the ECPF, a direct relationship is obtained between business cycle and the probability of transitions to employer which supports "pull" argument.[33] This result is consistent with that observed by Carrasco and Erjnaes (2003), who find procyclicality of self-employment.

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[26] Paid-employees with relatives with university studies are almost 51% more likely to switch to employer than those without (see Table A8, Appendix A). This result also agrees with the intergenerational transfers of human capital view.

[27] Transitions to employer increase by 346.5% when individuals present 6 quarters of observed job experience, compared with those just presenting one quarter (see Table A5, Appendix A). This difference decreases to 109% for own-account workers.

[28] Individuals working for firms with at least 20 employees are 77% less likely to switch to self-employment, than those working for smaller firms (see Table A8, Appendix A). In this sense, supervisors' probabilities of becoming employer increases by 211%, when compared with non-supervisors (see Table A8, Appendix A). When we focus on those becoming employers, this last effect increases until 386%.

[29] The ECPF shows how the probability of switching to self-employment is multiplied by 19 for those with previous self-employment experience in self-employment (see Table A5, Appendix A). Our estimates for the ECHP support this result. Thus, this probability is multiplied by 10 when individuals have been employers before, and is multiplied by 3 when previous experience consists of past spells as own-account worker (see Table A8, Appendix A).

[30] Transitions to self-employment increase by 183% when individuals divide their wages by two (see Table A5, Appendix A).

[31] When using the ECPF, each additional €1000 in "other family incomes" increases the probabilities of self-employment by 20% (see Table A5, Appendix A). Regarding the ECHP, those individuals receiving an additional €1,000 in capital and property incomes are 4.3% more likely to switch. Furthermore, this effect rises 9.3%% for transitions to employer (see Table A8, Appendix A).

[32] This effect is controlled by means of unemployment rate. Furthermore, we also attempted to control for business cycle conditions by using Unemployment and GDP (both variables in levels and growth rates) obtaining similar results.

[33] Transitions to employer decrease by 93% when individuals face the highest unemployment rates within the sample -24.55%- compared with the lowest rates -15.85%- (see Table A5, Appendix A).

Also interesting is the effect of the size of the town obtained for the ECPF. Thus, those paid-employees living in medium size towns (10,001-50,000 inhabitants) are more likely to switch to employer than those living in other size towns.[34] Finally, we can focus on regional specific effects by means of the ECHP. In this sense, important specific effects for NUTS 1 are not observed in Spain.[35]

6.4.2 Transitions from Unemployment to Self-employment

This subsection examines self-employment as an alternative for jobless workers. Thus, our interest lies in transitions from unemployment to self-employment. 181,254 observations (115,779 observations when using ECHP) are included in our initial sample. Thus, we selected the subsample of individuals who are unemployed during a particular quarter (year when using ECHP) and either continue as unemployed or switch into self-employment next quarter (year when using ECHP). After filtering, the final sample used for estimation has 3,661 observations (2,958 observations when using ECHP) of which 90 -2.46 percent- (197 -6.66 percent- when using ECHP) refer to transitions.[36]

In this sense, by means of the ECPF and consistent with Carrasco (1999), the probability of switching from unemployment to self-employment (4%) is observed to be close to 17 times the probability of switching from paid-employment (0.24%).[37] Furthermore, consistent with that obtained for the EU-15 the probability of switching from unemployment to self-employment (18%) is observed to be close to 7 times the probability of switching from paid-employment (2.7%) when using ECPH data.[38]

Tables A3 and A4 (see Appendix A) report logit estimates of the probability of transition to self-employment for unemployed individuals for both samples. When possible, the explanatory variables are the same that considered for transitions from paid-employment. For the ECPF, Table A3 show the results of the probability of transition into self-employment, conditional on being unemployed.[39] When focusing on ECHP estimates, the first two columns of Table A4 (see Appendix A) show the logit estimation and the last four columns report multinomial estimates in order to account for the differences of those switching to own-account worker, or becoming employers. Tables A5 and A8 (see Appendix A) compare predicted probabilities for individuals with given characteristics of entering into self-employment from paid employment and from unemployment. Finally, predicted probabilities of transitions for individuals living across different Spanish NUTS-1 are presented in Table A9 (see Appendix A).

The effects of the variable unemployment benefits are first considered, which reports one of the most interesting results. Thus, for both datasets and consistent with Carrasco (1999), a

[34] The probability of switching to employer increases by 123% when the individual lives in a medium town (see Table A5, Appendix A).

[35] NUTS-1 -groups of autonomous communities- is the higher disaggregation level which the ECHP offers for Spain. In this sense, results presented in Table A9 -Appendix A- must be cautiously interpreted, taking into account the distribution of observations across regions for our exercises (see, Tables A6 and A7, Appendix A).

[36] The differences on these percentages are explained by the fact that the labour force status is observed once per year when using the ECHP, and once per quarter when using the ECPF. Tables B2 and B4 (Appendix B) summarize the mean values of all self-employment entrants from unemployment.

[37] See Table A5 (Appendix A).

[38] See Table A8 (Appendix A).

[39] The low number of encountered transitions does not allow us to distinguish between employers and own-account workers, as final state for this sample.

strong and negative impact of unemployment insurance on those becoming entrepreneurs is obtained.[40] Furthermore, consistent with our principal findings in the previous chapter, receiving benefits seems to be particularly harmful for those switching to own-account work.[41] However, the estimates of the liquidity constraints effect are not statistically significant for any of our samples.

Other remarkable results are found in regards to the endowments of human capital. Firstly, the negative quadratic term begins to dominate the positive linear term at roughly the age of 38, indicating that past this age people become less likely to become entrepreneurs.[42] Regarding the effect of formal education, evidence is obtained that non-educated unemployed individuals have a lower probability of entering self-employment.[43] Also the presence of previous spells of self-employment report positive and significant results by means of the ECPF sample.[44] However, as this experience can be distinguished between spells as employer or own-account worker when using the ECHP dataset, we observe how the stronger effects on these transitions are due to previous own-account work.[45] Finally, past spells as paid-employees reduce the probabilities of entering own-account work, while does not alter in a significant way transitions to employer.[46]

The variables describing gender differences and personal characteristics report, in general, consistent results with that obtained for paid workers entering into self-employment. The probability of switching into self-employment is higher for males and those with lower number of children under fourteen. Moreover, when we try to capture the effect of intergenerational transfers of human capital and entrepreneurial ability, evidence supporting that the presence of self-employed relatives increases the chances of self-employment is again found.[47]

On the other hand, unlike Alba-Ramirez (1994) but consistent with that obtained for the EU-15, we observe for both datasets how the duration of unemployment significantly decreases the probability of becoming self-employed.[48] Regarding business cycle, unemployment rates are not statistically significant for any of our samples.

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[40] By means of the ECPF, the presence of benefits reduces the chances of self-employment by 54.6% (see Table A5, Appendix A). When using the ECHP, those unemployed receiving benefits the reduction is very similar -about 49%- (see Table A8, Appendix A).

[41] Transitions to own-account work decreases by 58% when unemployed receive benefits (see Table A8, Appendix A).

[42] However, this result is only significant for the ECHP dataset.

[43] This result is only significant for the ECHP dataset. Thus, we observe how the probability of switching to self-employment increases by 58.4% when the individual presents university studies (see Table A8, Appendix A).

[44] By means of the ECPF, we observe as past self-employment increases the chances of a new self-employment spell by 839% (see Table A5, Appendix A).

[45] By using the ECHP, this probability for those who were own-account workers in the past increases by almost 76% (see Table A8, Appendix A).

[46] Previous paid-employment experiences decreases the transitions to own-account work by 47.6% (see Table A8, Appendix A).

[47] By using the ECPF, transitions to self-employment increases with a self-employment spouse by 77% (see Table A5, Appendix A). Furthermore, the probability of switching to self-employment increases by 20.4 and 62.5% with the existence of relatives working as employer and own-account workers, respectively (see Table A8, Appendix A).

[48] Transitions to self-employment with the ECPF decrease by almost 74% when unemployment duration is five quarters, compared with those whose unemployment duration is one quarter (see Table A5, Appendix A). Regarding ECHP estimates, these transitions decrease by almost 36.5% when unemployment duration is about 9 years, compared with those whose unemployment duration is about 2 years (see Table A8, Appendix A).

Finally, the results showing the effects of regional specific effects merit some additional comments. Thus, we observe how transitions from unemployment to employer are more likely for individuals living in the Northeast and the East (i.e. for individuals living in the Basque Country, Navarra, La Rioja, Aragón, Catalonia, Comunidad Valenciana or the Balearic Islands) which have traditionally been areas where entrepreneurship were more likely.[49] In this sense, given that all Spanish regions share a common institutional environment, the origin of these differences might be explained by the business economic environment of these areas.[50]

6.5 Concluding Remarks

In this chapter, we have empirically investigated the influence of the individual characteristics and the business cycle on the probability of becoming self-employed by using some discrete choice models, In doing so, we have used two samples from the European Community Household Panel (ECHP), and from the Spanish Continuous Expenditure Survey (ECPF), which cover the Nineties.

Our main empirical results of the estimation of the determinants of self-employment can be summarized as follows: The determinants of self-employment show, in general, great similarities between both samples. Thus, consistent with the idea that self-employment is seen as an alternative to unemployment, transitions from unemployment are much more likely than transitions from paid-employment. Furthermore, males, middle-aged individuals, the most educated ones and those with some relatives self-employed have also relatively higher probabilities of becoming self-employed. Finally, regarding specific effects for each starting status we observe as those workers with greater capital income are more likely to enter self-employment, while for unemployed people, the chances of self-employment decrease with the presence of unemployment benefits and the length of previous unemployment spells.

Regarding the effect of the business cycle, we do not find any evidence of this effect when using the ECHP dataset. By means of the ECPF, however, we obtain a direct relationship between aggregated conditions and the probability of becoming employer from paid-employment, which supports “pull” argument. This result does not reject that finding for the EU-15 analysis and help us to conclude that those results were not biased for choosing a reference period of expansion.

Finally, when we attempt to control for differences across Spanish regions, the effects of different business economic environments might emerge for transitions from unemployment to employer where individuals living in the Northeast and the East (i.e. for individuals living in the Basque Country, Navarra, La Rioja, Aragón, Catalonia, Comunidad Valenciana and the Balearic Islands) present more chances to switch. Consequently, this result also call for further research in order to determine the exact underlying factors, as happens with the previous chapter.

[49] See Table A9 (Appendix A). These results must be cautiously interpreted, taking into account the distribution of observations across Spanish NUTS-1 for our exercises (see Tables A6 and A7, Appendix A).

[50] This result supports the idea of “agglomeration economies” or “entrepreneurial networks externalities or synergies”.

6.6 References

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Appendix A: Graphs and Results

Figure A1. Self-employment relative to all in employment in Spain, 1979-2001

Data Source: Labour Force Survey (EPA)

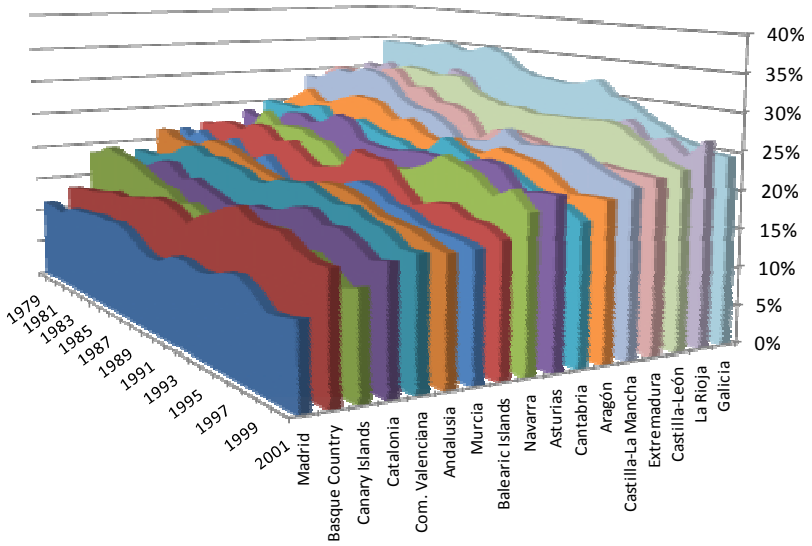

Figure A2. Employers relative to all in employment in Spain, 1979-2001

Data Source: Labour Force Survey (EPA)

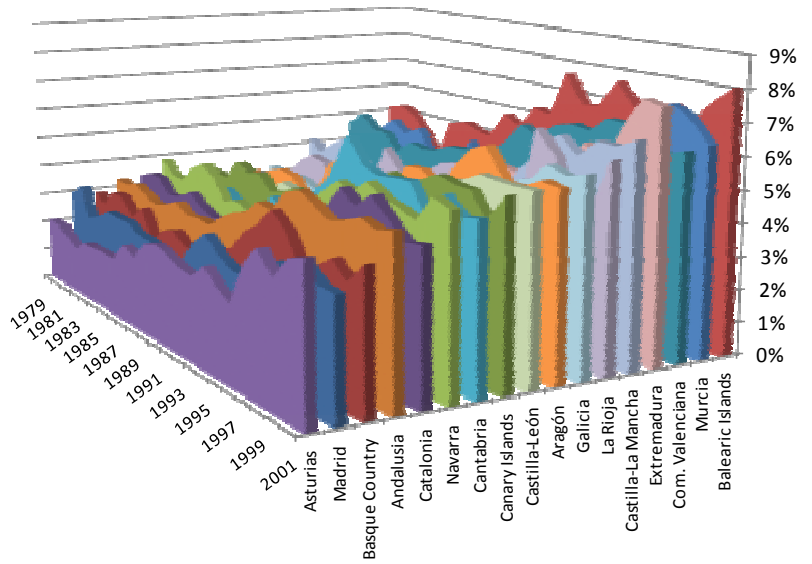

Figure A3. Own-account-workers relative to all in employment in Spain, 1979-2001

Data Source: Labour Force Survey (EPA)

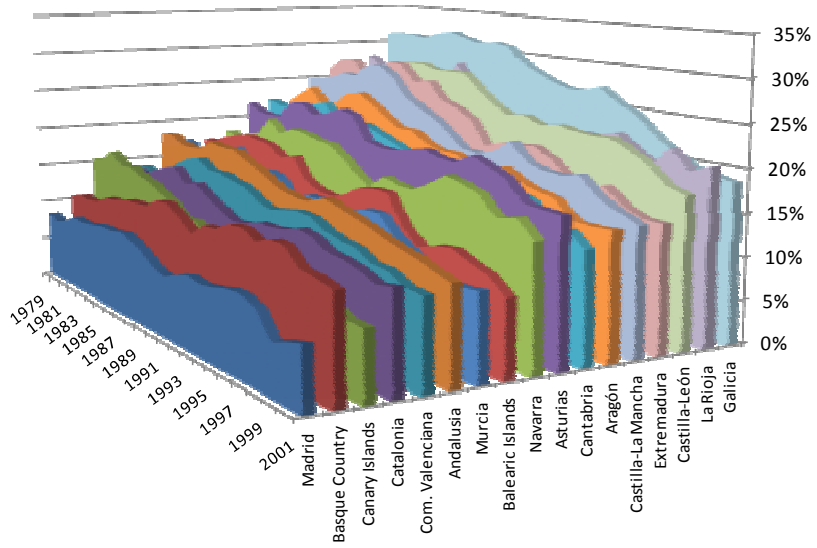

Table A1. Transitions from paid-employment to self-employment

Data Source: Spanish Continuous Expenditure Survey (ECPF), 1990 (I) – 1997 (I)

	Binomial		**Multinomial**			
	SELF-EMPLOYED (SE)		**EMPLOYER (EMP)**		**OWN-ACCOUNT WORKER (OA)**	
	Prob [$SE_t \mid PW_{t-1}$]		Prob [$EMP_t \mid PW_{t-1}$]		Prob [$OA_t \mid PW_{t-1}$]	
Number of observations	34108		34108			
Number of transitions	235		41		194	
Variables	**Coef.**	**t-stat.**	**Coef.**	**t-stat.**	**Coef.**	**t-stat.**
Constant	-6.1822	(-3.88)***	-5.701	(-1.81)*	-7.0513	(-4.29)***
Demographic characteristics						
Male	0.4218	(2.50)***	0.765	(1.83)*	0.3576	(1.91)*
Age	0.1214	(1.67)*	-0.0396	(-0.27)	0.1666	(2.15)**
Age (squared)	-0.0012	(-1.44)	0.0014	(0.85)	-0.002	(-2.16)**
Married (1)	0.5576	(2.40)**	1.189	(2.67)***	0.4388	(1.74)*
Children under 14	-0.4895	(-2.12)**	-0.7824	(-1.72)*	-0.4337	(-1.76)*
Husband/Wife self-employed	0.1992	(0.83)	0.7548	(1.93)*	0.057	(0.2)
Education						
Secondary schooling (2)	0.1623	(0.94)	1.7778	(3.99)***	-0.154	(-0.84)
University studies (2)	0.4278	(1.65)*	2.2197	(4.43)***	-0.1134	(-0.35)
Employment characteristics						
Observed employment duration	-0.5499	(-3.13)***	-1.2216	(-3.59)***	-0.33	(-1.79)*
Observed employment duration (squared)	0.0504	(2.05)**	0.1429	(3.26)***	0.0198	(0.77)
Previous experience						
Observed previous spell(s) as self-employed	3.0327	(16.67)***	2.4234	(4.95)***	3.1086	(15.59)***
Incomes						
Other quarterly family incomes	1.8E-04	(5.82)***	2.1E-04	(5.95)***	1.7E-04	(4.62)***
Quarterly work incomes	-8.1E-04	(-10.22)***	-3.8E-04	(-2.05)**	-9.7E-04	(-7.49)***
Business cycle						
Quarterly unemployment rate	-0.0043	(-0.19)	-0.1015	(-1.94)*	0.0136	(0.56)
Town size						
Medium town (10,001-50,000 inh..) (3)	0.4032	(2.01)**	0.8704	(1.8)*	0.2772	(1.28)
Large town (50,001-500,000 inh.) (3)	0.0992	(0.51)	-0.2628	(-0.51)	0.1662	(0.81)
Very large town (> 500,000 inh.) (3)	0.1075	(0.42)	0.0281	(0.05)	0.0781	(0.29)
Reference categories: (1) Single. separated. etc., (2) No education or primary schooling, (3) Small town (< 10,001 inh.)						
Log likelihood	-1065		-1136.2			

Notes:
(***) 1 % significativity level; (**) 5 % significativity level; (*) 10 % significativity level

Table A2. Transitions from paid-employment to self-employment

Data Source: European Community Household Panel (ECHP), 1994 – 2001

	Binomial		**Multinomial**			
	SELF-EMPLOYED (SE)		**EMPLOYER (EMP)**		**OWN-ACCOUNT WORKER (OA)**	
	Prob [$SE_t \mid PW_{t-1}$]		Prob [$EMP_t \mid PW_{t-1}$]		Prob [$OA_t \mid PW_{t-1}$]	
Number of observations	16846		16846			
Number of transitions	330		186		144	
Variables	**Coef.**	**t-stat.**	**Coef.**	**t-stat.**	**Coef.**	**t-stat.**
Constant	-9.4333	(-6.76)***	-10.1465	(-5.53)**	-9.8829	(-5.04)***
Demographic characteristics						
Male	0.7721	(4.15)***	0.4593	(1.97)**	1.0896	(3.93)***
Age	0.1247	(1.9)*	0.0456	(0.54)	0.2555	(2.55)**
Age (squared)	-0.0018	(-2.19)**	-0.0007	(-0.66)	-0.0038	(-2.88)***
Cohabiting (1)	0.2514	(1.37)	0.165	(0.68)	0.2918	(1.09)
Number of children under 14	-0.2355	(-2.44)**	-0.1744	(-1.4)	-0.238	(-1.63)
Relative(s) working as employer(s)	0.6696	(2.53)**	0.4728	(1.21)	0.7248	(1.99)**
Relative(s) working as own-account worker(s)	0.8618	(3.79)***	0.6842	(2.08)**	0.8642	(3.09)***
Education						
Secondary education (2)	0.3144	(1.88)*	0.0848	(0.37)	0.4736	(1.95)*
University studies (2)	0.0449	(0.23)	-0.1928	(-0.73)	0.2475	(0.93)
Relatives with university studies	0.2045	(1.34)	0.4164	(2.11)**	-0.0306	(-0.14)
Employment characteristics						
Private sector (3)	0.8242	(2.31)**	1.1935	(2.24)**	0.4502	(1.02)
Industrial sector (4)	-0.0585	(-0.28)	0.1937	(0.7)	-0.3296	(-1.11)
Financial services (4)	-0.3756	(-1.24)	-0.4377	(-1.01)	-0.1332	(-0.33)
Wholesale. hotels. restaurants & transport (4)	0.2717	(1.36)	0.2698	(1.01)	0.2494	(0.95)
Other services (4)	-0.086	(-0.28)	0.1176	(0.28)	-0.1652	(-0.38)
Small firm (1-4 employees) (5)	1.1955	(6.21)***	1.6303	(7.12)***	0.2285	(0.65)
Medium firm (5-19 employees) (5)	0.2322	(1.25)	0.4679	(1.97)**	-0.0122	(-0.05)
Supervisory (6)	1.5043	(8.11)***	1.3376	(5.66)***	1.5455	(6.27)***
Intermediate (6)	1.1163	(6.66)***	1.1064	(5.3)***	0.9778	(4.12)***
Hours of work	0.0155	(2.04)**	0.0313	(3.62)***	-0.0091	(-0.68)
Years of employment experience	0.0011	(0.02)	0.0204	(0.3)	-0.0353	(-0.5)
Years of employment experience (squared)	-0.001	(-0.44)	-0.0019	(-0.59)	0.0007	(0.2)
Indefinite contract (7)	-0.632	(-3.8)***	-0.422	(-1.72)*	-0.7768	(-3.3)***
Previous experience						
Observed previous spell(s) as employer	2.7947	(15.23)***	3.0983	(13.23)***	1.6504	(4.85)***
Observed previous spell(s) as own-acc. worker	1.6119	(7.38)***	1.0411	(2.7)***	1.9389	(6.81)***
Observed previous spell(s) as unemployed	-0.0452	(-0.28)	-0.223	(-1.09)	0.1515	(0.65)
Observed previous spell(s) as inactive	-0.0391	(-0.16)	0.171	(0.43)	-0.2411	(-0.74)
Incomes						
Dwelling owner	-0.0016	(-0.01)	0.0012	(0.01)	0.0529	(0.21)
Annual capital and property incomes (1 lag)	1.1E-04	(2.56)***	1E-04	(2.86)***	8.3E-05	(1.59)
Monthly work incomes	6.3E-05	(0.42)	8.1E-05	(0.51)	6.7E-05	(0.25)
Business cycle						
Annual unemployment rate	5.5E-06	(0.01)	0.0303	(1.03)	-0.0304	(-0.98)
Region						
Northwest (8)	-0.1918	(-0.75)	-0.2403	(-0.7)	-0.1662	(-0.48)
Northeast (8)	0.2704	(1.17)	0.4532	(1.53)	0.0375	(0.12)
Madrid (8)	-0.2331	(-0.84)	-0.3939	(-1.1)	-0.0488	(-0.14)
Center (8)	0.1791	(0.79)	0.3736	(1.21)	-0.1105	(-0.38)
East (8)	-0.047	(-0.22)	-0.1175	(-0.4)	-0.0356	(-0.13)
Canary Islands (8)	-0.275	(-0.81)	0.0933	(0.24)	-0.8233	(-1.51)
Reference categories: (1) Non-cohabiting individuals, (2) No education or primary education, (3) Public sector, (4) Construction sector, (5) Large firm (> 19 employees), (6) Non-supervisory, (7) Non-indefinite contract, (8) South						
Log likelihood	-1218		-1388.9			

Notes:
(***) 1 % significativity level; (**) 5 % significativity level; (*) 10 % significativity level

Table A3. Transitions from unemployment to self-employment

Data Source: Spanish Continuous Expenditure Survey (ECPF), 1990 (I) – 1997 (I)

	Binomial	
	SELF-EMPLOYED (SE)	
	Prob [$SE_t \mid U_{t-1}$]	
Number of observations	3661	
Number of transitions	90	
Variables	**Coef.**	**t-stat.**
Constant	-3.5307	(-1.59)
Demographic characteristics		
Male	1.5432	(4.98)***
Age	0.0546	(0.52)
Age (squared)	-0.0011	(-0.88)
Married (1)	0.3437	(0.95)
Children under 14	-0.3125	(-0.87)
Husband/Wife self-employed	0.6041	(1.61)
Education		
Secondary schooling (2)	-0.367	(-1.29)
University studies (2)	0.076	(0.17)
Unemployment characteristics		
Observed unemployment duration	-0.7781	(-2.56)***
Observed unemployment duration (squared)	0.097	(2.22)**
Previous experience		
Observed previous spell(s) as self-employed	2.6674	(7.94)***
Incomes		
Other quarterly family incomes	2.3E-06	(0.04)
Receiving unemployment benefits	-0.8117	(-3.3)***
Business cycle		
Quarterly unemployment rate	-0.0258	(-0.67)
Town size		
Medium town (10,001-50,000 inh.) (3)	0.2612	(0.77)
Large town (50,001-500,000 inh.) (3)	0.4807	(1.53)
Very large town (> 500,000 inh.) (3)	0.5506	(1.37)
Reference categories: (1) Single, separated. etc. (2) No education or primary schooling, (3) Small town (< 10,001 inh.)		
Log likelihood	-348.1	

Notes:
(***) 1 % significativity level; (**) 5 % significativity level; (*) 10 % significativity level

Table A4. Transitions from unemployment to self-employment

Data Source: European Community Household Panel (ECHP), 1994 – 2001

	Binomial		**Multinomial**			
	SELF-EMPLOYED (SE)		**EMPLOYER (EMP)**		**OWN-ACCOUNT WORKER (OA)**	
	Prob [$SE_t \mid U_{t-1}$]		Prob [$EMP_t \mid U_{t-1}$]		Prob [$OA_t \mid U_{t-1}$]	
Number of observations	2958		2958			
Number of transitions	197		40		157	
Variables	**Coef.**	**t-stat.**	**Coef.**	**t-stat.**	**Coef.**	**t-stat.**
Constant	-7.3695	(-4.97)***	-9.6612	(-3.72)***	-7.209	(-4.53)***
Demographic characteristics						
Male	1.4211	(7.68)***	1.2099	(3.08)***	1.406	(6.69)***
Age	0.2763	(3.74)***	0.2765	(1.99)**	0.2636	(3.28)***
Age (squared)	-0.0037	(-3.77)***	-0.0039	(-2.20)**	-0.0035	(-3.23)***
Cohabiting (1)	0.6115	(2.74)***	0.9921	(1.98)**	0.5109	(1.92)*
Number of children under 14	-0.187	(-1.68)*	-1.0901	(-3.02)***	-0.0529	(-0.47)
Relative(s) working as employer(s)	0.2338	(0.64)	0.1952	(0.28)	0.2465	(0.59)
Relative(s) working as own-account worker(s)	0.6408	(2.81)***	0.1936	(0.37)	0.7049	(2.99)***
Education						
Secondary education (2)	0.3921	(1.89)*	0.7362	(1.73)*	0.3037	(1.35)
University studies (2)	0.6047	(2.77)***	0.8191	(1.78)*	0.5101	(2.14)**
Relatives with university studies	0.0016	(0.01)	-0.196	(-0.48)	0.041	(0.18)
Unemployment characteristics						
Unemployment duration	-0.0717	(-2.92)***	-0.0446	(-0.92)	-0.0759	(-2.39)**
Previous experience						
Observed previous spell(s) as employer	-0.1469	(-0.28)	0.0292	(0.02)	-0.1598	(-0.29)
Observed previous spell(s) as own-account worker	0.7566	(1.95)*	1.0946	(1.21)	0.6944	(1.68)*
Observed previous spell(s) as unemployed	-0.5111	(-2.45)**	-0.7191	(-1.36)	-0.447	(-2.03)**
Observed previous spell(s) as inactive	-0.0024	(-0.01)	0.2127	(0.48)	-0.03	(-0.13)
Incomes						
Dwelling owner	0.0709	(0.35)	-0.2462	(-0.61)	0.1521	(0.68)
Annual capital and property incomes (1 lag)	5.2E-05	(0.78)	9.5E-05	(1.24)	2.7E-05	(0.36)
Receiving unemployment benefits	-0.7331	(-3.5)***	0.3430	(0.82)	-0.9751	(-3.86)***
Business cycle						
Annual unemployment rate	-0.0474	(-1.35)	-0.0101	(-0.16)	-0.0498	(-1.43)
Country						
Northwest (3)	0.066	(0.25)	0.7777	(1.46)	-0.1009	(-0.34)
Northeast (3)	0.374	(1.42)	1.0501	(1.94)*	0.2102	(0.73)
Madrid (3)	0.0069	(0.02)	0.7463	(1.27)	-0.1466	(-0.42)
Center (3)	-0.6237	(-2.12)**	-0.6905	(-0.85)	-0.5964	(-1.94)*
East (3)	0.3044	(1.26)	1.0561	(1.98)**	0.1158	(0.45)
Canary Islands (3)	-0.242	(-0.62)	-0.3189	(-0.30)	-0.2106	(-0.5)
Reference categories: (1) Non-cohabiting individuals, (2) No education or primary education, (3) South						
Log likelihood	-646.2		-731.7			

Notes:
(***) 1 % significativity level; (**) 5 % significativity level; (*) 10 % significativity level

Table A5. Predicted probabilities of switching for individuals with given characteristics

Data Source: Spanish Continuous Expenditure Survey (ECPF), 1990 (I) – 1997 (I)

	Transitions to Self-employment FROM					Transitions to Employer FROM			Transitions to Own-account Work FROM	
	E [a]	Δ% [b]	U [a]	Δ% [b]		E [a]	Δ% [b]		E [a]	Δ% [b]
Standard individual (S.I.) [c]	*0.0024*	-----	*0.0402*	-----		*1.06E-04*	-----		*0.0023*	-----
S.I. but female	0.0016	-34.4 %	0.0089	-77.9 %		4.96E-05	-53.4 %		0.0016	-30 %
S.I. with university studies	0.0038	53.2 %	0.0432	7.6 %		9.8E-03	819.9 %		0.0021	-10.8 %
S.I. with previous spell(s) as self-employed	0.0485	1880 %	0.3762	836 %		1.15E-03	974.3 %		0.0491	2032 %
S.I. with husband / wife self-employed	0.003	22 %	0.0712	77.1 %		2.27E-04	112.7 %		0.0024	5.8 %
S.I. with low observed unemployment duration [d, e]	-----	-----	0.0657	63.5 %		-----	-----		-----	-----
S.I. with high observed unemployment duration [d, e]	-----	-----	0.0361	-10.2 %		-----	-----		-----	-----
S.I. but receiving benefits [d]	-----	-----	0.0183	-54.6 %		-----	-----		-----	-----
S.I. with low observed job experience [f, g]	0.0053	117.5 %	-----	-----		4.38E-04	310.6 %		0.0041	77.5 %
S.I. with high observed job experience [f, g]	0.002	-18.5 %	-----	-----		1.45E-04	35.9 %		0.0016	-31.6 %
S.I. but receiving €1,000 more in capital and property incomes	0.0029	20.1 %	0.0403	0.2 %		1.13E-04	23 %		0.0027	17.9 %
S.I. with low work incomes [f, h]	0.0069	183.4 %	-----	-----		1.74E-04	63.1 %		0.008	247.5 %
S.I. with high work incomes [f, h]	0.0003	-87.6 %	-----	-----		3.97E-05	-62.8 %		0.0002	-91.8 %
S.I. with low unemployment rate [i]	0.0025	2 %	0.0459	14.1 %		1.69E-04	58.3 %		0.0022	-5.9 %
S.I. with high unemployment rate [i]	0.0024	-1.8 %	0.037	-8 %		6.97E-05	-34.6 %		0.0024	5.8 %
S.I. but living in a small town (<10.001 inh.)	0.0021	-13.2 %	0.0299	-25.6 %		9.98E-05	-6.3 %		0.002	-13.1 %
S.I. but living in a medium town (10.001-50.000 inh.)	0.0032	29.7 %	0.0385	-4.3 %		2.38E-04	123.5 %		0.0026	14.6 %
S.I. but living in a large town (50.001-500.000 inh.)	0.0023	-4.2 %	0.0475	18.1 %		7.67E-05	-28 %		0.0024	2.6 %
S.I. but living in a very large town (> 500.000 inh.)	0.0024	-3.4 %	0.0507	26.2 %		1.03E-04	-3.7 %		0.0022	-6.1 %

Notes:

[a] E=Employee, U=Unemployed.

[b] Percentage change related to the standard.

[c] Standard individual: male, married, children, no education or primary education, not husband / wife self-employed, and not previous self-employment experience within the sample. With respect to transitions from unemployment, individuals are not receiving benefits. Other variables equals to average values respectively.

[d] Not applicable in transitions from employment.

[e] Low and high observed unemployment duration are 1 and 5 quarters (the 10^{th} and 90^{th} centiles respectively).

[f] Not applicable in transitions from unemployment.

[g] Low and high job experience are 1 and 6 quarters (the 10^{th} and 90^{th} centiles respectively).

[h] Low and high and work incomes are half and double the average ones respectively.

[i] Low and high unemployment rates are 15.85 % and 24.55 % respectively, which are the lowest and the highest values for our sample period.

Table A6. Number of transitions from paid-employment across Spain

Data Source: European Community Household Panel (ECHP), 1994 – 2001

	Number of transitions from Paid-Employment TO		
	Paid-employment	**Employer**	**Own-account Work**
Spain	*16516*	*186*	*144*
Northwest	1993	20	19
Northeast	2901	36	22
Madrid	2121	16	14
Center	2244	38	22
East	3797	41	33
South	2508	24	30
Canary Islands	952	11	4

Table A7. Number of transitions from unemployment across Spain

Data Source: European Community Household Panel (ECHP), 1994 – 2001

	Number of transitions from Unemployment TO		
	Unemployment	**Employer**	**Own-account Work**
Spain	*2761*	*40*	*157*
Northwest	391	7	21
Northeast	298	8	23
Madrid	209	5	13
Center	454	2	17
East	446	11	28
South	802	6	46
Canary Islands	161	1	9

Table A8. Predicted probabilities of switching for individuals with given characteristics

Data Source: European Community Household Panel (ECHP), 1994 – 2001

	Transitions to Self-employment FROM				Transitions to Employer FROM				Transitions to Own-account Work FROM			
	E [a]	Δ% [b]	U [a]	Δ% [b]	E [a]	Δ% [b]	U [a]	Δ% [b]	E [a]	Δ% [b]	U [a]	Δ% [b]
Standard individual (S.I.) [c]	*0.0273*	-----	*0.1873*	-----	*0.0109*	-----	*0.0154*	-----	*0.0256*	-----	*0.174*	-----
S.I. but female	0.0128	-53.1 %	0.0527	-71.9 %	0.007	-35.5 %	0.0054	-65.2 %	0.0088	-65.6 %	0.0497	-71.4 %
S.I. with university studies	0.0285	4.5 %	0.2967	58.4 %	0.0089	-18 %	0.0309	99.8 %	0.0326	27.4 %	0.2552	46.7 %
S.I. with relatives with university studies	0.0333	21.9 %	0.1876	0.1 %	0.0164	50.9 %	0.0126	-18.2 %	0.0247	-3.5 %	0.1804	3.7 %
S.I. with observed previous spell(s) as employer	0.3146	1053 %	0.166	-11.4 %	0.1805	1556 %	0.0163	5.6 %	0.0996	289.2 %	0.1521	-12.6 %
S.I. with observed previous spell(s) as own-account worker	0.1233	3517 %	0.3294	75.8 %	0.0263	141.6 %	0.0383	147.9 %	0.1518	493 %	0.2891	66.2 %
S.I. with observed previous spell(s) as paid-employed	-----	-----	0.1215	-35.2 %	-----	-----	0.0081	-47.6 %	-----	-----	0.1197	-31.2 %
S.I. with observed previous spell(s) as unemployed	0.0261	-4.3 %	-----	-----	0.0087	-20.2 %	-----	-----	0.0297	16.1 %	-----	-----
S.I. with observed previous spell(s) as inactive	0.0263	-3.7 %	0.1869	-0.2 %	0.013	19.1 %	0.0191	23.9 %	0.0202	-21.2 %	0.1691	-2.8 %
S.I. with relative(s) working as employer	0.052	90.4 %	0.2255	20.4 %	0.0169	55.2 %	0.0178	15.5 %	0.0511	99.7 %	0.2116	21.6 %
S.I. with relative(s) working as own-account worker	0.0623	128.2 %	0.3043	62.5 %	0.0207	89.5 %	0.0159	2.7 %	0.0581	126.9 %	0.298	71.3 %
S.I. working in the industrial sector [d]	0.0258	-5.5 %	-----	-----	0.0133	22 %	-----	-----	0.0185	-27.7 %	-----	-----
S.I. working in financial services [d]	0.0189	-30.7 %	-----	-----	0.0071	-35 %	-----	-----	0.0226	-11.9 %	-----	-----
S.I. working in wholesale, hotels, restaurants or transport [d]	0.0355	30.1 %	-----	-----	0.0141	29.6 %	-----	-----	0.0325	27 %	-----	-----
S.I. working in other services [d]	0.0251	-8 %	-----	-----	0.0123	12.8 %	-----	-----	0.0218	-15 %	-----	-----
S.I. working whose job status is supervisory [d]	0.0849	210.9 %	-----	-----	0.0529	385.6 %	-----	-----	0.0306	19.5 %	-----	-----
S.I. working in a large size firm (>19 employees) [d]	0.0062	-77.3 %	-----	-----	0.0029	-73 %	-----	-----	0.0056	-78.1 %	-----	-----
S.I. without indefinite contract [d]	0.0147	-46.2 %	-----	-----	0.0073	-33.3 %	-----	-----	0.012	-53.2 %	-----	-----
S.I. with low working hours [d, e]	0.0248	-9.2 %	-----	-----	0.0089	-18.1 %	-----	-----	0.0271	6 %	-----	-----
S.I. with high working hours [d, e]	0.0306	12.2 %	-----	-----	0.0138	26.8 %	-----	-----	0.0239	-6.8 %	-----	-----
S.I. with low job experience [d, f]	0.0294	7.7 %	-----	-----	0.0107	-1.7 %	-----	-----	0.032	25 %	-----	-----
S.I. with high job experience [d, f,]	0.0208	-23.7 %	-----	-----	0.008	-26.9 %	-----	-----	0.0221	-13.7 %	-----	-----
S.I. but receiving benefits [g]	-----	-----	0.0997	-46.8 %	-----	-----	0.0242	56.9 %	-----	-----	0.0731	-58 %
S.I. with low unemployment duration [g, h]	-----	-----	0.2124	13.4 %	-----	-----	0.0165	6.8 %	-----	-----	0.1989	14.3 %
S.I. with high unemployment duration [g, h]	-----	-----	0.1440	-23.1 %	-----	-----	0.0134	-13.3 %	-----	-----	0.1315	-24.4 %
S.I. but receiving €1,000 more in capital and property incomes	0.0303	11.1 %	0.1953	4.3 %	0.012	10.2 %	0.0169	9.3 %	0.0277	8.3 %	0.1776	2.1 %
S.I. with low monthly work incomes [d, i]	0.0265	-3 %	-----	-----	0.0105	-3.9 %	-----	-----	0.0248	-3.2 %	-----	-----
S.I. with high monthly work incomes [d, i]	0.029	6.3 %	-----	-----	0.0118	8.2 %	-----	-----	0.0273	6.7 %	-----	-----
S.I. with low unemployment rate [j]	0.0273	0.002 %	0.235	25.5 %	0.0095	-12.8 %	0.0155	0.1 %	0.0292	14.2 %	0.2215	27.3 %
S.I. with high unemployment rate [j]	0.0273	-0.002 %	0.1703	-9.1 %	0.0123	13.2 %	0.0154	-0.4 %	0.0227	-11.4 %	0.1572	-9.6 %

Notes:

[a] E = Employee, U = Unemployed, and OA = Own-Account Worker.

[b] Percentage change related to the standard.

[c] S. I.= Standard individual: male, cohabiting, one children aged fewer 14, no education or primary education, no relatives with university education within the sample, not previous experience as employer, own-account worker, unemployed or inactive, within the sample, not relatives working as employer or own-account worker, receiving mean capital and property incomes. In transitions from employment, individuals work as non-supervisoriy in the private sector, in small firms, with indefinite contracts, and in the construction sector. With respect to transitions from unemployment, individuals are not receiving benefits. Other variables equals to average values respectively.

[d] Not applicable in transitions from unemployment.

[e] Low and high working hours are 36 and 50 (the 10^{th} and 90^{th} centiles respectively).

[f] Low and high job experience are 1 and 19 years (the 10^{th} and 90^{th} centiles respectively).

[g] Not applicable in transitions from employment.

[h] Low and high unemployment duration are 2 and 9 years, half and double the average ones respectively.

[i] Low and high monthly work incomes are half and double the average ones respectively.

[j] Low and high unemployment rates are 11.3 % and 19.8 % respectively, which are the lowest and the highest values for our sample period.

Table A9. Predicted probabilities of switching, for individuals with given characteristics

Data Source: European Community Household Panel (ECHP), 1994 – 2001

	Transitions to Self-employment FROM				Transitions to Employer FROM				Transitions to Own-account Work FROM			
	E [a]	Δ% [b]	U [a]	Δ% [b]	E [a]	Δ% [b]	U [a]	Δ% [b]	E [a]	Δ% [b]	U [a]	Δ% [b]
Standard individual [c]	*0.0273*	-----	*0.1873*	-----	*0.0109*	-----	*0.0154*	-----	*0.0256*	-----	*0.174*	-----
Standard individual but living in the Northwest	0.0228	-16.4 %	0.1995	6.5 %	0.0084	-23.3 %	0.024	55.6 %	0.0238	-6.9 %	0.171	-1.7 %
Standard individual but living in the Northeast	0.0357	30.9 %	0.2533	35.2 %	0.0165	51.3 %	0.0295	91 %	0.0288	12.6 %	0.2182	25.4 %
Standard individual but living in Madrid	0.0219	-19.8 %	0.1903	1.6 %	0.0072	-34.4 %	0.0235	52.1 %	0.0268	4.5 %	0.1648	-5.3 %
Standard individual but living in the Center	0.0327	19.8 %	0.1112	-40.7 %	0.0153	40.5 %	0.0061	-60.8 %	0.025	-2.4 %	0.1139	-34.5 %
Standard individual but living in the East	0.0263	-3.8 %	0.2403	28.3 %	0.0094	-13.7 %	0.0303	95.9 %	0.027	5.6 %	0.2025	16.4 %
Standard individual but living in the South	0.0275	0.7 %	0.1892	1 %	0.0106	-3.1 %	0.011	-28.9 %	0.028	9.2 %	0.1882	8.2 %
Standard individual but living in Canary Islands	0.021	-23 %	0.1548	-17.3 %	0.0118	7.9 %	0.0083	-46.2 %	0.0125	-51.3 %	0.1586	-8.8 %

Notes:

[a] E=Employee, U=Unemployed, and OA=Own-Account Worker.

[b] Percentage change related to the standard.

[c] S. I.= Standard individual: male, cohabiting, one children aged fewer 14, no education or primary education, no relatives with university education within the sample, not previous experience as employer, own-account worker, unemployed or inactive, within the sample, not relatives working as employer or own-account worker, receiving mean capital and property incomes. In transitions from employment, individuals work as non-supervisoriy in the private sector, in small firms, with indefinite contracts, and in the construction sector. With respect to transitions from unemployment, individuals are not receiving benefits. Other variables equals to average values respectively.

Appendix B: Data Description

Spanish Continuous Expenditure Survey (ECPF)

Variable definitions referred to exercises developed with the Household Budget Continuous Survey (HBCS) are reported below.

Dependent variables

Transitions from paid-employment to self-employment:

Binomial case

Dependent variable equals 1 for individuals who are full-time waged workers in quarter *t-1* and become self-employed in quarter *t*. The variable equals 0 for individuals who are full-time waged workers in quarters *t-1* and *t*.

Multinomial case

Dependent variable equals 1 for individuals who are full-time waged workers in quarter *t-1* and become employers in quarter *t*. The variable equals 2 for individuals who are full-time waged workers in quarter *t-1* and become own-account workers in quarter *t*. Finally, the variable equals 0 for individuals which are full-time waged workers in quarters *t-1* and *t*.

Transitions from unemployment to self-employment:

Dependent variable equals 1 for individuals who are unemployed in quarter *t-1* and become self-employed in quarter *t*. The variable equals 0 for individuals who are unemployed in quarters *t-1* and *t*.

Explanatory variables

Demographic characteristics:

Male	Dummy equals 1 for males.
Age	Age reported by the individual, ranging from 21 to 59.
Married	Dummy equals 1 for married individuals and 0 otherwise.
Children under 14	Dummy for individuals with children aged under than 14.
Husband / Wife self-employed	Dummy equals to 1 for individuals whose husband / wife is self-employed.

Education:

No education and primary schooling	Dummy equals 1 for illiterate, no schooling individuals, and individuals with primary schooling as higher education level achieved, and 0 otherwise Education data of the head of household is used as a *proxy* of education of the husband / wife.
Secondary schooling	Dummy equals 1 for individuals with secondary schooling as higher education level achieved and 0 otherwise. Education data of the head of household is used as a *proxy* of education of the husband / wife.
University studies	Dummy equals 1 for individuals with University studies and 0 otherwise. Education data of the head of household is used as a *proxy* of education of the husband / wife.

Employment characteristics:	
Employment duration	Observed number of quarters in present job as paid-employed.
Unemployment characteristics:	
Unemployed duration	Observed number of quarters as unemployed.
Observed previous experience:	
Previous spell(s) as self-employed	Dummy equals 1 for individuals with observed previous spell(s) as self-employed.
Incomes:	
Quarterly work incomes	Work incomes earned during the previous quarter to the interview, converted to euros of 1992, having been corrected by Consumer Price Index.
Other quarterly family incomes	Other family income earned during the previous quarter to the interview, converted to euros of 1992, having been corrected by Consumer Price Index. It includes all family incomes but paid-employment work incomes, unemployment benefits, depending on the analyzed transitions.
Receiving unemployment benefits	Dummy equals 1 for individuals receiving unemployment benefits during the previous quarter to the interview, and 0 otherwise.
Business cycle:	
Quarterly unemployment rate	National quarterly unemployment rate (source: Labour Force Survey –EPA-).
Town size:	
Small town (< 10,000 inh.)	Dummy equals to 1 for individuals living in small size towns and 0 otherwise.
Medium town (10,001-50,000 inh.)	Dummy equals to 1 for individuals living in medium size towns and 0 otherwise.
Large town (50,001-500,000 inh.)	Dummy equals to 1 for individuals living in large size towns and 0 otherwise.
Very large town (> 500,000 inh.)	Dummy equals to 1 for individuals living in very large size towns and 0 otherwise.

Table B1. Descriptive statistics of the transitions from paid-employment to self-employment

Data Source: Spanish Continuous Expenditure Survey (ECPF), 1990 (I) – 1997 (I)

	All observations	Non switching observations	Switching to Employer observations	Switching to Own-account Worker observations
Number of observations	34108	33873	41	194
Demographic characteristics				
Females	26.7 %	26.7 %	19.5 %	28.9 %
Average age	41.2 years	41.2 years	44.1 years	40.1 years
Age 21-30 years	13.1 %	13.1 %	22 %	13.9 %
Age 31-40 years	36.1 %	36.2 %	19.5 %	35.1 %
Age 41-50 years	32.4 %	32.4 %	19.5 %	31.4 %
Age 51-59 years	18.4 %	18.3 %	39 %	19.6 %
No education / Primary schooling (*)	44.8 %	44.7 %	24.4 %	60.8 %
Secondary schooling (*)	38.8 %	38.9 %	48.8 %	31.5 %
University studies (*)	16.4 %	16.4 %	26.8 %	7.7 %
Married	43.9 %	43.9 %	48.8 %	45.9 %
Children under 14	35.6 %	35.7 %	26.8 %	33 %
Husband / Wife self-employed	5.9 %	5.8 %	17.1 %	9.8 %
Employment characteristics				
Average observed experience as employee	3.4 quarters	3.4 quarters	2.4 quarters	2.1 quarters
Previous experience within self-employment				
Previous experience as self-employed	1 %	0.8 %	17.1 %	36.1 %
Incomes				
Other quarterly family income	€418	€412	€1,420	€1,319
Average quarterly work income	€2,575	€2,584	€2,142	€1,184
Town size				
Small town (< 10,000 inh.)	19.2 %	19.2 %	14.6 %	22.7 %
Medium town (10,001-50,000 inh.)	20 %	19.9 %	36.6 %	27.8 %
Large town (50,001-500,000 inh.)	43.1 %	43.1 %	29.3 %	37.6 %
Very large town (> 500,000 inh.)	17.7 %	17.8 %	19.5 %	11.9 %

(*) Educational attainment of the head of household is used as a *proxy* of education of the husband/wife.

Table B2. Descriptive statistics of the transitions from unemployment to self-employment

Data Source: Spanish Continuous Expenditure Survey (ECPF), 1990 (I) – 1997 (I)

	All observations	Non switching observations	Switching observations
Number of observations	3661	3571	90
Demographic characteristics			
Females	43 %	43.6 %	17.8 %
Average age	41.2 years	41.3 years	39.7 years
Age 21-30 years	19.1 %	19.1 %	20 %
Age 31-40 years	32.2 %	32.1 %	33.3 %
Age 41-50 years	23.4 %	23.3 %	30 %
Age 51-59 years	25.3 %	25.5 %	16.7 %
No education / Primary schooling (*)	59.5 %	59.2 %	66.7 %
Secondary schooling (*)	34.3 %	34.6 %	24.4 %
University studies (*)	6.2 %	6.2 %	8.9 %
Married	45.8 %	45.7 %	50 %
Children under 14	35.4 %	35.4 %	36.7 %
Husband / Wife self-employed	9.6 %	9.5 %	11.1 %
Unemployment characteristics			
Average observed unemployment duration	2.5 quarters	2.5 quarters	1.9 quarters
Previous experience within self-employment			
Previous experience as self-employed	1.7 %	1.1 %	23.3 %
Incomes			
Other quarterly family income	€1,829	€1,831	€1,752
Receiving unemployment benefits	70.7 %	70.7 %	48.9 %
Average quarterly unemployment benefits	€776	784	453
Average quarterly unemployment benefits (those who receive)	€1,098	€1,101	€925
Town size			
Small town (< 10,000 inh.)	26.7 %	26.9 %	20 %
Medium town (10,001-50,000 inh.)	25.2 %	25.3 %	24.5 %
Large town (50,001-500,000 inh.)	33.9 %	33.6 %	42.2 %
Very large town (> 500,000 inh.)	14.2 %	14.2 %	13.3 %

(*) Educational attainment of the head of household is used as a *proxy* of education of the husband/wife.

European Community Household Panel (ECHP)

Variable definitions referring to exercises developed with the European Community Household Panel (ECHP) are reported below.

Explained variables

Transitions from paid-employment to self-employment:

Binomial case

Dependent variable equals 1 for individuals who are full-time waged workers in period *t-1* and become self-employed in period *t*. The variable equals 0 for individuals who are full-time waged workers in periods *t-1* and *t*.

Multinomial case

Dependent variable equals 1 for individuals who are full-time waged workers in period *t-1* and become employers in period *t*. The variable equals 2 for individuals who are full-time waged workers in period *t-1* and become own-account workers in period *t*. Finally, the variable equals 0 for individuals which are full-time waged workers in periods *t-1* and *t*.

Transitions from unemployment to self-employment:

Binomial case

Dependent variable equals 1 for individuals who are unemployed in period *t-1* and become self-employed in period *t*. The variable equals 0 for individuals who are unemployed in periods *t-1* and *t*.

Multinomial case

Dependent variable equals 1 for individuals who are unemployed in period *t-1* and become employers in period *t*. The variable equals 2 for individuals who are unemployed in period *t-1* and become own-account workers in period *t*. Finally, the variable equals 0 for individuals who are unemployed in periods *t-1* and *t*.

Explanatory variables

Demographic characteristics:

Male	Dummy equals 1 for males.
Age	Age reported by the individual, ranging from 21 to 59.
Cohabiting	Dummy equals 1 for cohabiting individuals and 0 otherwise.
Number of children under 14	Number of children aged under than 14 living within the household.
Relative(s) working as employer(s)	Dummy equals to 1 if there are any in the household.
Relative(s) working as own-acc. worker(s)	Dummy equals to 1 if there are any in the household.

Education:

No education or primary education	Dummy equals 1 for illiterate, no schooling individuals, or individuals with primary schooling as highest education level achieved, and 0 otherwise.
Secondary education	Dummy equals 1 for individuals with secondary schooling as highest education level achieved and 0 otherwise.
University studies	Dummy equals 1 for individuals with university studies and 0 otherwise.
Relatives with university studies	Dummy equals 1 if there are any in the household.

Employment characteristics:

Private sector	Dummy equals 1 for individuals working in the private sector (versus the public sector).

Construction sector	Dummy equals 1 for individuals whose codes of main activity of the local unit of the business is F (construction), by the "Nomenclature of Economic Activities" (NACE-93).
Industrial sector	Dummy equals 1 for individuals whose codes of main activity of the local unit of the business are C (mining and quarrying), D (manufactures) and E (electricity, gas and water supply), by the "Nomenclature of Economic Activities" (NACE-93).
Wholesale, hotels, restaurants & transport	Dummy equals 1 for individuals whose codes of main activity of the local unit of the business are G (wholesale and retail trade; repair of motor vehicles, motorcycles and personal/household goods), H (hotels and restaurants) and I (transport, storage and communication), by the "Nomenclature of Economic Activities" (NACE-93).
Financial services	Dummy equals 1 for individuals whose codes of main activity of the local unit of the business are J (Financial intermediation) and K (real estate, renting and business activities), by the "Nomenclature of Economic Activities" (NACE-93).
Other services	Dummy equals 1 for individuals whose codes of main activity of the local unit of the business are L (public administration and defense; compulsory social security), M (education), N (health and social work) and O-Q (other community, social and personal service activities; private households with employed persons; extra-territorial organizations and bodies), by the "Nomenclature of Economic Activities" (NACE-93).
Small firm (0-4 employees)	Dummy equals 1 for individuals working in small firms.
Medium firm (5-19 employees)	Dummy equals 1 for individuals working in medium firms.
Large firm (> 19 employees)	Dummy equals 1 for individuals working in large firms.
Supervisory	Dummy equals 1 for individuals whose job status is supervisory.
Intermediate	Dummy equals 1 for individuals whose job status is intermediate.
Non-supervisory	Dummy equals 1 for individuals whose job status is non-supervisory.
Years of employment experience	Number of years in present job.
Hours of work	Hours of work per week.
Indefinite contract	Dummy equals 1 for full-time waged-workers with indefinite contract and 0 otherwise.
Non-indefinite contract	Dummy equals 1 for full-time waged-workers with non-indefinite contract and 0 otherwise.

Unemployment characteristics:

Unemployment duration	Number of years as unemployed.

Observed previous experience:

Previous spell(s) as employer	Dummy equals 1 for individuals with observed previous spell(s) as employer.
Previous spell(s) as own-account worker	Dummy equals 1 for individuals with observed previous spell(s) as own-account worker.
Previous spell(s) as paid-employee	Dummy equals 1 for individuals with observed previous spell(s) as paid-employee.

Previous spell(s) as unemployed	Dummy equals 1 for individuals with observed previous spell(s) as unemployed.
Previous spell(s) as inactive	Dummy equals 1 for individuals with observed previous spell(s) as inactive.
Incomes:	
Dwelling owner	Dummy equals 1 for households owning the dwelling in period *t-1*, and 0 otherwise.
Capital and property incomes (1 lag)	Capital and property incomes, and private transfers received during period *t-2*, converted to euros of 1996, having been corrected by Harmonised Consumer Price Index.
Monthly work incomes	Work incomes earned during the previous month to the interview, converted to euros of 1996, having been corrected by Harmonised Consumer Price Index.
Receiving unemployment benefits	Dummy equals 1 for individuals receiving unemployment benefits in period *t-1*, and 0 otherwise.
Business cycle:	
Annual unemployment rate	Standardized annual unemployment rate (source: OCDE)
Region dummies:	
Northwest	Dummy equals 1 for individuals living in Galicia, Asturias or Cantabria, and 0 otherwise.
Northeast	Dummy equals 1 for individuals living in the Basque Country, Navarra, La Rioja, or Aragón, and 0 otherwise.
Madrid	Dummy equals 1 for individuals living in Madrid, and 0 otherwise.
Center	Dummy equals 1 for individuals living in Castilla and León, Castilla La Mancha, or Extremadura, and 0 otherwise.
East	Dummy equals 1 for individuals living in Catalonia, Comunidad Valenciana or the Balearic Islands), and 0 otherwise.
South	Dummy equals 1 for individuals living in Andalusia, Murcia, Ceuta or Melilla, and 0 otherwise.
Canary Islands	Dummy equals 1 for individuals living in the Canary Islands, and 0 otherwise.

Table B3. Descriptive statistics of the transitions from paid-employment to self-employment

Data Source: European Community Household Panel (ECHP), 1994 – 2001

	All observations	Non switching observations	Switching to Employer observations	Switching to Own-account Worker observations
Number of observations	16846	16516	186	144
Demographic characteristics				
Females	30.4 %	30.9 %	18.3 %	15.9 %
Average age	37.5 years	37.5 years	37.3 years	33.6 years
Age 21-30 years	29.3 %	29.1 %	30.6 %	45.8 %
Age 31-40 years	32.6 %	32.5 %	34.9 %	33.3 %
Age 41-50 years[)]	26 %	26.1 %	21 %	17.4 %
Age 51-59 years	12.2 %	12.3 %	13.4 %	3.5 %
No education / Very basic education	47.4 %	47.4 %	48.9 %	46.5 %
Primary schooling / Secondary schooling	21.8 %	21.7 %	26.3 %	29.2 %
University studies	30.8 %	30.9 %	24.7 %	24.3 %
Relatives with university studies	28.4 %	28.3 %	35.5 %	26.4 %
Cohabiting	69.7 %	69.6 %	74.7 %	66.7 %
Average number of children under 14	0.58 children	0.59 children	0.55 children	0.56 children
Relative(s) working as employer(s)	3.4 %	3.3 %	8.1 %	6.9 %
Relative(s) working as own-acc. worker(s)	5.6 %	5.5 %	7.5 %	11.8 %
Employment characteristics				
Private sector	81.4 %	81.1 %	97.3 %	93.8 %
Construction sector	11.8 %	11.6 %	16.1 %	21.5 %
Industrial sector	28.5 %	28.6 %	28.5 %	18.1 %
Financial services	10.7 %	10.8 %	6.5 %	9 %
Wholesale. hotels. restaurants & transport	24.9 %	24.6 %	41.4 %	41 %
Other services	24.1 %	24.4 %	7.5 %	10.4 %
Small firm (0-4 employees)	14.8 %	14.4 %	32.3 %	38.2 %
Medium firm (5-19 employees)	25.6 %	25.2 %	43.5 %	38.2 %
Large firm (>19 employees)	59.7 %	60.4 %	24.2 %	23.6 %
Supervisory	9.2 %	8.8 %	39.2 %	9.7 %
Intermediate	19.5 %	19.6 %	14.5 %	14.6 %
Non-supervisory	71.3 %	71.5 %	46.2 %	75.7 %
Indefinite contract	71.6 %	71.9 %	66.7 %	43.8 %
Average hours of work per week	42.4 hours	42.3 hours	47.4 hours	43.8 hours
Average years of experience as employee	9.1 years	9.2 years	7.4 years	4.9 years
Previous experience				
Previous spell(s) as employer	2.1 %	1.5 %	43.5 %	16 %
Previous spell(s) as own-account worker	2 %	1.7 %	12.9 %	23.6 %
Previous spell(s) as unemployed	50 %	49.9 %	45.7 %	70.1 %
Previous spell(s) as inactive	9.1 %	9.1 %	7.5 %	11.8 %
Incomes				
Dwelling owner	83.8 %	83.9 %	80.6 %	80.6 %
Receiving capital and property incomes	56.5 %	56.3 %	60.8 %	66.7 %
Average annual capital and property incomes	€211	€209	€437	€239
Average annual capital and property incomes (those who receive)	€374	€370	€720	€359
Average monthly work income	€1,004	€1,005	€1,038	€850
Region				
Northwest	12.1 %	12.1 %	10.8 %	13.2 %
Northeast	17.6 %	17.6 %	19.4 %	15.3 %
Madrid	12.8 %	12.8 %	8.6 %	9.7 %
Center	13.7 %	13.6 %	20.4 %	15.3 %
East	23 %	23 %	22 %	22.9 %
South	15.2 %	15.2 %	12.9 %	20.8 %
Canary Islands	5.7 %	5.8 %	5.9 %	2.8 %

Table B4. Descriptive statistics of the transitions from unemployment to self-employment

Data Source: European Community Household Panel (ECHP), 1994 – 2001

	All observations	Non switching observations	Switching to Employer observations	Switching to Own-account Worker observations
Number of observations	2958	2761	40	157
Demographic characteristics				
Females	53.7 %	55.5 %	30 %	18 %
Average age	33.6 years	33.6 years	33.3 years	33.8 years
Age 21-30 years	48.2 %	48.2 %	55 %	47.1 %
Age 31-40 years	27 %	27 %	17.5 %	29.9 %
Age 41-50 years)	16.3 %	16.1 %	22.5 %	19.1 %
Age 51-59 years	8.4 %	8.7 %	5 %	3.8 %
No education / Very basic education	58.3 %	59.1 %	37.5 %	49 %
Primary schooling / Secondary schooling	21.5 %	21.3 %	30 %	24.2 %
University studies	20.2 %	19.6 %	32.5 %	26.8 %
Relatives with university studies	21 %	20.6 %	27.5 %	25.5 %
Cohabiting	50.5 %	50.4 %	52.5 %	52.2 %
Average number of children under 14	0.6 children	0.61 children	0.2 children	0.59 children
Relative(s) working as employer(s)	4.1 %	4 %	5 %	5.7 %
Relative(s) working as own-acc. worker(s)	9.9 %	9.5 %	12.5 %	17.8 %
Unemployment characteristics				
Average unemployment duration	4.4 years	4.5 years	3.6 years	3.4 years
Previous experience				
Previous spell(s) as employer	1.2 %	1.1 %	2.5 %	3.2 %
Previous spell(s) as own-account worker	1.9 %	1.6 %	7.5 %	7 %
Previous spell(s) as unemployed	66.2 %	66.5 %	60 %	62.4 %
Previous spell(s) as inactive	27.8 %	27.9 %	27.5 %	26.1 %
Incomes				
Dwelling owner	77.5 %	77.3 %	75 %	81.5 %
Receiving capital and property incomes	27 %	26.3 %	35 %	36.9 %
Average annual capital and property incomes	€221	€212	€545	€302
Average annual capital and property incomes (those who receive)	€656	€645	€1,246	€654
Receiving unemployment benefits	30.9 %	31.4 %	37.5 %	21 %
Average annual unemployment benefits	€1,374	€1,383	€2,054	€1,043
Average annual unemployment benefits (those who receive)	€3,560	€3,530	€4,386	€3,971
Region				
Northwest	14.2 %	14.2 %	17.5 %	13.4 %
Northeast	11.1 %	10.8 %	20 %	14.6 %
Madrid	7.7 %	7.6 %	12.5 %	8.3 %
Center	16 %	16.4 %	5 %	10.8 %
East	16.4 %	16.2 %	27.5 %	17.8 %
South	28.9 %	29 %	15 %	29.3 %
Canary Islands	5.8 %	5.8 %	2.5 %	5.7 %

Part III
Transitions within Self-employment

Chapter 7. Transitions within Self-employment: from Own-account Worker to Job Creator[1]

7.1 Introduction

A central issue within the European entrepreneurial promotion policy is the design of a set of instruments directed at encouraging people to become self-employed, that is, to favour the choice of self-employment as an alternative to unemployment –or even to paid-employment-.[2] Thus, this was logical in a framework marked by high and persistent unemployment rates as happened during the 1980s and the 1990s where entrepreneurship promotion was in the service of the active labour market policies. However, leaving aside the possible adverse selection problems created[3], objectives such as the increase in self-employment rates –usually included in entrepreneurship promotion action plans- reflect the authentic nature that this type of policy has had: to promote the access into self-employment.

We will agree, however, that the objective cannot be limited to achieving a certain number of self-employed temporally but also to pay attention to obtaining mid and long-term effects. This bias might be corrected by including some specific incentives and instruments aimed at increasing survival chances. Indeed, the existing literature on self-employment survival provides some useful guidelines in this direction. However, together with an adequate promotion of transitions to self-employment and measures oriented to favouring survival, it also becomes necessary to focus on the promotion of business growth.

In this sense, among the factors that interfere with the hiring of workers, the appearance of certain sunk costs that hinder any future adjustment is, undoubtedly, an important one. Thus, some own-account workers wishing to hire employees and facing a positive demand shock might be dissuaded by these costs, causing a negative effect on the number of employers. However, despite the possible adverse effects of the labour market regulation, other effects as the

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[1] This work is partly based on my Master's thesis in the Quantitative Economics Doctorate (QED) at the *Universidad de Alicante*, under the supervision of Javier Álvarez. A revised version of it was circulated as "Some Empirical Aspects of Self-employment in Spain during the Nineties", SAE wp 20, *Universidad de Huelva*. I would like to thank Manuel Arellano, who gave me the initial intuition for this work, and André van Stel and Simon Parker, for their comments on earlier drafts. Usual disclaimer applies.

[2] Given that most part of these new entrepreneurs were unemployed, and taking into account their disadvantages in relation to business start-up finance (Metcalf and Benson, 2000), the most common transitions has occurred to own-account worker –or employer with very little employees-.

[3] The own-account self-employed may be a discouraged wage worker who finds his offered wages too low or his employment too sporadic in the wage sector. If an individual chooses self-employment not because the value of self-employment is so high but because his value of wage work is so low, it is possible that own-account workers have lower levels of human capital than wage workers. Hence, an adverse selection problem can emerge, and those countries where these own-account workers were predominant might present non favourable conditions for growth and success.

business cycle or generalized positive shocks might cause positive effects on the share of employers.

This is precisely the aim of this work. This study tries to shed some light on the decision of becoming self-employed with employees (employer) from own-account self-employment, which can be seen as the result of business growth and success. Thus, thanks to a better understanding about this type of transitions within self-employment, we will be ready to design incentives and instruments to increase the contribution of the self-employed to the job creation process. In doing so, binary logit models are applied to data drawn from the European Community Household Panel for the EU-15 (ECHP, 1994-2001).[4]

In addition, the determining factors of this type of transitions in Spain[5] are analysed, in order to explore the causes of the specific patterns followed by "the EU cohesion countries".[6] These countries –Ireland, Portugal, Spain and Greece- faced at the beginning of the Eighties, the highest self-employment rates across the EU-15, but their GNIs per capita were among the lowest. Thus, Ireland, Spain and Greece experienced a sharp drop in the percentage of the population opting for self-employment in the last two decades. This particular pattern was the result of sustained falls in own-account work rates, which was opposed to rises in employers' rates.[7]

Some probable explanations for this phenomenon might be the progressive flexibility introduced in their labour markets[8], or the effects of demographic or structural changes' effects. Focusing on the Spanish case, Figure 1 shows how the reduction in own-account workers rates is smoothed if those own-account workers working in agricultural industries are excluded.

However, it is also tempting to link part of this reduction to the incorporation to the Single market.[9] Thus, the appearance of new opportunities and the presence of important Structural and Cohesion Funds[10] resulted in a growth of the existing entrepreneurial dimension within these countries.

[4] ECHP data are used under permission of European Commission-Eurostat; contract ECHP/2006/09, held with the University of Huelva.

[5] The sample for Spain is constructed by means of the eight available waves of the ECHP panel for Spain (1994-2001). Results are also reported from an alternative sample from the Spanish Continuous Expenditure Survey (ECPF).

[6] Greece, Spain, Portugal and Ireland are collectively termed "the EU cohesion countries". Their economic characteristics included low levels of income per head (relative to the EU-15 average), a substantial part of the territory having a "Less Favoured Region" status, traditional manufacturing structures, often a high share of agricultural employment and low productivity.

[7] See Tables 2-4 (Chapter 4).

[8] Regular wage or salary labour markets in these countries were too rigid. This rigidity, particularly strong within Mediterranean countries, has been considered as the main cause for explaining those high self-employment rates as it makes it costly for the self-employed to recruit employees. This argument considers that the rigidity pushed individuals into self-employment although they would prefer to work for an employer causing that small entrepreneurial dimension.

[9] Ireland was incorporated in 1973, Greece in 1981, and Portugal and Spain in 1986.

[10] Structural and Cohesion Funds are funds allocated by the European Union. Structural Funds' objectives are i) supporting development in the less prosperous regions, and ii) revitalising areas facing structural difficulties. The Cohesion fund funding is for Member States whose gross national income is below 90% of the EU average, and contributes to interventions in the field of the environment and trans-European transport networks.

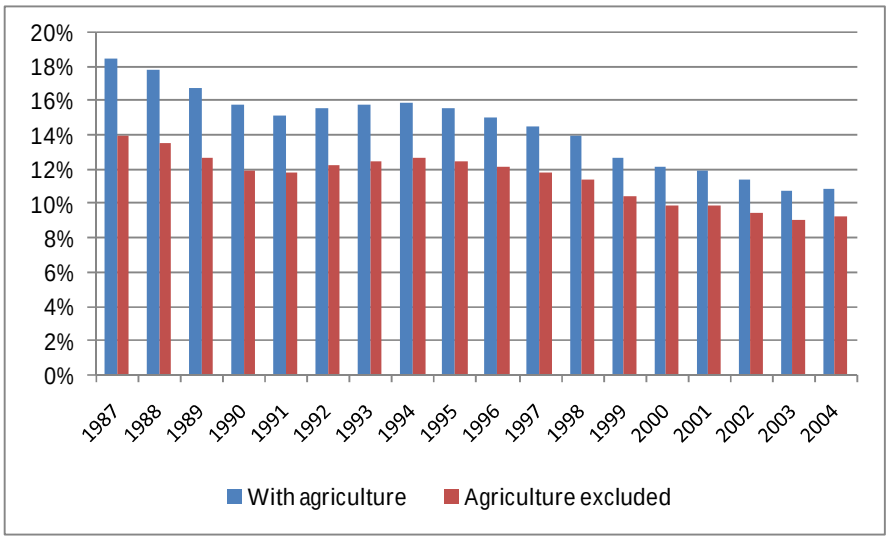

Fig. 1. Own-account workers rates in Spain

Data Source: I.N.E., Spanish Labour Force Survey

Hence, these arguments turn Spain into an excellent object of study in order to complete our view on the determinants of the transitions to employers, given that the Spanish incorporation to the Single market can be considered as an external shock which can explain the exponential growth in the number of job creators.

The contribution of this chapter is threefold. First, the success is analysed in a different manner, that is, by interpreting the hire of employees as a sign of success. Thus, this work provides new evidence supporting the existence of individual and economic factors affecting this type of transitions. In addition, our study also suggests the existence of idiosyncratic factors decreasing the probability of transition in some European countries, which might be related to a specific institutional framework. Third, we consider the possible influence of an external shock –the consequences of the Single Market- on the entrepreneurial dimension. All these results, lead us to rethink about the convenience of including some additional elements in order to improve the actual entrepreneurial promotion policy.

This chapter is organized as follows. The second section stresses the importance of the analyzed transition and revises the scarce related literature. Section 3 briefly describes the dataset. The empirical model is presented in the fourth section. Section 5 is devoted to the estimation results for Spain and the EU-15. Finally, section 6 concludes.

7.2 From Own-account Self-employed to Job Creator

As already mentioned, the aim of this chapter is to consider the transitions from own-account worker to employer, as an alternative to the decision of continuing as own-account worker.

Own-account self-employed covers a diverse range of occupational realities, from artisans and farmers to the professional liberal or the high-technology consultant with an international clientele. Along with this wide range of activities, there are a wide range of motivations behind this occupational choice. In this sense, many self-employed people have chosen to pursue this kind of work environment –they are pulled into it-, while others opt for self-employment as the only realistic job choice open to them –they are pushed into self-employment-.

Leaving aside some singular activities which, given their nature, find a suitable environment in own-account self-employment, the logical growth and expansion of any entrepreneurial venture should result in transitions from own-account worker to employer. However, some elements can foster or hinder the decision to become a job creator. On the one hand, the own character of the expansion process joint with the financial needs and the labour costs can determine, the viability and convenience of this expansion. Thus, the demand shock character (permanent or transitory) and the impact of labour market regulations will play a key role. On the other hand, the abilities to manage a team and the ability to assume the new paperwork will be two additional elements to consider, before deciding to opt for growth.

Therefore, if we want to analyze the success interpreting the hire of employees as a sign of success, the main issues to resolve should be: Which are the underlying factors contributing to the transition from own-account work to employer? How important are the financial issues concerning this decision? How determinant is the existing labour market regulation in this kind of transitions?

To the best of our knowledge, general econometric analysis on the transitions from own-account work to employer does not exist to date. Furthermore, there still only remains rather limited literature on the determinants of job creation by the self-employed, e.g. Carroll *et al*. (2000) for the US, Barkham (1994), Westhead and Cowling (1995), Burke *et al*. (2000, 2002), and Cowling *et al*. (2004) for the UK. Thus, Caroll *et al*. (2000) focuses on the effects of tax changes on self-employed job creation. Barkham (1994) studies the relationship between the size of the new firms and the characteristics of the entrepreneur. Westhead and Cowling (1995) report empirical evidence supporting the relationship between the key founder characteristics and the ability of small high-technology firms to create additional jobs. Burke *et al*. (2000, 2002) using data from the National Child Development Study (NCDS5, 1991), analyse the determinants of being an employer as an alternative of being an own-account worker. Finally, Cowling *et al*. (2004) use wave 9 of the British Household Panel Survey, conducted in the autumn of 1999. They also focus on disaggregation by gender and their analysis is based on the decision rules which determine the choice between own-account worker of employer, and paid-employment. In particular, they examine the probability of men and women of being observed in self-employment, and the probability of a self-employed individual of being an employer.[11]

In shot, previous literature is scarce and it only contains several tangential approaches to the phenomena, which confirm the opportunity of our analysis.

7.3 Data

This section briefly describes the samples generated for the EU-15[12] (1994-2001) and Spain during the Nineties, and their corresponding data sources. Our analysis is focused on self-

[11] However, the Burke *et al*. and Cowling *et al*. approaches both use cross-sectional estimates which confound the determinants of switching and survival, as pointed out by Evans and Leighton (1989).

[12] We have to exclude France, Luxembourg and Sweden for different reasons. Firstly, during the period 1997-2001, own-account workers cannot be distinguished from employers in France due to the high number of missing values we observe within the ECHP in the variable which allows making such distinction –number of regular paid employees in the local unit in current job-. Regarding Sweden and Luxembourg, the ECHP does not collect the information related to first waves, and present missing values in relevant variables in other waves. Tables A3 and A4 (Appendix A) present the distribution of observations across countries for our exercises, and Tables B2 and B3 (Appendix B) summarizes the mean values of our European sample.

employed individuals, making differences between employers and own-account workers and considering the transition from own-account self-employment employer. Thus, our samples include individuals who are own-account workers during a particular period and either continue as own-account worker or become employers in the next one. To this end, we use data from the European Community Household Panel (ECHP)[13] and from the Spanish Continuous Family Expenditure Survey (ECPF-Encuesta Continua de Presupuestos Familiares).[14] As happened during previous exercises, our samples include men and women aged 21 to 59 and working outside the agricultural sector. Therefore, it should be remembered that this last exclusion is not performed when using the ECPF due to its lack of information related to activity sector.

7.4 Empirical Framework

In order to provide a framework for the empirical analysis to study the determinants of transitions, the standard binary logit model is used. Thus, we assume, as usual, that the probability of switching from the starting status –own-account self-employment- to the final –employer- depends on a set of observed individual characteristics and economic variables *X* at *t-1*[15]. Hence, an individual who was own-account worker at time *t-1* will be observed as employer at time *t* if the utility derived from his new role as employer exceeds that obtained from an own-account work. Consequently, the probability of switching can be written as:

$$\begin{aligned}&\Pr(Y_{i,t}=1)=\\&=\Pr\left(U_{i,t}^{Emp}>U_{i,t}^{OA}\,\middle|\,U_{i,t-1}^{Emp}\le U_{i,t-1}^{OA}\right)=\\&=\Pr\left(\beta' X_{i,t-1}+u_i+\varepsilon_{i,t}>0\right)=F\left(\beta' X_{i,t-1}+u_i\right),\end{aligned}$$

where $Y_{i,t}$ = 1 if the individual who was own-account worker in period *t-1* becomes employer with employees in period *t*, and $Y_{i,t}$ = 0 if the individual continues as own-account worker in period *t*.[16] The vector $X_{i,t-1}$ represents individual characteristics and economic conditions in the previous year to move into the new status, β is the associated vector of coefficients to be estimated, u_i is a disturbance term that includes the time-invariant unobserved heterogeneity (an

[13] ECHP data are used in accordance with the permission of European Commission-Eurostat; contract ECHP/2006/09, held with the *Universidad de Huelva*. Section 4 in Chapter 5 includes an in-depth analysis of this dataset, definitions of employers and own-account workers included by the International Classification by Status in Employment (ICSE-1993), and the way both status are detected within our dataset including some filters. Furthermore, corrections of wealth variables to avoid comparability problems –across countries and across time- are also described. Finally, again to avoid comparability problems, this section describe the unemployment rates included within our analysis.

[14] Section 2 in Chapter 6 includes a brief analysis of this dataset.

[15] Using data from the ECHP, some of the wealth variables captured are the annual capital and property incomes at the individual level lagged one year (period t-2), and the annual own-account work incomes also lagged one year (period t-2). Both are lagged due to the obvious endogeneity problem of the changes in wealth related to business start-up or growth itself. In this sense, other wealth measures like inheritance are used in order to avoid endogeneity issues regarding wealth.

[16] The labour force status is observed once per year. Thus, if there are additional changes in status within the year, they are overlooked. We assume there are only a few of these, and that their exclusion does not affect the results.

individual-specific effect)[17], $\varepsilon_{i,t}$ is a random error term representing not person-specific unobserved variables, and F(.) follows a logit distribution:

$$F(z) = \frac{\exp(z)}{1+\exp(z)}$$

7.5 Results

This section reports binary logit estimates obtained for the EU-15 (1994-2001) and Spain during the nineties. Thus, the underlying determinants of the transitions from self-employment without employees to job creator are analysed.

7.5.1 Transitions from Own-account Worker to Employer in Europe

Transitions from own-account worker to employer, for European self-employed, are first considered. Estimates are obtained from the sample of individuals who are own-account workers during a particular period and either continue as own-account worker or become employers in the next one. As a consequence, the final sample, after removing cases with missing data for any of the relevant variables, includes 12,255 observations where 1,917 (15.64 percent) refer to transitions.[18]

Tables A1 and A2 (see Appendix A) report the estimates. The specifications include variables concerning demographic characteristics and family structure (gender, age, education, number of children and dummies for marital status and the presence/absence of self-employed relatives), education, employment characteristics, experience, incomes (wealth measured by both capital and own-account work incomes) and business cycle (unemployment rate). We also take into account whether the individual has had spells as employer. Furthermore, Tables A5 and A6 (see Appendix A) report predicted probabilities of becoming employer from own-account work for individuals with given characteristics. Finally, predicted probabilities of transitions for individuals living across different EU-15 countries are presented in Table A7 (see Appendix A).

Main empirical results can be summarized as follows. Considering the effect of demographic characteristics, we do not observe any effect of gender, age or the number of children. This probability, however, increases for cohabiting individuals and by the presence of self-employed

[17] Assume we have two observations y_{i1} and y_{i2} of individual i taken at two different points in time. Consequently, u_{i1} and u_{i2} would not be independently distributed as we measure them for the same individual. They would tend to be quite similar. As a result, across all respondents, we would tend to underestimate the true error variation and overestimate the statistical significance of our coefficients. That is the reason why we assume u_i as a disturbance term that includes the time-invariant unobserved heterogeneity (the person-specific effect). In this sense, as we will work with random-effects models, this term will be assumed to be a normally distributed random variable with mean 0 and variance u_n.

[18] We also estimate a complementary exercise where we control for individuals having born abroad and for those receiving inheritances, gifts or lottery winnings. However, the inclusion of these variables implies excluding Germany, The Netherlands and the UK from this complementary analysis. Tables A3 and A4 (Appendix A) present the distribution of observations across countries for these main and complementary exercises. Tables B2 and B3 (Appendix B) summarize the mean values for those who become employers from own-account work, in both samples.

relatives.[19] In this sense, regarding education, no significant effect is observed which might reflect the relative importance for growth of intergenerational transfers of human capital and entrepreneurial ability when compared with formal education.

When we attempt to capture the effect of industrial affiliation, the probability of becoming employer is observed to be much lower for those working in wholesale, hotels, restaurants and transport, and other services when compared with those working in financial services, industrial or construction sector.[20] Regarding the effect of the number of years of experience, our results show how the probability of switching is U-shaped in experience as own-account worker, reaching a minimum at roughly 10 years of experience.[21]

Focusing on previous experience before current status, European own-account workers are more likely to become employers when they have been employers or paid-employees in the past.[22] Firstly, this result also points to the key role of the endowments of human capital.[23] Furthermore, as observed in chapters 5 and 6, this result agrees with the absence of some kind of "failure stigma" which might be expected from all those who were employers in the past, but had to reduce their business dimension.

Both home ownership[24] and incomes earned by own-account worker in the previous period also have a positive effect on transitions.[25] Thus, on the one hand, this result supports the liquidity constraint hypothesis. On the other hand, it supports the idea that the adequate development of an entrepreneurial venture by an own-account worker, should result in a transition to employer which is the natural expansion of the business. Hence, business success becomes a decisive element when the decision to hire –or not to hire- employees is to be taken.

However, not just individual conditions will affect this decision, but also the aggregated ones play a crucial role. Thus, by analyzing the business cycle effect on this decision, we find a clear negative impact of the unemployment rate on this type of transitions which supports "prosperity-pull" argument.[26].

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[19] The probability of switching to employer has an 18% increase with the existence of relatives working as own-account workers (see Table A5, Appendix A).

[20] Individuals working in wholesale, hotels, restaurants and transport present between 24 and 33% lower probabilities of switching to employer than those working in financial services, industrial or construction sector (see Table A5, Appendix A). Similarly, individuals working in other services present between 16 and 24% lower probabilities of switching to being an employer than those working in financial services, industrial or construction sector (see Table A5, Appendix A).

[21] Transitions to employer increases by 43 and 30% when job tenure increases and decreases (see Table A5, Appendix A).

[22] In particular, the probability of switching to employer for those who were employers in the past increases 107% while previous spells as paid-employed increases this probability by around 46% (see Table A5, Appendix A).

[23] Thus, all informal processes of acquisition of this capital (i.e. previous experience in the labour market or intergenerational transfers) present stronger effects than those attached to formal education.

[24] Home ownership might be important for entrepreneurs who require outside labour because a house is often used as collateral when an individual wants to take a loan in a bank.

[25] Transitions to employer increases by 14% when individuals' own account work incomes are double the average ones, compared with those earning half the average one (see Table A5, Appendix A).

[26] Transitions to employer decreases by 130% when individuals face high unemployment rates –19.8% for instance- compared with those facing low unemployment rates –2.9% for example- (see Table A5, appendix A).

Finally, as regards country specific effects, some country dummies present significant effects. On one hand, the presence of more –and less- favourable scenarios in terms of labour market legislation across countries might be affecting these results. However, the fact that precisely "the EU cohesion countries" present higher probabilities of increasing their entrepreneurial dimension lead us to think that external shocks –such as the incorporation to the Single Market- can also play crucial roles over all expanding decisions.[27]

7.5.2 Transitions from Own-account Worker to Employer in Spain

As in the European case, we select the subsample of individuals who are own-account workers during a particular quarter (year when using ECHP) and either continue as own-account worker or become employers in the next quarter (year when using ECHP). After filtering, the final sample used for estimation has 8,786 observations (2,386 observations when using ECHP) of which 222 –2.52 percent- (322 –13.5 percent- when using ECHP) refer to transitions.[28]

Tables A8 and A10 (see Appendix A) report the estimates. Tables A9 and A12 (see Appendix A) likewise compare predicted probabilities of becoming an employer for Spanish own-account workers. Finally, by means of the ECHP, predicted probabilities of transitions for individuals living across different Spanish NUTS-1 are presented in Table A13 (see Appendix A).

Results for Spain support those obtained for the EU-15 and can be summarized as follows. Considering the effect of personal characteristics we do not observe any significant effect of age, marital status, or children. In this sense, only males included in the ECPF sample, and those with relatives working as own-account workers identified by means of the ECHP are more likely to switch.[29] Furthermore, the ECPF sample reveals that the presence of university studies increases the chances of hiring paid-employees.[30] On the other hand, our estimations concerning the ECHP sample support again that those Spanish own-account self-employed working in wholesale, hotels, restaurants or transport present lower probabilities of becoming employers.[31] Focusing on previous experience before current status, as happened for Europeans, Spanish own-account workers are more likely to become employers when they have been employers or paid-employees in the past.[32] Furthermore, the presence of liquidity constraints and the impor-

[27] Leaving aside the effect for Finland, those own-account workers living in Greece, Spain and Ireland are observed to be more likely to become job-creators (see Table A7, Appendix A). Regarding Portuguese own-account workers, although they present lower probabilities compared with mean values, their deviation is quite small (see Table A7, Appendix A). France, Luxembourg and Sweden are again excluded from this specification. These results must be cautiously interpreted, taking into account the distribution of observations across countries for our exercises (see Tables A3 and A4, Appendix A).

[28] The differences in these percentages are explained by the fact that labour force status once per year is observed when using the ECHP, and once per quarter when using the ECPF. Tables B1 and B4 (Appendix B) summarizes the mean values of those who become employers from own-account work in Spain.

[29] By means of the ECPF the probability of becoming employer for females decreases by 34% (see Table A9, Appendix A). When using the ECHP, the probability of switching increases by 28% for those with relatives working as own-account workers (see Table A12, Appendix A).

[30] Transitions to employer increase by 189% when own-account workers present university studies (see Table A9, Appendix A).

[31] Transitions to employer with the ECHP decrease by almost 42% when individuals work in wholesale, hotels, restaurants or transport, compared with those working for other sectors (see Table A12, Appendix A).

[32] The ECPF shows that past spells as employer increases the chances of a new spell as employer by 1178% (see Table A9, Appendix A). By using the ECHP, these chances increases by almost 129% (see

tance of the performance of the business is also observed.[33] In addition, our results tally with the "prosperity-pull hypothesis using the ECHP sample.[34] The effect of the size of the town obtained for the ECPF is also interesting. Thus, those own-account workers living in a medium size town (10,001-50,000 inhabitants) are more likely to switch to being an employer than those living in other size towns.[35] Finally, we wish to emphasize that there is no evidence of the existence of regional specific effects, probably due to the existence of common regulatory frameworks among these regions.[36]

7.6 Conclusions

This chapter investigates the underlying determinants of the decision to hire employees by own-account workers, that is, to become job creators. This analysis is interesting due to the existence of a bias in current entrepreneurship promotion programs which usually emphasise getting people to become self-employed, while they do not include instruments oriented towards facilitating or making the self-employed more interested in expanding their workforce.

In this sense, this work shows the importance of factors such as earnings or expanding economic situations. However, the informal acquisition of human capital also plays a key role for these decisions. Thus, previous experience within the labour market –as employer or salaried worker- is seen to have a significant impact. Therefore, if the objective is to foster that self-employment which contributes with the job generation process, it becomes important to favour the necessary entrepreneurial human capital, in order to get those better skilled individuals to become job creators.

One of the most interesting results perhaps refers to the existence of certain country specific factors –not detected across Spanish regions-. Thus, the greater likelihood of becoming a job creator from own-account self-employment appears in Finland, followed by Greece, Ireland and Spain, whereas the lower probabilities are in Denmark, The Netherlands and the UK. These observed differences seem to highlight the importance of external shocks –such as the incorporation to the Single Market- and institutional differences between European countries. Therefore, further analysis to detect the exact underlying factors would help to improve the existing entrepreneurship policy, to improve the business environment and to make it easier for own-account workers to hire labour.

Table A8, Appendix A). Also for this data set, previous paid-employment experiences increase the transitions to employer by 68% (see Table A8, Appendix A).

[33] When using the ECHP, the presence of inheritance, gift or lottery winnings within the household, increases the probability of becoming an employer by 115% (see Table A12, Appendix A). According to the ECPF, transitions to employer increase by 23% when individuals multiply their earnings by two (see Table A9, Appendix A).

[34] Transitions to employer decrease by 124.5% when individuals face the highest unemployment rates within the sample –19.8%- compared with the lowest rates –11.3%- (see Table A12, Appendix A).

[35] The probability of switching to employer increases by 33% when the individual lives in a medium-sized town (see Table A9, Appendix A).

[36] These results, however, do not support the idea of "agglomeration economies" or "entrepreneurial networks externalities or synergies" that emerged under the analysis of the transitions from unemployment to employer for Spain (Chapter 6). On the other hand, these results, together with those presented in Table A13 –Appendix A- must be cautiously interpreted, taking into account the distribution of observations across regions for our exercise (see Table A11, Appendix A).

7.7 References

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Appendix A: Main Results

Table A1. Transitions from own-account worker to employer across the EU-15 (Main exercise)

Data Source: European Community Household Panel (ECHP), 1994 – 2001

	Binomial	
	EMPLOYER (EMP)	
	Prob [EMP_t | OA_{t-1}]	
Number of observations	12255	
Number of transitions	1917	
Variables	**Coef.**	**t-stat.**
Constant	0.0281	(0.05)
Demographic characteristics		
Male	0.0142	(0.21)
Age	-0.0322	(-1.24)
Age (squared)	0.0002	(0.5)
Cohabiting (1)	0.1764	(2.23)**
Number of children under 14	-0.0216	(-0.66)
Relative(s) working as employer(s)	-0.0484	(-0.38)
Relative(s) working as own-account worker(s)	0.1853	(2.5)**
Education		
Secondary education (2)	0.0668	(0.98)
University studies (2)	0.1008	(1.15)
Relatives with university studies	0.0018	(0.03)
Own-account work characteristics		
Industrial sector (3)	0.0397	(0.41)
Financial services (3)	0.0817	(0.76)
Wholesale, hotels, restaurants & transport (3)	-0.3019	(-3.69)***
Other services (3)	-0.1932	(-1.75)*
Hours of work	0.0037	(1.68)*
Own-account employment duration	-0.094	(-4.93)***
Own-account employment duration (squared)	0.0048	(5.88)***
Previous experience		
Previous spell(s) as employer	0.8563	(14.07)***
Previous spell(s) as paid-employed	0.432	(5.47)***
Previous spell(s) as unemployed	0.0797	(1.23)
Previous spell(s) as inactive	0.1598	(1.32)
Incomes		
Dwelling owner	0.1442	(2.12)**
Annual capital and property incomes (1 lag)	9.1E-06	(0.75)
Annual own-account work incomes (1 lag)	9.7E-06	(3.94)***
Business cycle		
Annual unemployment rate	-0.0869	(-5.6)***
Country		
Austria (4)	-0.4249	(-1.67)*
Belgium (4)	-0.304	(-1.51)
Denmark (4)	-2.3809	(-5.62)***
Finland (4)	0.6546	(4.93)***
France (4)	*No observations*	
Germany (4)	-0.5252	(-2.84)***
Greece (4)	0.0053	(0.05)
Ireland (4)	-0.1018	(-0.63)
Italy (4)	-0.3966	(-3.38)***
Luxembourg (4)	*No observations*	
Netherlands (4)	-3.8103	(-6.2)***
Portugal (4)	-0.5144	(-2.84)***
Sweden (4)	*No observations*	
United Kingdom (4)	-1.4583	(-7.7)***
Reference categories: (1) Non-cohabiting individuals, (2) No education or primary education, (3) Construction Sector, (4) Spain		
Log likelihood	-4911,8	

Notes:
(***) 1 % significativity level; (**) 5 % significativity level; (*) 10 % significativity level

Table A2. Transitions from own-account worker to employer across the EU-15 (Complementary exercise)

Data Source: European Community Household Panel (ECHP), 1994 – 2001

	Binomial	
	EMPLOYER (EMP)	
	Prob [$EMP_t \mid OA_{t-1}$]	
Number of observations	10350	
Number of transitions	1742	
Variables	**Coef.**	**t-stat.**
Constant	0.2106	(0.34)
Demographic characteristics		
Male	0.0478	(0.67)
Born abroad	-0.1571	(-0.99)
Age	-0.0345	(-1.25)
Age (squared)	0.0002	(0.59)
Cohabiting (1)	0.1737	(2.06)**
Number of children under 14	-0.027	(-0.77)
Relative(s) working as employer(s)	-0.0487	(-0.37)
Relative(s) working as own-account worker(s)	0.1605	(2.09)**
Education		
Secondary education (2)	0.0413	(0.58)
University studies (2)	0.0447	(0.46)
Relatives with university studies	-0.0015	(-0.02)
Own-account work characteristics		
Industrial sector (3)	0.0408	(0.4)
Financial services (3)	0.1576	(1.32)
Wholesale, hotels, restaurants & transport (3)	-0.3233	(-3.75)***
Other services (3)	-0.2066	(-1.74)*
Hours of work	0.0003	(0.12)
Own-account employment duration	-0.0851	(-4.2)***
Own-account employment duration (squared)	0.0043	(5.03)***
Previous experience		
Previous spell(s) as employer	0.8792	(13.78)***
Previous spell(s) as paid-employed	0.4395	(5.1)***
Previous spell(s) as unemployed	0.1246	(1.8)*
Previous spell(s) as inactive	0.1556	(1.19)
Incomes		
Inherit, gift or lottery winnings	0.215	(1.15)
Dwelling owner	0.1544	(2.12)**
Annual capital and property incomes (1 lag)	1.3E-05	(0.97)
Annual own-account work incomes (1 lag)	1E-05	(3.79)***
Business cycle		
Annual unemployment rate	-0.0894	(-5.62)***
Country		
Austria (4)	-0.4185	(-1.61)
Belgium (4)	-0.2939	(-1.44)
Denmark (4)	-2.4501	(-5.73)***
Finland (4)	0.6391	(4.75)***
France (4)	*No observations*	
Germany (4)	*No observations*	
Greece (4)	0.0124	(0.1)
Ireland (4)	-0.1035	(-0.62)
Italy (4)	-0.4283	(-3.6)***
Luxembourg (4)	*No observations*	
Netherlands (4)	*No observations*	
Portugal (4)	-0.534	(-2.89)***
Sweden (4)	*No observations*	
United Kingdom (4)	*No observations*	
Reference categories: (1) Non-cohabiting individuals, (2) No education or primary education, (3) Construction Sector, (4) Spain		
Log likelihood	-4372.2	

Notes:
(***) 1 % significativity level; (**) 5 % significativity level; (*) 10 % significativity level

Table A3. Number of transitions from own-account work across the EU-15 (Main exercise)

Data Source: European Community Household Panel (ECHP), 1994 – 2001

	Number of transitions from Own-Account Work TO	
	Own-Account Work	**Employer**
European Union 15	*10338*	*1917*
Austria	184	51
Belgium	245	54
Denmark	214	7
Finland	435	143
France	*No observations*	
Germany	374	81
Greece	2289	566
Ireland	436	112
Italy	1565	244
Luxembourg	*No observations*	
Netherlands	286	3
Portugal	1202	249
Spain	2088	325
Sweden	*No observations*	
United Kingdom	1020	82

Table A4. Number of transitions from own-account work across the EU-15 (Complementary exercise)

Data Source: European Community Household Panel (ECHP), 1994 – 2001

	Number of transitions from Own-Account Work TO	
	Own-Account Work	**Employer**
European Union 15	*8608*	*1742*
Austria	183	51
Belgium	245	54
Denmark	214	7
Finland	435	143
France	*No observations*	
Germany	*No observations*	
Greece	2284	564
Ireland	422	109
Italy	1543	242
Luxembourg	*No observations*	
Netherlands	*No observations*	
Portugal	1199	248
Spain	2083	324
Sweden	*No observations*	
United Kingdom	*No observations*	

Table A5. Predicted probabilities of switching for individuals with given characteristics across the EU-15 (Main exercise)

Data Source: European Community Household Panel (ECHP), 1994 – 2001

	Transitions to Employer FROM	
	OA [a]	Δ% [b]
Standard individual [c] (S.I.)	*0.1*	-----
S.I. but female	0.0987	-1.3 %
S.I. with university studies	0.1094	9.4 %
S.I. with relatives with university studies	0.1001	0.2 %
S.I. with previous spell(s) as employer	0.2073	107.4 %
S.I. with previous spell(s) as paid-employed	0.1461	46.1 %
S.I. with previous spell(s) as unemployed	0.1074	7.4 %
S.I. with previous spell(s) as inactive	0.1153	15.3 %
S.I. with relative(s) working as employer	0.0957	-4.3 %
S.I. with relative(s) working as own-account worker	0.1179	18 %
S.I. but working in the industrial sector	0.1036	3.6 %
S.I. but working in financial services	0.1076	7.6 %
S.I. but working in wholesale, hotels, restaurants or transport	0.0759	-24.1 %
S.I. but working in other services	0.0839	-16.1 %
S.I. with low working hours [c]	0.0964	-3.6 %
S.I. with high working hours [c]	0.1064	6.5 %
S.I. with low job experience [d]	0.1295	29.5 %
S.I. with high job experience [d]	0.1428	42.8 %
S.I. but receiving €1,000 more in other family incomes	0.1008	0.8 %
S.I. with low own-account work incomes [e]	0.0956	-4.4 %
S.I. with high own-account work incomes [e]	0.1092	9.3 %
S.I. with low unemployment rate [f]	0.1766	76.7 %
S.I. with high unemployment rate [f]	0.0471	-52.9 %

Notes:
[a] Own-account worker.
[b] Percentage change related to the standard.
[c] S. I.= Standard individual: male, cohabiting, one children aged fewer 14, no education or primary education, no relatives with university education within the sample, not previous experience as employer, paid-employed, unemployed or inactive, within the sample, not relatives working as employer or own-account worker, working in the construction sector and receiving mean capital and property incomes. Other variables equals to average values respectively.
[c] Low and high working hours are 40 and 70 (the 10^{th} and 90^{th} centiles respectively).
[d] Low and high own-account work experience are 2 and 19 years (the 10^{th} and 90^{th} centiles respectively).
[e] Low and high and own account work incomes are half and double the average ones respectively.
[f] Low and high unemployment rates are 2.9 % and 19.8 % respectively, which are the lowest and the highest values for our sample period.

Table A6. Predicted probabilities of switching for individuals with given characteristics across the EU-15 (Complementary exercise)

Data Source: European Community Household Panel (ECHP), 1994 – 2001

	Transitions to Employer FROM	
	OA [a]	Δ% [b]
Standard individual [c] (S.I.)	*0.1183*	-----
S.I. but born abroad	0.1029	-13 %
S.I. with inherit, gift or lottery winnings within the household	0.1427	20.6 %

Notes:
[a] Own-account worker.
[b] Percentage change related to the standard.
[c] S. I.= Standard individual: male, born in the country of present residence, cohabiting, one children aged fewer 14, no education or primary education, no relatives with university education within the sample, not previous experience as employer, paid-employed, unemployed or inactive, within the sample, not relatives working as employer or own-account worker, working in the construction sector, receiving mean capital and property incomes, and without any inherit, gift or lottery winnings within the household. Other variables equals to average values respectively.

Table A7. Predicted probabilities of switching for individuals with given characteristics across the EU-15 (Main exercise)

Data Source: European Community Household Panel (ECHP), 1994 – 2001

	Transitions to Employer FROM	
	OA [a]	Δ% [b]
Standard individual [c]	*0.1*	-----
Standard individual but living in Austria	0.097	-3 %
Standard individual but living in Belgium	0.1081	8.1 %
Standard individual but living in Denmark	0.015	-85 %
Standard individual but living in Finland	0.2401	140.2 %
Standard individual but living in France	*No observations*	
Standard individual but living in Germany	0.0885	-11.5 %
Standard individual but living in Greece	0.1417	41.7 %
Standard individual but living in Ireland	0.1292	29.2 %
Standard individual but living in Italy	0.0995	-0.5 %
Standard individual but living in Luxembourg	*No observations*	
Standard individual but living in the Netherlands	0.0036	-96.4 %
Standard individual but living in Portugal	0.0894	-10.6 %
Standard individual but living in Spain	0.141	41.1 %
Standard individual but living in Sweden	*No observations*	
Standard individual but living in the United Kingdom	0.0368	-63.2 %

Notes:
[a] Own-account worker.
[b] Percentage change related to the standard.
[c] S. I.= Standard individual: male, cohabiting, one children aged fewer 14, no education or primary education, no relatives with university education within the sample, not previous experience as employer, paid-employed, unemployed or inactive, within the sample, not relatives working as employer or own-account worker, working in the construction sector and receiving mean capital and property incomes. Other variables equals to average values respectively.

Table A8. Transitions from own-account worker to employer across Spain

Data Source: Spanish Continuous Family Expenditure Survey (ECPF), 1990 (I) – 1997 (I)

	Binomial	
	EMPLOYER (EMP)	
	Prob [EMP_t | OA_{t-1}]	
Number of observations	8786	
Number of transitions	222	
Variables	**Coef.**	**t-stat.**
Constant	-3.9693	(-2.26)**
Demographic characteristics		
Male	0.4243	(2.19)**
Age	0.0132	(0.17)
Age (squared)	-0.0004	(-0.39)
Married (1)	-0.4369	(-1.6)
Children under 14	-0.0084	(-0.03)
Husband/Wife self-employed	0.004	(0.02)
Education		
Secondary schooling (2)	0.3231	(1.74)*
University studies (2)	1.0801	(4.39)***
Own-account work characteristics		
Own-account employment duration	-0.3014	(-5.68)***
Previous experience		
Observed previous spell(s) as employer	2.6617	(15.7)***
Incomes		
Other quarterly family income	4.6E-05	(1.32)
Quarterly own-account work incomes	1.1E-04	(3.15)***
Business cycle		
Quarterly unemployment rate	0.0011	(0.05)
Town size		
Medium town (10,001-50,000 inh.) (3)	0.4171	(2.24)**
Large town (50,001-500,000 inh.) (3)	0.1978	(1.04)
Very large town (> 500,000 inh.) (3)	-0.3986	(-1.19)
Reference categories: (1) Single, separated, etc., (2) No education or primary schooling, (3) Small town (< 10,001 inh.)		
Log likelihood	-824.9	

Notes:
(***) 1 % significativity level; (**) 5 % significativity level; (*) 10 % significativity level

Table A9. Predicted probabilities of switching for individuals with given characteristics across Spain

Data Source: Spanish Continuous Family Expenditure Survey (ECPF), 1990 (I) – 1997 (I)

	Transitions to Employer FROM	
	OA [a]	Δ% [b]
Standard individual [c] (S.I.)	*0.0091*	-----
S.I. but female	0.0059	-34.4 %
S.I. with university studies	0.0262	189.4 %
S.I. with previous spell(s) as employer	0.1157	1178 %
S.I. with husband / wife self-employed	0.0091	0.4 %
S.I. with low observed own-account work duration [d]	0.0181	99.6 %
S.I. with high observed own-account work duration [d]	0.0041	-55.1 %
S.I. but receiving €1,000 more in other family incomes	0.0095	4.7 %
S.I. with low work incomes [e]	0.0082	-9.9 %
S.I. with high work incomes [e]	0.0111	23.1 %
S.I. with low unemployment rate [f]	0.009	-0.5 %
S.I. with high unemployment rate [f]	0.0091	0.5 %
S.I. but living in a small town (<10,001 inh.)	0.008	-11.7 %
S.I. but living in a medium town (10,001-50,000 inh.	0.0121	33.4 %
S.I. but living in a large town (50,001-500,000 inh.)	0.0097	7.4 %
S.I. but living in a very large town (> 500,000 inh.)	0.0054	-40.6 %

Notes:
[a] Own-account worker.
[b] Percentage change related to the standard.
[c] Standard individual: male, married, children, no education or primary education, not husband / wife self-employed, and not previous experience as employer within the sample. Other variables equals to average values respectively.
[d] Low and high own-account work duration are 1 and 6 quarters (the 10^{th} and 90^{th} centiles respectively).
[e] Low and high own-account work incomes are half and double the average ones respectively.
[f] Low and high unemployment rates are 15.85 % and 24.55 % respectively, which are the lowest and the highest values for our sample period.

Table A10. Transitions from own-account worker to employer across Spain

Data Source: European Community Household Panel (ECHP), 1994 – 2001

	Binomial	
	EMPLOYER (EMP)	
	Prob [EMP $_t$ | OA $_{t-1}$]	
Number of observations	2386	
Number of transitions	322	
Variables	**Coef.**	**t-stat.**
Constant	1.3025	(0.93)
Demographic characteristics		
Male	-0.1419	(-0.82)
Born abroad	0.3953	(1.17)
Age	-0.0142	(-0.22)
Age (squared)	9.5E-06	(-0.01)
Cohabiting (1)	0.064	(0.35)
Number of children under 14	-0.0518	(-0.57)
Relative(s) working as employer(s)	-0.3475	(-1.03)
Relative(s) working as own-account worker(s)	0.2789	(1.66)*
Education		
Secondary education (2)	0.2389	(1.35)
University studies (2)	-0,0177	(-0.08)
Relatives with university studies	0.0602	(0.38)
Own-account work characteristics		
Industrial sector (3)	0.1293	(0.5)
Financial services (3)	0.0468	(0.17)
Wholesale, hotels, restaurants & transport (3)	-0.5868	(-2.89)***
Other services (3)	-0.0353	(-0.12)
Hours of work	-0.0012	(-0.21)
Own-account employment duration	-0.0683	(-1.48)
Own-account employment duration (squared)	0.0026	(1.28)
Previous experience		
Previous spell(s) as employer	0.9738	(6.29)***
Previous spell(s) as paid-employed	0.592	(3.19)***
Previous spell(s) as unemployed	-0.0373	(-0.24)
Previous spell(s) as inactive	-0.4849	(-1.75)*
Incomes		
Inherit, gift or lottery winnings	0.8939	(2.06)**
Dwelling owner	-0.0016	(-0.01)
Annual capital and property incomes (1 lag)	8.8E-06	(0.19)
Annual own-account work incomes (1 lag)	9.6E-06	(1.25)
Business cycle		
Annual unemployment rate	-0.1443	(-5.61)***
Region		
Northwest (4)	-0.0491	(-0.21)
Northeast (4)	0.1458	(0.63)
Madrid (4)	0.2032	(0.66)
Center (4)	-0.2155	(-0.85)
East (4)	-0.2754	(-1.22)
Canary Islands (4)	0.1716	(0.57)
Reference categories: (1) Non-cohabiting individuals, (2) No education or primary education, (3) Construction Sector, (4) South		
Log likelihood	-826.4	

Notes:
(***) 1 % significativity level; (**) 5 % significativity level; (*) 10 % significativity level

Table A11. Number of transitions from own-account work across Spain

Data Source: European Community Household Panel (ECHP), 1994 – 2001

	Number of transitions from Own-Account Work TO	
	Own-Account Work	**Employer**
Spain	*2064*	*322*
Northwest	374	57
Northeast	326	64
Madrid	122	23
Center	302	39
East	506	67
South	308	47
Canary Islands	126	25

Table A12. Predicted probabilities of switching for individuals with given characteristics across Spain

Data Source: European Community Household Panel (ECHP), 1994 – 2001

	Transitions to Employer FROM	
	OA [a]	Δ% [b]
Standard individual [c] (S.I.)	*0.0955*	-----
S.I. but female	0.1085	13.6 %
S.I. but born abroad	0.1356	41.9 %
S.I. with university studies	0.094	-1.6 %
S.I. with relatives with university studies	0.1009	5.6 %
S.I. with previous spell(s) as employer	0.2185	128.8 %
S.I. with previous spell(s) as paid-employed	0.1603	67.8 %
S.I. with previous spell(s) as unemployed	0.0924	-3.3 %
S.I. with previous spell(s) as inactive	0.0611	-36.1 %
S.I. with relative(s) working as employer	0.0694	-27.3 %
S.I. with relative(s) working as own-account worker	0.1225	28.2 %
S.I. but working in the industrial sector	0.1073	12.3 %
S.I. but working in financial services	0.0997	4.3 %
S.I. but working in wholesale, hotels, restaurants or transport	0.0555	-41.9 %
S.I. but working in other services	0.0925	-3.2 %
S.I. with low working hours [d]	0.0968	1.3 %
S.I. with high working hours [d]	0.0938	-1.8 %
S.I. with low job experience [e]	0.1243	30.1 %
S.I. with high job experience [e]	0.0997	4.4 %
S.I. with inherit, gift or lottery winnings within the household	0.2052	114.8 %
S.I. but receiving €1,000 more in other family incomes	0.0963	0.8 %
S.I. with low work incomes [f]	0.0923	-3.4 %
S.I. with high work incomes [f]	0.1023	7.1 %
S.I. with low unemployment rate [g]	0.1791	87.5 %
S.I. with high unemployment rate [g]	0.0602	-37 %

Notes:

[a] Own-account worker.

[b] Percentage change related to the standard.

[c] S. I.= Standard individual: male, born in the country of present residence, cohabiting, one children aged fewer 14, no education or primary education, no relatives with university education within the sample, not previous experience as employer, paid-employed, unemployed or inactive, within the sample, not relatives working as employer or own-account worker, working in the construction sector, receiving mean capital and property incomes, and without any inherit, gift or lottery winnings within the household. Other variables equals to average values respectively.

[d] Low and high working hours are 40 and 70 (the 10^{th} and 90^{th} centiles respectively).

[e] Low and high own-account work experience are 2 and 19 years (the 10^{th} and 90^{th} centiles respectively).

[f] Low and high and own-account work incomes are half and double the average ones respectively.

[g] Low and high unemployment rates are 11.3 % and 19.8 % respectively, which are the lowest and the highest values for our sample period.

Table A13. Predicted probabilities of switching for individuals living across Spain

Data Source: European Community Household Panel (ECHP), 1994 – 2001

	Transitions to Employer FROM	
	OA [a]	Δ% [b]
Standard individual [c]	*0.0955*	-----
Standard individual but living in the Northwest	0.0964	0.9 %
Standard individual but living in the Northeast	0.1147	20.1 %
Standard individual but living in Madrid	0.1207	26.3 %
Standard individual but living in the Center	0.0828	-13.3 %
Standard individual but living in the East	0.0784	-18 %
Standard individual but living in the South	0.1007	5.4 %
Standard individual but living in Canary Islands	0.1174	22.9 %

Notes:
[a] Own-account worker.
[b] Percentage change related to the standard.
[c] S. I.= Standard individual: male, born in the country of present residence, cohabiting, one children aged fewer 14, no education or primary education, no relatives with university education within the sample, not previous experience as employer, paid-employed, unemployed or inactive, within the sample, not relatives working as employer or own-account worker, working in the construction sector, receiving mean capital and property incomes, and without any inherit, gift or lottery winnings within the household. Other variables equals to average values respectively.

Appendix B: Data Description

Spanish Continuous Family Expenditure Survey (ECPF)

Variable definitions referred to exercises developed with the Spanish Continuous Family Expenditure Survey (ECPF) are reported below.

Dependent variables

Transitions from own-account work to employer:
Dependent variable equals 1 for individuals who are own-account workers in quarter *t-1* and become employers in quarter *t*. The variable equals 0 for individuals who are own-account workers in quarters *t-1* and *t*.

Explanatory variables

Demographic characteristics:

Male	Dummy equals 1 for males.
Age	Age reported by the individual, ranging from 21 to 59.
Married	Dummy equals 1 for married individuals and 0 otherwise.
Children under 14	Dummy for individuals with children aged under than 14.
Husband / Wife self-smployed	Dummy equals to 1 for individuals whose husband / wife is self-employed.

Education:

No education and primary schooling	Dummy equals 1 for illiterate, no schooling individuals, and individuals with primary schooling as higher education level achieved, and 0 otherwise Education data of the head of household is used as a *proxy* of education of the husband / wife.
Secondary schooling	Dummy equals 1 for individuals with secondary schooling as higher education level achieved and 0 otherwise. Education data of the head of household is used as a *proxy* of education of the husband / wife.
University studies	Dummy equals 1 for individuals with University studies and 0 otherwise. Education data of the head of household is used as a *proxy* of education of the husband / wife.

Employment characteristics:

Own-account employment duration	Observed number of quarters in present job as own-account worker.

Observed previous experience:

Previous spell(s) as self-employed	Dummy equals 1 for individuals with observed previous spell(s) as self-employed.

Incomes:

Quarterly own-account work incomes	Own-account work incomes earned during the previous quarter to the interview, converted to euros of 1992, having been corrected by Consumer Price Index.

Other quarterly family incomes	Other family income earned during the previous quarter to the interview, converted to euros of 1992, having been corrected by Consumer Price Index. It includes all family incomes but own-account work incomes.
Business cycle:	
Quarterly unemployment rate	National quarterly unemployment rate (source: Labour Force Survey –EPA-).
Town size:	
Small town (< 10,000 inh.)	Dummy equals to 1 for individuals living in small size towns and 0 otherwise.
Medium town (10,001-50,000 inh.)	Dummy equals to 1 for individuals living in medium size towns and 0 otherwise.
Large town (50,001-500,000 inh.)	Dummy equals to 1 for individuals living in large size towns and 0 otherwise.
Very large town (> 500,000 inh.)	Dummy equals to 1 for individuals living in very large size towns and 0 otherwise.

Table B1. Descriptive statistics of the transitions from own-account worker to employer across Spain

Data Source: Spanish Continuous Family Expenditure Survey (ECPF), 1990 (I) – 1997 (I)

		All observations	Non switching observations	Switching observations
Number of observations		8786	8564	222
Demographic characteristics				
	Females	32.3 %	32.6 %	20.3 %
	Average age	44.6 years	44.6 years	43.5 years
	Age 21-30 years	7.9 %	7.9 %	9.5 %
	Age 31-40 years	25.6 %	25.5 %	27.5 %
	Age 41-50 years)	36.5 %	36.4 %	39.6 %
	Age 51-59 years	30 %	30.2 %	23.4 %
	No education / Primary schooling (*)	34.3 %	34.3 %	35.6 %
	Secondary schooling (*)	25.1 %	25 %	27.9 %
	University studies (*)	20.9 %	21 %	18 %
	Married	66.7 %	67 %	52.7 %
	Children under 14	27.9 %	27.8 %	30.2 %
	Husband / Wife self-employed	5.4 %	5.1 %	17.1 %
Previous employment characteristics				
	Average observed exp. as own-acc.worker	3.3 quarters	3.4 quarters	2.1 quarters
Previous experience within self-employment				
	Previous experience as employer	3.7 %	2.7 %	40.1 %
Incomes				
	Other quarterly family income	€1,217	€1,214	€1,309
	Average quarterly own-acc. work incomes	€1,869	€1,845	€2,793
Town size				
	Small town (< 10,000 inh.)	43.1 %	43.4 %	32 %
	Medium town (10,001-50,000 inh.)	24.3 %	24.1 %	30.2 %
	Large town (50,001-500,000 inh.)	26 %	25.8 %	31.1 %
	Very large town (> 500,000 inh.)	6.7 %	6.7 %	6.8 %

(*) Educational attainment of the head of household is used as a *proxy* of education of the husband/wife.

European Community Household Panel (ECHP)

Variable definitions referring to exercises developed with the European Community Household Panel (ECHP) are reported below.

Explained variables

Transitions from own-account work to employer:
Dependent variable equals 1 for individuals who are own-account workers in period *t-1* and become employers in period *t*. The variable equals 0 for individuals who are own-account workers in periods *t-1* and *t*.

Explanatory variables

Demographic characteristics:

Male	Dummy equals 1 for males.
Born abroad	Dummy equals 1 for born abroad individuals.
Age	Age reported by the individual, ranging from 21 to 59.
Cohabiting	Dummy equals 1 for cohabiting individuals and 0 otherwise.
Number of children under 14	Number of children aged under than 14 living within the household.
Relative(s) working as employer(s)	Dummy equals to 1 if there are any in the household.
Relative(s) working as own-acc. worker(s)	Dummy equals to 1 if there are any in the household.

Education:

No education or primary education	Dummy equals 1 for illiterate, no schooling individuals, or individuals with primary schooling as highest education level achieved, and 0 otherwise.
Secondary education	Dummy equals 1 for individuals with secondary schooling as highest education level achieved and 0 otherwise.
University studies	Dummy equals 1 for individuals with university studies and 0 otherwise.
Relatives with university studies	Dummy equals 1 if there are any in the household.

Employment characteristics:

Construction sector	Dummy equals 1 for individuals whose codes of main activity of the local unit of the business is F (construction), by the "Nomenclature of Economic Activities" (NACE-93).
Industrial sector	Dummy equals 1 for individuals whose codes of main activity of the local unit of the business are C (mining and quarrying), D (manufactures) and E (electricity, gas and water supply), by the "Nomenclature of Economic Activities" (NACE-93).
Wholesale, hotels, restaurants & transport	Dummy equals 1 for individuals whose codes of main activity of the local unit of the business are G (wholesale and retail trade; repair of motor vehicles, motorcycles and personal/household goods), H (hotels and restaurants) and I (transport, storage and communication), by the "Nomenclature of Economic Activities" (NACE-93).
Financial services	Dummy equals 1 for individuals whose codes of main activity of the local unit of the business are J (Financial intermediation) and K (real estate, renting and business activities), by the "Nomenclature of Economic Activities" (NACE-93).

Other services	Dummy equals 1 for individuals whose codes of main activity of the local unit of the business are L (public administration and defense; compulsory social security), M (education), N (health and social work) and O-Q (other community, social and personal service activities; private households with employed persons; extra-territorial organizations and bodies), by the "Nomenclature of Economic Activities" (NACE-93).
Years of own-account work experience	Number of years as own-account worker.
Hours of work	Hours of work per week.
Observed previous experience:	
Previous spell(s) as employer	Dummy equals 1 for individuals with observed previous spell(s) as employer.
Previous spell(s) as paid-employed	Dummy equals 1 for individuals with observed previous spell(s) as paid-employee.
Previous spell(s) as unemployed	Dummy equals 1 for individuals with observed previous spell(s) as unemployed.
Previous spell(s) as inactive	Dummy equals 1 for individuals with observed previous spell(s) as inactive.
Incomes:	
Inherit, gift or lottery winnings	Dummy equals 1 for households where anyone inherit any property capital, or receive a gift or lottery winnings, worth €2,000 or more during period *t-1*, and 0 otherwise.
Dwelling owner	Dummy equals 1 for households owning the dwelling in period *t-1*, and 0 otherwise.
Capital and property incomes (1 lag)	Capital and property incomes, and private transfers received during period *t-2*, converted to euros of 1996, having been corrected by Harmonised Consumer Price Index. Furthermore, these incomes are converted to average euros of 1996, being corrected by Purchasing Power Parity (across countries) for european exercises using ECHP.
Annual own-account work incomes (1 lag)	Own-account work incomes earned during period *t-2*, converted to euros of 1996, having been corrected by Harmonised Consumer Price Index. Furthermore, these incomes are converted to average euros of 1996, being corrected by Purchasing Power Parity (across countries) for european exercises using ECHP.
Business cycle:	
Annual unemployment rate	Standardized annual unemployment rate (source: OCDE)
Country dummies	Dummies equal 1 for individuals living in the named country, and 0 otherwise.

Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden and United Kingdom.

Region dummies:	
Northwest	Dummy equals 1 for individuals living in Galicia, Asturias or Cantabria, and 0 otherwise.
Northeast	Dummy equals 1 for individuals living in the Basque Country, Navarra, La Rioja, or Aragón, and 0 otherwise.

Madrid	Dummy equals 1 for individuals living in Madrid, and 0 otherwise.
Center	Dummy equals 1 for individuals living in Castilla and León, Castilla La Mancha, or Extremadura, and 0 otherwise.
East	Dummy equals 1 for individuals living in Catalonia, Comunidad Valenciana or the Balearic Islands), and 0 otherwise.
South	Dummy equals 1 for individuals living in Andalusia, Murcia, Ceuta or Melilla, and 0 otherwise.
Canary Islands	Dummy equals 1 for individuals living in the Canary Islands, and 0 otherwise.

Table B2. Descriptive statistics of the transitions from own-account worker to employer across the EU-15 (Main exercise)

Data Source: European Community Household Panel (ECHP), 1994 – 2001

		All observations	Non switching observations	Switching observations
Number of observations		12255	10338	1917
Demographic characteristics				
	Females	25.5 %	25.8 %	24 %
	Average age	41.6 years	41.7 years	40.6 years
	Age 21-30 years	14.2 %	13.6 %	17.2 %
	Age 31-40 years	31.7 %	31.4 %	33.5 %
	Age 41-50 years	34 %	34.4 %	31.6 %
	Age 51-59 years	20.1 %	20.5 %	17.7 %
	No education / Very basic education	52 %	52.8 %	47.6 %
	Primary schooling / Secondary schooling	28.5 %	28 %	31.4 %
	University studies	19.5 %	19.2 %	21.1 %
	Relatives with university studies	20 %	19.8 %	21.2 %
	Cohabiting	81.3 %	81.2 %	81.6 %
	Average number of children under 14	0.69 children	0.69 children	0.71 children
	Relative(s) working as employer(s)	4.6 %	4.6 %	4.6 %
	Relative(s) working as own-acc. worker(s)	14.2 %	13.7 %	16.5 %
Employment characteristics				
	Construction sector	15.3 %	15.1 %	16.6 %
	Industrial sector	12.4 %	11.9 %	15.1 %
	Financial services	12 %	11.6 %	13.8 %
	Wholesale, hotels, restaurants & transport	48 %	48.8 %	43.3 %
	Other services	12.3 %	12.5 %	11.2 %
	Average hours of work per week	51 hours	50.9 hours	51.2 hours
	Average years of exper. as own-acc.worker	9.6 years	9.6 years	9.7 years
Previous experience				
	Observed previous spell(s) as employer	16.8 %	14.1 %	31.6 %
	Observed previous spell(s) as paid-employed	12.6 %	11.4 %	18.8 %
	Observed previous spell(s) as unemployed	28.2 %	28 %	29.4 %
	Observed previous spell(s) as inactive	5.2 %	5 %	6 %
Incomes				
	Dwelling owner	79.1 %	78.8 %	80.6 %
	Receiving capital and property incomes	35.7 %	35.6 %	36.4 %
	Average annual capital and property incomes	€490	€482	€536
	Average annual capital and property incomes (those who receive)	€1,372	€1,353	€1,472
	Average annual own-account work incomes	€10,202	€10,045	€11,051
Country				
	Austria	1.9 %	1.8 %	2.7 %
	Belgium	2.4 %	2.4 %	2.8 %
	Denmark	1.8 %	2.1 %	0.4 %
	Finland	4.7 %	4.2 %	7.5 %
	France	*No observations*		
	Germany	3.7 %	3.6 %	4.2 %
	Greece	23.3 %	22.1 %	29.5 %
	Ireland	4.5 %	4.2 %	5.8 %
	Italy	14.8 %	15.1 %	12.7 %
	Luxembourg	*No observations*		
	Netherlands	2.4 %	2.8 %	0.2 %
	Portugal	11.8 %	11.6 %	13 %
	Spain	19.7 %	20.2 %	17 %
	Sweden	*No observations*		
	United Kingdom	9 %	9.9 %	4.3 %

Table B3. Descriptive statistics of the transitions from own-account worker to employer across the EU-15 (Complementary exercise)

Data Source: European Community Household Panel (ECHP), 1994 – 2001

		All observations	Non switching observations	Switching observations
Number of observations		10350	8608	1742
Demographic characteristics				
	Females	26.4 %	26.9 %	23.8 %
	Average age	3.6 %	3.7 %	3.1 %
	Born abroad	41.6	41.8	40.7
	Age 21-30 years	14 %	13.5 %	16.9 %
	Age 31-40 years	31.7 %	31.3 %	33.5 %
	Age 41-50 years	33.8 %	34.3 %	31.4 %
	Age 51-59 years	20.4 %	20.9 %	18.2 %
	No education / Very basic education	54.3 %	55.2 %	50 %
	Primary schooling / Secondary schooling	29.3 %	28.9 %	31.1 %
	University studies	16.4 %	15.9 %	18.9 %
	Relatives with university studies	18.5 %	18.2 %	20 %
	Cohabiting	81.5 %	81.4 %	81.6 %
	Average number of children under 14	0.69 children	0.68 children	0.71 children
	Relative(s) working as employer(s)	5 %	5 %	4.8 %
	Relative(s) working as own-acc. worker(s)	15.6 %	15.3 %	17 %
Employment characteristics				
	Construction sector	13.6 %	13 %	16.4 %
	Industrial sector	12.9 %	12.3 %	15.5 %
	Financial services	10 %	9.5 %	12.9 %
	Wholesale, hotels, restaurants & transport	52 %	53.6 %	44.4 %
	Other services	11.5 %	11.6 %	10.8 %
	Average hours of work per week	51 hours	51 hours	50.7 hours
	Average years of exper. as own-acc.worker	10.4 years	10.4 years	10.2 years
Previous experience				
	Previous spell(s) as employer	17.7 %	14.7 %	32.4 %
	Previous spell(s) as paid-employed	11.1 %	9.7 %	18.1 %
	Previous spell(s) as unemployed	28.1 %	27.8 %	29.7 %
	Previous spell(s) as inactive	5 %	4.8 %	5.8 %
Incomes				
	Inherit, gift or lottery winnings	2.1 %	2 %	2.5 %
	Dwelling owner	80.4 %	80.1 %	81.9 %
	Receiving capital and property incomes	€453	€437	€532
	Average annual capital and property incomes	31.6 %	31.3 %	33.3 %
	Average annual capital and property incomes (those who receive)	€1,433	€1,398	€1,598
	Average annual own-account work incomes	€9,589	€9,372	€10,658
Country				
	Austria	2.3 %	2.1 %	2.9 %
	Belgium	2.9 %	2.8 %	3.1 %
	Denmark	2.1 %	2.5 %	0.4 %
	Finland	5.6 %	5.1 %	8.2 %
	France	*No observations*		
	Germany	*No observations*		
	Greece	27.5 %	26.5 %	32.4 %
	Ireland	5.1 %	4.9 %	6.3 %
	Italy	17.2 %	17.9 %	13.9 %
	Luxembourg	*No observations*		
	Netherlands	*No observations*		
	Portugal	14 %	13.9 %	14.2 %
	Spain	23.3 %	24.2 %	18.6 %
	Sweden	*No observations*		
	United Kingdom	*No observations*		

Table B4. Descriptive statistics of the transitions from own-account worker to employer across Spain (Complementary exercise)

Data Source: European Community Household Panel (ECHP), 1994 – 2001

		All observations	Non switching observations	Switching observations
Number of observations		2386	2064	322
Demographic characteristics				
	Females	24.2 %	24.4 %	23 %
	Born abroad	3.4 %	3.3 %	4.3 %
	Average age	41.2 years	41.5 years	39.4 years
	Age 21-30 years	16.3 %	15.4 %	22.4 %
	Age 31-40 years	31.1 %	30.5 %	35.1 %
	Age 41-50 years	31.6 %	32.6 %	25.8 %
	Age 51-59 years	20.9 %	21.6 %	16.8 %
	No education / Very basic education	63.8 %	65.1 %	55.6 %
	Primary schooling / Secondary schooling	18.6 %	18.1 %	21.7 %
	University studies	17.6 %	16.8 %	22.7 %
	Relatives with university studies	23.8 %	23.1 %	28.6 %
	Cohabiting	78.8 %	79.3 %	76.1 %
	Average number of children under 14	0.62 children	0.62 children	0.62 children
	Relative(s) working as employer(s)	4.4 %	4.5 %	3.7 %
	Relative(s) working as own-acc. worker(s)	17.9 %	17.1 %	22.7 %
Employment characteristics				
	Construction sector	12.9 %	12 %	18.6 %
	Industrial sector	8 %	7.5 %	11.5 %
	Financial services	10.4 %	9.6 %	15.2 %
	Wholesale, hotels, restaurants & transport	61.7 %	64.2 %	45.7 %
	Other services	7 %	6.7 %	9 %
	Average hours of work per week	52.5 hours	52.7 hours	51.2 hours
	Average years of exper. as own-acc.worker	9.7 years	9.9 years	8.8 years
Previous experience				
	Previous spell(s) as employer	15.5 %	12.2 %	37 %
	Previous spell(s) as paid-employed	12.5 %	10.2 %	27.3 %
	Previous spell(s) as unemployed	39.6 %	38.9 %	44.1 %
	Previous spell(s) as inactive	7.4 %	7.4 %	7.5 %
Incomes				
	Inherit, gift or lottery winnings	1.4 %	1.2 %	2.8 %
	Dwelling owner	84.7 %	84.6 %	85.1 %
	Receiving capital and property incomes	55.6 %	54.8 %	60.9 %
	Average annual capital and property incomes	€289	€286	€311
	Average annual capital and property incomes (those who receive)	€520	€522	€511
	Average annual own-account work incomes	€7,862	€7,724	€8,746
Region				
	Northwest	18.1 %	18.1 %	17.7 %
	Northeast	16.3 %	15.8 %	19.9 %
	Madrid	6.1 %	5.9 %	7.1 %
	Center	14.3 %	14.6 %	12.1 %
	East	24 %	24.5 %	20.8 %
	South	14.9 %	14.9 %	14.6 %
	Canary Islands	6.3 %	6.1 %	7.8 %

Part IV
Success and Failure in Self-employment

Chapter 8. Survival within Entrepreneurs: Which Europeans are the best Job Creators?[1]

8.1 Introduction

Most empirical studies on entrepreneurship dynamics have focused on the decision to enter into self-employment. These works have contributed to detecting the variables which make an individual take the decision to enter self-employment, but not necessarily the variables which make an individual to be successful within self-employment.

However, establishing why some individuals quit self-employment shortly after they have started –while others survive- must be considered a crucial question, in order to improve the effectiveness of the entrepreneurial promotion policies aimed at not only enhancing self-employment but also to promote the economic growth and job creation processes. As the Entry and Post-entry literature has pointed out, entry to markets is relatively easy but survival is not (Geroski, 1995). Thus, governments' objectives cannot be limited to achieving a certain number of self-employed –and enhance employment- temporarily but also to obtaining a certain persistence of this effect.

In this sense, the European Council defined its objectives in terms of employment and economic growth in Lisbon in 2000. In doing so, European authorities are involved in a commitment to promote entrepreneurship by designing and implementing a whole spectrum of policies, legislation, programmes and initiatives relevant to Europe's small and medium-sized enterprises (SMEs).[2] Its more remarkable actions reveal, however, a marked tendency or bias in favour of measures promoting entries into self-employment.[3]

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[1] This work benefited from my research stay at the *Max-Planck-Institut für Ökonomik* in Jena in 2005 where an earlier version of this paper was presented. I wish to thank Javier Álvarez, Juan A. Máñez, María E. Rochina, Juan A. Sanchis and André Van Stel for their help, encouragement and friendship. We also would like to thank José Ignacio García, and Simon Parker for their comments on earlier drafts. I gratefully acknowledge the support from the grant provided by the *Fundación Centro de Estudios Andaluces* for the project "*Función empresarial: Determinantes de oferta en clave comparada y distorsiones del sistema fiscal*", REF. ECO-15/2005. Usual disclaimer applies.

[2] The category of micro, small and medium-sized enterprises (SMEs) is made up of enterprises which employ fewer than 250 persons and which have an annual turnover not exceeding €50 million, and/or a total annual balance sheet not exceeding €43 million (see COM (2003) 1422 final). Some remarkable implementation reports are the *European Charter for Small Enterprises* adopted in Lisbon, the *Green Paper: Entrepreneurship in Europe* presented in 2003, or the *Action Plan: the European Agenda for Entrepreneurship*, presented in 2004. More general programmes are the *Competitiveness and Innovation Framework Programme 2007-2013* which substitutes the *Multiannual Programme for Enterprise and Entrepreneurship 2001-2006*, or the *Community Lisbon Programme 2005-2008,* recently revised at the new *Community Lisbon Programme 2008-2010*.

[3] Its main objectives include: i) Improving access to finance for European (SMEs), not just to start their activities, but also to stimulate its growth; ii) encouraging Member States to integrate entrepreneurship into curricula at all levels of education; iii) making it easier to start a company, by simplifying their

An obvious risk of these measures is that they can distort occupational choice, by encouraging non-skilled individuals to enter self-employment[4] who may return to unemployment when economic conditions changes or even, when incentives disappear.[5] Therefore, its long-term success will crucially depend on an appropriate diagnostic and knowledge of the more powerful transitions in order to enhance European employment rate, together with a solution to the clear lack of measures devoted to increasing ventures survival. In other words, self-employment programmes should enhance not only transitions into self-employment, but also remaining within this state for some time. As a consequence, further knowledge of how different factors contribute to self-employment duration becomes a crucial question.

Empirical studies of success in entrepreneurship can roughly be divided into two types, where the firm is the unit of observation, while the individual is the other unit of observation. The former type has intensively explored the survival of firms or establishments in a particular geographic area or a specific economic sector. These studies try to capture the effects of firm's size, advertising and R&D activities, productivity, export intensity, legal structure and foreign capital participation, over the probability of survival of those firms. Consequently, this topic is very useful for studying corporate entrepreneurial activity but fails, however, to explain entrepreneurship from an individual perspective.[6] The other strand of the literature, much smaller however, has examined success within self-employment by means of individual characteristics obtained from household and labour surveys.[7] Within these works, not only duration models are

procedures, and reducing the costs of company start-up; iv) encouraging young entrepreneurs; v) encouraging women entrepreneurs; vi) opening doors to ethnic minority groups to set up and run a business; vii) simplify procedures and making it easier for small firms to recruiting a first employee; viii) making it simpler to transfer firms to new owners, when founder retires or decides to move onto other things; and ix) tackling the stigma attached to business failure, among other actions to promote entrepreneurship.

[4] It is a well-known fact that there are individuals who switch from unemployment to self-employment when the opportunity cost of this type of status in employment falls, either due to the fall in the paid-employment offers arrivals rate or for the existence of an incentive structure favouring to become entrepreneur versus becoming wage-worker. In this sense, (Mortensen, 1986), Rissman (2003) use the basic job search model to develop a self-employment model for unemployed workers, where those unemployed individuals can supplement their income during spells of unemployment with earnings generated from self-employment. In this model, self-employment is a second-best for those individuals who choose self-employment as a way to supplement their income until a better paying job opportunity becomes available in the wage sector. At least, for this special group of self-employed, survival and growth must be related with some specific factors that are possibly highly removed from our previous statements about the determinants of entrepreneurial success. By contrast, for the "conventional" self-employed, success implies expanding their labour and to increase earnings, among other circumstances, and can be determined by certain elements such as human capital, liquidity constraints or even labour market institution characteristics.

[5] For instance, controlled experiments in the US suggest that small business assistance is successful for a small group of unemployed individuals—such as, highly educated prime-aged men, indicating that this measure may be most appropriate for unemployed workers who have entrepreneurial skills and the motivation to survive in a competitive environment (Fay, 1996, and Wilson and Adams, 1994). Moreover, Rodríguez-Planas, (2007) compares success of employment services and small-business assistance programmes at getting the unemployed back to work. Thus, she finds as employment services tend to be more efficient than small-business assistance programmes for workers without a high-school degree, and that the opposite holds for the more educated workers.

[6] As examples of this literature, see Troske (1989), Audretsch (1991, 1995), Audretsch and Mahmood (1994, 1995), Audretsch *et al*. (1997, 1999), Mata and Portugal (1994), Mata, Portugal and Guimaraes (1995), Segarra and Callejón (2002), Geroski, Mata and Portugal (2003), Esteve *et al*. (2004, 2007a, 2007b), Esteve and Mañez (2006) and López-García and Puente (2006) among others.

[7] Individual-based data sets do not have certain information, while firm-based ones do not cover other aspects. As limitations are shared, it would be of great interest to move forward in the design of joint sur-

observed, but also other tools, such as multiple state models[8], threshold models[9], decomposition techniques[10], and particularly discrete choice models.[11] The reason for this scarcity lies mostly in the lack of data, which has limited the inclusion of self-employed characteristics in econometric models.[12]

Regarding duration models, most of them refer to the United States (see Evans and Leighton, 1989)[13], Kalleberg and Leicht ,1991, Holtz-Eakin *et al*. ,1994, Van Praag ,2003, Fairlie and Krashinsky, 2006, Rissman, 2006, Gurley-Calvez and Bruce, 2007, and Georgarakos and Tatsiramos, 2007). Outside Europe, there are interesting studies focused on Zimbabwe (see Nziramasanga and Lee, 2001, 2002). In Europe, there is still a great deal to be done, and learnt, in the field of self-employment survival. In this sense, the few analyses available to date refer to the UK (see Taylor, 1999 and Georgellis *et al*., 2007), Germany (see Bruderl *et al*. ,1992, Brüderl and Preisendörfer, 1998, and Block and Sandner, 2006), Spain (see Carrasco, 1999 and Cueto and Mato, 2003), Switzerland (see Falter, 2002), Finland (see Johansson, 2001, and Tervo and Haapanen, 2005), Denmark (see Jensen *et al*., 2003, and Jørgensen, 2005) and Sweden (see Pernilla, 2007). To the best of our knowledge, however, Williams (2004) is the only work referring to Europe as a whole that exists to date.[14] Thus, the current chapter attempts to fill this "European research gap" using information about 7,423 self-employed individuals in Europe, who have been annually interviewed.[15]

veys of enterprises and entrepreneurs as the Panel Study of Entrepreneurship Dynamics (PSED) for the US, the Eurostat survey on the "Factors of Business Success" (FOBS), or the new firm database from Statistic Denmark, which has been linked to the Integrated Database for Labour Market Research (IDA). The obvious advantage of this data is that the econometric analysis can condition both firm and individual-level data and, thus, avoid the problem of omitted variables which may otherwise bias results.

[8] Kuhn and Schuetze (2001) and Martinez-Granado (2003) respectively perform multiple state models for Canada and UK, where the probability of exiting self-employment is studied, among others.

[9] Cooper *et al*. (1992) and Gimeno-Gascon *et al*. (1997) present threshold models for the US where survival also depends on a firm's own threshold of performance.

[10] For the US, Fairlie (1999) and Fairlie and Robb (2007) show variations of the Blinder-Oaxaca decomposition technique.

[11] These works study the probability of exiting self-employment, some of which also account for duration dependence. Thus, Bates (1990, 1999), Cooper *et al*. (1991, 1994), Holmes and Schmitz (1996), Bruce (2002), Bruce and Gurley-Calvez (2005), and Lofstrom and Wang (2006) present different works for the US Lin *et al*. (2000) present a study for Canada, and Cressy (1996), Taylor (2001, 2004) for the UK. Finally, regarding Nordic countries, Kangasharju and Pekkala (2002) present evidences for Finland, Giannetti and Simonov (2004) for Sweden and Ejrnæs and Hochguertel (2007) for Denmark.

[12] Millán *et al*. (2008) review and evaluate all the potential statistical sources in order to study self-employment in Spain. They stress that the available information might be considered accurate for reaching the goals of each source while, however, the information becomes incomplete and even erratic if we intend to analyse entrepreneurial activity by it.

[13] Evans and Leighton, however, attempt to study self-employment duration by means of non-parametric hazard formulations.

[14] Williams try to identify the effects of childcare activities on the duration of self-employment across eight European countries: Belgium, Denmark, France, Greece, Ireland, Italy, Portugal and Spain. However, Williams uses the first wave as the starting point for all spells (i.e. spells that started prior to 1994 are included in the data, but with 1994 as the start date), but does not correct for left-censoring. Moreover, only single spells of self-employment are considered and multiple spells are therefore omitted in the sample once. Finally, this author does not include any income controls when the estimation is performed for the eight countries, to avoid comparability problems which might have been corrected by Purchasing Power Parity Indexes.

[15] After filtering, the final sample used for estimation has 23,417 observations where 7,423 different individuals can be identified.

In this sense, this work is concerned with the individual running the firm, allowing to examine how personal characteristics –gender, age, or human capital variables including controls for unobserved heterogeneity-, financial variables –home ownership or capital and property incomes-, industry dummies, some firms' characteristics such as the number of employees-, or economic conditions as the unemployment rate, affect the likelihood of survival.

Thus, by matching the eight waves of the European Community Household Panel data (ECHP, 1994-2001) for the EU-15, this work examines self-employed workers' exit from self-employment in Europe. Concerning econometric methods, we estimate logistic discrete hazard models[16], including some single and competing risk duration models in order to study the underlying determinants of self-employment success, measured in terms of survival within this state, and search for differences across the EU-15 and different destination states: paid-employment, unemployment or inactive.[17]

Our results are generally consistent with the findings of previous studies, and seem to suggest that personal characteristics –gender, age, and prior business experience as self-employed, paid-employed or unemployed-, wealth variables –home ownership and capital and property incomes-, activity sector, firm's size, aggregated conditions, and duration dependence determine those individuals most likely to remain as self-employed. In particular, and consistent with results obtained by Taylor (1999), Carrasco (1999), and Van Praag (2003), we observe that those with previous experience as self-employed or wage-employed are more likely to survive, while those with previous experience as unemployed are more likely to fail. Consequently, and just as an example of the importance of improving our understanding of the determinants of firm survival, policy makers must be conscious of the possible ineffectiveness, or at least, of the smaller effect of those instruments designed to promote the transitions from unemployment to self-employment than those considered in order to favour transitions from paid-employment in terms of its persistent effects.

The chapter is organised as follows. Section 2 briefly describes the underlying theoretical framework, while Section 3 reviews the literature on the determinants of self-employment survival and proposes the hypotheses to be tested. Section 4 describes the data used in our analysis and the econometric framework is described in the fifth section. Section 6 presents the empirical results obtained and, finally, the last section sets out the main conclusions and suggests some policy rules. The tables and figures are in two separate appendices at the end of the chapter.

[16] See Amemiya (1985), Lancaster (1990), Wooldridge (2002) or Greene (2003) for more details of this methodology.

[17] Georgellis *et al.* (2007) includes a fourth state, called "entering a different self-employment state", interpreting this exit as an indicative of "absence of any kind of stigma of business failure", or even as the discovering and exploiting of better business opportunities. However, we have considered that this is not an advisable strategy, because given the sample' design, this individuals could be as much winners as failed entrepreneurs. This heterogeneous composition made the results non-interpretable. In addition, our interest is in understand the how and why some self-employed people remain in self-employment versus those who exit from self-employment, in order to establish the factors of success and/or failure. From this point of view, individuals remaining in self-employment will be considered a homogeneous group.

8.2 A Brief Theoretical Discussion

This section briefly describes the underlying theoretical approaches that have become widely used to explain individuals' decisions to participate in, to enter and to exit from self-employment.

Following the standard theory of on-the-job search (which does not include the option of self-employment), most previous studies on self-employment and entrepreneurship extend the basic model by a common starting-point: a model of a rational agent which enters into self-employment at time *j* if the expected utility associated to this occupation $E\left(U_{ij}^{SE}\right)$ exceeds the expected utility of paid-employment $E\left(U_{ij}^{W}\right)$.[18] This model assumes that individuals discover entrepreneurial opportunities over their life cycles, and that people who have made better discoveries or who have more limited opportunities in wage work will be more likely to start a business.

Some studies simplify the problem using expected earnings as a *proxy* for expected utility. However, regarding the decision to start-up a new business, the literature has also emphasized the role of liquidity constraints, human capital (age, experience, and education), personal characteristics (marital status, children), family circumstances, ethnic or gender differences, economic conditions, social capital, health and disability, psychological factors, risk attitudes, regional factors, and government policy variables among others.[19]

Similarly, the literature recognizes that there may be more than two occupations to choose from. For example, Earle and Sakova (2000) studied the problem of choosing between employer self-employment, own-account self-employment, paid-employment, or unemployment, by using multinomial choice models. Moreover, within the literature of self-employment duration and also accounting for multiple labour market states, there are the works of Taylor (1999), Carrasco (1999), Falter (2002), Martínez-Granado (2002), Van Praag (2003) or Georgellis *et al*. (2007).

Given this framework, the choice of labour market state is continually reviewed as individual situations change. Hence, the determinants of self-employment dissolution emerge. Thus, a rational individual will quit self-employment at time *j* if the expected utility from self-employment $E\left(U_{ij}^{SE}\right)$ is smaller than the expected utility from a waged-employment offer received $E\left(U_{ij}^{W}\right)$. Similarly, a rational individual will end a current business to set up a new one at time *j* if the expected utility from the current self-employment $E\left(U_{ij}^{SE^{(1)}}\right)$ is smaller than the expected utility from the new self-employment experience $E\left(U_{ij}^{SE^{(2)}}\right)$. By contrast, transitions from self-employment to unemployment or inactivity can be characterized as an involuntary abandon of self-employment.[20] Thus, we assume that the utility differential between self-employment and other final states (paid-employment, unemployment or inactive) depends on a set of observed (and unobserved) individual characteristics and economic variables.

[18] Evans and Jovanovic (1989) or Evans and Leigthon (1989).
[19] See Parker (2004) for an extensive and in-depth review of entrepreneurship determinants.
[20] See Taylor (1999).

8.3 The Determinants of Self-employment Survival

This section considers a number of questions regarding the determinants of self-employment survival. Thus, based on some previous studies, we shed light on the dynamics of self-employment, in terms of the choice of explanatory variables.

Question 1: Does the probability of switching out of self-employment decrease with the amount of self-employment experience?

The shape of the empirical hazard rate of self-employment duration mostly presents a negative effect on the exit rate, that is, the hazard decreases with duration. There are two possible explanations of this result. The first one, well-known, is that entrepreneurial success may require time before being well established. The second comes from the fact that individuals improve their entrepreneurial skills along with self-employment experience. Examples supporting this hypothesis include the work of Evans and Leighton (1989), Bruderl *et al*. (1992), Bates (1990), Holtz-Eakin *et al*. (1994), Taylor (1999), Carrasco (1999), Falter (2002), Martínez-Granado (2002), Van Praag (2003), Jensen *et al*. (2003), Taylor (2004), Tervo and Haapanen (2005) or Rissman (2006). Regarding the work of Martinez-Granado (2002) and Van Praag (2003), they report an interesting result. Thus, they find that the exit probability of new entrants is initially lower than the probability during the second –or even third- year, and then approaches zero as time tends to infinite.

However, we also find one exception in the works of Holmes and Schmitz (1996). They find that for businesses owned by non-founders, and for those with managers who have the same tenure, the probability of discontinuance declines with the age of the business. However, among businesses owned by founders, the failure rate initially declines in business age, but, after some point, the failure rate increases in the age of the business.

Question 2: Are there gender differences in self-employment duration?

As regards gender differences, females are still a minority of the self-employed workforce in all developed countries. However, once women have overcome all obstacles and family circumstances to become self-employed, there is not *a priori* any reason which justify lower survival rates, unless similar hurdles reappear. Thus, Kalleberg and Leicht (1991), Cooper *et al*. (1991, 1992, 1994), Brüderl and Preisendörfer (1998) and Pernilla (2007) evidence that gender has an insignificant effect on business survival rates. Besides, Giannetti and Simonov (2004) show how males are less likely to stay longer in self-employment than females. On the contrary, most previous studies observe how women have significantly higher failure rates (see Holmes and Schmitz, 1996, Taylor, 1999, Nziramasanga and Lee, 2001, Falter, 2002, Tervo and Haapanen, 2005, Block and Sandner, 2006, or Georgellis *et al*., 2007 among others).

Question 3: Are there different self-employment survival rates across different ethnics and racial groups?

We might argue that those who wish to immigrate temporarily in order to accumulate wealth see in entrepreneurship the most effective means to this end. Furthermore, immigrants turn to entrepreneurship as they are disadvantaged with respect to access to paid-employment. In this sense, language difficulties, discrimination, or possession of non-validated foreign qualifica-

tions seem to be the main causes.[21] Immigrants are also considered to be self-selected risk takers due to their willingness to leave their homeland to make their way in a foreign country. Consequently, due to the difficulties to enter paid-employment, or the desperate wish –or need- to accumulate wealth, not enough skilled individuals may become self-employed, together with those skilled, and this may decrease survival rates among immigrants. Thus, Cooper *et al*. (1991, 1992, 1994), Falter (2002), Lofstrom and Wang (2006), and Georgarakos and Tatsiramos (2007) observed that foreigners are less likely to survive within self-employment. Other studies point out differences between immigrants themselves. Thus, Bates (1999) observes that Asian Indian and Filipino immigrants are more likely than Asian non-immigrant firm owners to exit self-employment. Similarly, Jensen *et al*. (2003) find higher rates of survival among immigrants from Iran, than from Turkey or Pakistan. However, other results are also present within the literature in the works of Taylor (1999) or Martínez-Granado (2002). In this sense, Taylor (1999) and Martínez-Granado (2003), using the same database, observe that being non-white –versus being white one- appears to have little effect over the probability of success, everything else constant.

Regarding ethnics groups, several recent studies have examined the causes of the dearth of black-owned businesses and find that relatively low levels of education, assets, and parental self-employment are partly responsible (see Holmes and Schmitz, 1996, Bates, 1997, Fairlie, 1999, Hout and Rosen, 2000, and Fairlie and Robb, 2007).

Question 4: Is there any relationship between dependent children for and self-employment duration?

A review of several articles that include such controls suggests that the empirical evidence regarding the effect of children on the duration of self-employment is mixed (see Holtz-Eakin *et al*., 1994, Fairlie, 1999, Kuhn and Schuetze, 2001, Nziramasanga and Lee, 2001, Bruce, 2002, Tervo and Haapanen, 2005 or Ejrnæs and Hochguertel, 2007 as examples of these conflicting results). Later, Williams (2004) examines the determinants of success in self-employment, specially focusing on the effects of the time spent caring for children. As Williams argues one reason for the existence of different results is that children have effects on the probability of success in self-employment through many channels, not only as regards the time spent caring for them, and some effects are positive. Depending on their ages, children might provide labour services that contribute to the success of the self-employed. In addition, children can provide "motivation" for the self-employed (as for the wage employed), which could contribute to their success. These factors would lead to a positive relationship between the number of children and self-employment duration. The effect of the number of children also might be nonlinear, if older children are able to assist in the care of younger children. In a linear empirical analysis, this could result in an estimation of no effect. But on the other hand, children can absorb resources that might otherwise be devoted to the business and ultimately lead to a greater likelihood of failure. Regarding Williams' estimates, they indicate that caring for children significantly reduces the duration of self-employment ventures, for both males and females, and in most countries studied. These results suggest that policy makers need to consider child care policies in conjunction with self-employment policies.

[21] Sometimes, there is a "law vacuum" which distorts the occupational choice decision. For instance, Spain has assisted recently to an exponential growth in Romanian self-employed due to the existence of significant differences between the legal requirements for Romanian immigrants depending on whether they will be self-employed or employees. Given that they do not have a work permit, the self-employment opportunity cost for these individuals is zero.

Question 5: Has age a significant impact on self-employment duration?

One might expect older and/or more experienced people to survive within self-employment with greater probability than younger and/or less experienced individuals, due to the human capital requirements of entrepreneurship –often unavailable to younger workers-, or the necessary time to build networks, and to have identified valuable opportunities in entrepreneurship. Thus, most empirical studies test if age has a non-linear effect on duration, by including both a linear and a quadratic term in the analysis. The idea is to capture whether the negative quadratic term begins to dominate the positive linear term within –or outside- the existing range of age in the sample. In this sense, Holtz-Eakin *et al*. (1994), Taylor (2004), Tervo and Haapanen (2005) and Block and Sandner (2006) find that the negative quadratic term begins to dominate the positive linear term at roughly the age of 43, indicating that past this age, people become more likely to opt out of entrepreneurship in favour of wage earning, ceteris paribus. Holmes and Schmitz (1996) also observe that the probability of exit is U-shaped in the age of the manager, with the youngest and oldest managers having the highest exit rates. Moreover, Gimeno-Gascon *et al*. (1997), Cooper *et al*. (1992), Falter (2002), Van Praag (2003), Cueto and Mato (2003) or Pernilla (2007) show as the older one starts, the longer one survives (the lower the hazard). Finally, Carrasco (1999)[22] or Taylor (2001) does not find any statistically important effect of age.

Question 6: Does the presence of self-employed parents (or relatives) increases the probability of survival?

The argument is that parental labour market status may act as a proxy for intergenerational transfers of entrepreneurial human capital and ability.[23] However, empirical studies are not as conclusive as expected. Thus, Cooper *et al*. (1991, 1992, 1994), Gimeno-Gascon *et al*. (1997) and Tervo and Haapanen (2005) report a higher probability of survival if the entrepreneur's parents had owned (or currently own) a business. Falter (2002) observes that those with a self-employment spouse have a higher probability of remaining in business. Finally, Martínez-Granado (2002) reports a lower probability of exiting to paid-employment for those whose father has been self-employed. On the other hand, Bates (1990), Brunderl *et al*. (1992), Schiller and Crewson (1997), Taylor (2001), Van Praag (2003) or Georgellis *et al*. (2007) do not find any statistically significant result related with variables measuring parental background. In this line, Martínez-Granado (2002) suggests that the job status of the parents does not have any effect on the probability of switching from self-employment to unemployment.

Question 7: Are those individuals with higher education (or qualifications) less likely to exit self-employment?

We expect more schooling to improve a firm's survival chances. On the other hand, one would expect, according to the signalling hypothesis, that those planning to enter self-employment have no need to acquire formal qualifications to indicate their quality to potential employers. Moreover, higher levels of education might be related to higher expected wage earnings, that is, higher opportunity cost of being self-employed. Consequently, the expected results are ambiguous.

[22] However, as Carrasco stresses, her data set has a serious limitation, given that she only can observe entrants into self-employment over a short period of time (the maximum self-employment spell she can observe is 2 years).

[23] Lentz and Laband (1990), among others, argues that children of entrepreneurs acquire informal business experience from their parents. They find that parents' self-employment experience has a strong and positive effect on the probability of becoming self-employed.

Regarding some previous studies, Cressy (1996) finds that high qualifications have positive and statistically significant effects on survival rates. Similarly, Bates (1990), Brunderl *et al*. (1992), Cooper *et al*. (1991, 1994), Falter (2002), Cueto and Mato (2003), Tervo and Haapanen (2005) and Ejrnæs and Hochguertel (2007) find education to be an important factor in increasing self-employment longevity. However, Cooper *et al*. (1992), Taylor (1999), Carrasco (1999), Johansson (2001) or Georgellis *et al*. (2007) do not find any statistically important effect of education on survival. On the other hand, Nziramasanga and Lee (2001) find that the level of education has a negative impact on duration.[24] Holmes and Schmitz (1996) observe that the probability of exit has an inverted U-shaped pattern in manager education, with the least and most educated managers having the lowest exit rates. Finally, Kangasharju and Pekkala (2002) also report interesting findings. They analyze the effect of self-employed persons' education on the success of their firms during the economic downturn and upturn of the 1990s. Thus, they observe how exit probability is lower for the highly educated during bust, but higher in boom.

Question 8: Does prior experience have a significant impact on self-employment duration?

Jovanovic's (1982) dynamic selection theory notes that entrepreneurs learn about their abilities over time, which they do only from having engaged in entrepreneurship. Thus, previous self-employment experience may indicate the accumulation of business skills. However, it also may suggest lack of these business skills. Besides, an entrepreneur whose business venture has not succeeded is too often stigmatized, without recognizing that such failures are inevitable in some cases, and that entrepreneurs who have come through them can learn from them, and rebuild a better business next time round. Regarding previous experience as paid-employed, the more labour experience, and the more human capital one has may increase survival rates. However, the more labour experience, and also the more outside options one has, the higher the probability will be that these options compare favourably to self-employment. Consequently, expected results are unambiguous as well. Finally, previous unemployment experience may result in skills depreciation or perhaps reflect a lack of business acumen which indicates a higher probability of failure.

Thus, Holmes and Schmitz (1996), Taylor (1999) and Georgellis *et al*. (2007) show that those individuals with previous experience as self-employed are less likely to fail. However, Cooper *et al*. (1992), Gimeno-Gascon *et al*. (1997), Bruderl *et al*. (1992), Cressy (1996), Martínez-Granado (2002) and Van Praag (2003) do not observe any relationship between entrepreneurial experience, and self-employment survival.[25]

In regard to previous paid-employment, Bruderl *et al*. (1992), Taylor (1999) and Tervo and Haapanen (2005) observe a positive and statistically significant relationship between firm survival and years of work experience previous to the time of founding. On the other hand, Nziramasanga and Lee (2001), Cueto and Mato (2003) and Georgellis *et al*. (2007) observe that prior wage employment has a negative impact on duration. Finally, Van Praag (2003) finds that general labour market experience does not influence success or failure in business.

[24] These authors consider the existence of higher opportunity of being self-employed for those educated individuals in develping countries, such as Zimbabwe.

[25] Martínez-Granado suggests a hypothesis coherent with this zero effect is as follows. If there is a learning process that makes individuals with longer self-employment experience more likely to remain self-employed, this process is business specific, which means that this experience can not be transferred to increase the survival probabilities in other business.

Focusing on previous unemployment experiences, Taylor (1999), Carrasco (1999), Johansson (2001), Van Praag (2003) and Georgellis *et al*. (2007) report that those individuals with previous experience as unemployed are more likely to fail. Martínez-Granado (2002), Cueto and Mato (2003) and Tervo and Haapanen (2005) observe, however, that previous unemployment does not have any effect on the probability of surviving in self-employment. Finally, Falter (2002) surprisingly finds that that having been unemployed before becoming self-employed increases the length of self-employed spells (or decreases the hazard).[26]

Other studies included variables trying to capture the effect of other prior experiences to self-employment. In this sense, Cooper *et al*. (1991, 1994) test if probabilities of survival are lower for entrepreneurs who were not in the workforce or who left non-profit institutions prior to starting the venture, but do not find any significant relation. Falter (2002) observes how having been inactive before becoming self-employed increases the probability of switching back to inactivity (or unemployment). Cooper *et al*. (1992) and Gimeno-Gascon *et al*. (1997) do not observe any relationship between previous managerial and self-employment survival. Finally, Tervo and Haapanen (2005) show how the transition from student to self-employment decreases survival rates.

Question 9: Are wealth variables highly correlated with self-employment success?

To identify the effect of financial capital on the probability of an individual being successfully self-employed is econometrically difficult: personal assets could be endogenous to whether one is self-employed, or could be correlated with unobserved factors like entrepreneurial ability. Consequently, the existing results are quite diverse.

Thus, Bates (1990) find access to finance, measured in terms of leverage, to increase business longevity. Bruderl *et al*. (1992) find that higher capital investment reduces chances of failure, though there is reason to be concerned with sample selection in the Bruderl *et al*. results. Holtz-Eakin *et al*. (1994) show that both receiving an inheritance and the level of liquid assets increase the probability that an entrepreneur will stay in business rather than become a wage earner. Cooper *et al*. (1991, 1992, 1994) find the total amount of capital invested by the time of first sale, to increase the probability of survival. Nziramasanga and Lee (2001, 2002) also show the importance of liquidity and lower loan costs. Cueto and Mato (2003) observe how those individuals whose main source of income is self-employment earnings are more likely to survive. Johansson (2001), Tervo and Haapanen (2005) and Block and Sandner (2006) observe that the initial wealth, measured by means of proxy home ownership, significantly reduces the risk of exiting self-employment. Fairlie and Krashinsky (2006) demonstrate that pre-entry assets are an important determinant of entrepreneurial longevity. Finally, Georgellis *et al*. (2007) observe how the receipt of interest and dividend payments increases the probability of survival.

On the other hand, Cressy (1996) find human capital to have a more substantial effect than financial capital. Indeed he argued that "human capital is the 'true' determinant of survival and that the correlation between financial capital and survival is spurious". Moreover, neither Holtz-Eakin *et al*. nor Taylor (2001, 2004) finds any statistical correlation between being a home-owner, and the probability of survival. Moreover, neither does Taylor (1999) find any significant effect from the receipt of interest and dividend payments, nor does Taylor (2001) observe any effect of windfall receipt on the probability of remaining in self-employment. Falter (2002) observes that the initial wealth, also measured by means of the proxy home ownership, has no

[26] However, Falter also find that the impact of previous job market experience differs according to the type of hazard. Indeed, being a former unemployed lowers the probability of switching to wage-work while it increases the likelihood of switching to inactivity or unemployment.

impact on self-employment duration. In this line, Van Praag (2003) also finds financial variables –people starting with their own capital, and home ownership- to be insignificant.

In terms of measuring wealth, the literature also focus on tax effects on self-employment duration. Thus, Bruce (2002) finds that, taking into account the endogeneity of individual level tax rates, higher relative marginal tax rates on self-employment income do not necessarily increase the probability of exit. On the other hand, Gurley-Calvez (2006) observes that the presence of a health insurance deduction decreases the probability that a self-employed entrepreneur will choose to exit the entrepreneurial sector by 2.65% for single filers, and for 10.5% for married ones. Finally, Gurley-Calvez and Bruce (2007) find evidence that cutting marginal tax rates faced by wage-and-salary workers can reduce the duration of entrepreneurial activities, while cutting marginal tax rates faced by entrepreneurs can lengthen entrepreneurial spells.

Question 10: Does the activity sector play a major role on survival?

As economies are so different, we do not have any *a priori* specified relation between sectors and survival. Furthermore, inconsistency of these results should not be a surprise. Thus, Cooper *et al*. (1991, 1992, 1994) do not find any significant difference between those working in retail or personal services, compared with other business activities. Bruderl *et al*. (1992) find that manufacturing, construction and computer service firms have better chances of survival than wholesale/retail businesses, transportation firms and restaurants. In this sense, Taylor (1999) observe that men in agriculture and construction have much lower exit rates using prior 1991 data, than using post 1991 data.[27] Taylor (2001) shows how manufacturing, distribution, hotels, catering, banking, finance, and insurance present higher survival rates than non-financial services. Van Praag (2003) observes as starting a business in the agricultural or business and repair services industries have a negative effect on the hazard. Jørgensen (2005) observes how those individuals working in industry, knowledge-intensive services, or other services present lower probability of exit than those working in the retail trade, hotels or restaurants. Tervo and Haapanen (2005) find that hotel and restaurants have higher survival rates than construction, transport, storage, communications, private services or manufacturing. Block and Sandner (2006) stress that industry dummies have a significant effect on survival but, regrettably, they do not show their estimated parameters and associated standard errors. Finally, Georgellis *et al*. (2007) show how manufacturing and finance activities increases the probability of exit.

Question 11: Does the probability of survival increase with firm size?

Empirical studies where the unit of observation is the individual measure the size of the establishment by the number of employees. A negative influence on the hazard rate is expected, i.e., larger firms should face a reduced risk, because as the firm size increases, it approaches the minimum efficient level of output, or more likely the existence of higher dismissal costs will be associated with higher exit costs. In this sense, Bruderl *et al*. (1992) and Jørgensen (2005) find that those with a higher number of employees are less likely to exit self-employment. On the other hand, Georgellis *et al*. (2007) find lower survival rates for those self-employed who has employees.

Question 12: Are new businesses less successful in depressed areas that have high unemployment rates?

[27] Taylor suggests that this reversal may reflect both the changing industrial structure of the economy and the recession of the early 1990s which hit the construction industry particularly hard.

Regarding the effect of macroeconomic conditions on the duration within self-employment, the theory provides an ambiguous prediction. The "push" hypothesis states that when prospects on the labour market worsen, people will stay in self-employment due to lack of alternative employment options. By contrast, the "prosperity pull" hypothesis states that individuals will stay in self-employment, when prospects in the economy are good because of favourable business conditions and good demand. It may also happen that both effects work at the same time, and as a consequence none of them dominates the other.

Thus, supporting the "prosperity pull" hypothesis, Taylor (1999) finds that the unemployment rate at the start of the spell is positively related to the exit rate from self-employment. Similarly, Carrasco (1999), Tervo and Haapanen (2005) and Ejrnæs and Hochguertel (2007) show how the unemployment rate has a significant upward effect on the probability of leaving self-employment. On the other hand, consistent with the "push" hypothesis, Johansson (2001), Cueto and Mato (2003) and Rissman (2006) observe how the local unemployment rate has a negative effect on the risk of exiting. Besides, not supporting any of these views, Lin *et al*. (2000), Falter (2002) and Van Praag (2003) and Georgellis *et al*. (2007) suggest that the unemployment rate does not affect duration in self-employment. In this sense, Martínez-Granado (2002) observes as an increase in the national unemployment rate does not have effect on the probability of switching to employment and (marginally) increases the probability of switching to unemployment.

Finally, other measures of aggregated conditions are included in Nziramasanga and Lee (2002) and Van Praag (2003). Thus, Nziramasanga and Lee examine the role of lending rates, imports and growth while Zimbabwe embarked on trade liberalisation. They show that duration on self-employment is negatively related to higher lending rates, increased imports and structural change, but responds positively to growth. On the other hand, Van Praag also includes as explanatory variable the business failure rate[28] which shows a very significant relationship with the hazard rate: the higher the business failure rate, the higher the individual hazard out of self-employment.

8.4 Data

Our empirical results are obtained by using data from the European Community Household Panel (ECHP).[29] The ECHP is a panel of households referring to the EU-15, covering the period 1994-2001. Every year all members of the selected households in each country are interviewed about issues relating to demographics, labour market, income and living conditions. The fact that a relatively long period of data is available allows us to study the influence of not just personal and demographic characteristics, but also changes in the business cycle. The same questionnaire is used for all countries, which makes the information directly comparable.

Our sample is composed of European individuals, working out of the agricultural sector[30] and aged between 21 to 59 years old in order to avoid undesirable effects from youngest and oldest people.

[28] This variable measures the number of business failures per 10,000 existing concerns for each industry and every year.

[29] ECHP data are used in accordance with the permission of European Commission-Eurostat; contract ECHP/2006/09, held with the *Universidad de Huelva*.

[30] Firstly, the "agricultural industries", defined to include agriculture, hunting, forestry and fishing, are structurally different from the rest of the economy, in that self-employment is the natural employment

The individuals in our dataset are asked whether their main activity is self-employment or not –flow sampling-, and how many years they have been in their current status –stock sampling-. From this information, we can construct self-employment durations for up to 15 years for individuals entering self-employment at the time of interview (the *observation window* 1994-2001) or before 1994.[31] However, all self-employed individuals who are not full-time workers, that is, working under 30 hours per week, are excluded from our final sample.[32] Regarding wealth variables, self-employment incomes are corrected by Purchasing Power Parity (comparability across countries) and Harmonised Consumer Price Index (comparability across time). Finally, as we test national unemployment rates as determining factors of the survival within self-employment, standardised unemployment rates for Europe need to be used to avoid comparability problems. Thus, after filtering, the final sample used for estimation within our main exercise has 23,417 observations where we can identify 7,423 different individuals.[33]

Tables B1 and B2 (see appendix B) summarizes the mean values of all self-employment spells, distinguishing by all different destination states: survivors (censored) and exiters to set up a new business, paid employment, unemployment or inactivity. As can be observed, the two samples that serve for our estimates are composed mostly of men living in a couple, and owning their dwelling. Regarding educational attainment, most individuals present low or medium level of education and finally, in terms of the business sector, individuals mostly works for the services sector.

8.5 Empirical Framework and Estimation[34]

Due to the nature of our data (survival spells are recorded in "years" –grouped duration data[35]-), discrete time specifications are considered. Thus, as the exact number of years an indi-

status in these industries. Moreover, the reported earnings of self-employed farmers are well known to be notoriously inaccurate.

[31] The way we generate our sample is described below in section 5.

[32] We decided not to include part-time self-employed within our estimations. This is due to the fact that those individuals doing both jobs (self-employment and paid-employment) at the same time might face short-term problems in one of the two activities, and look for complementary incomes just for a particular period of time. That would make the determinants of the duration of those individuals simultaneously doing both jobs different from the determinants of those who opt for a single activity. We believe, therefore, part-time self-employment needs to be independently analyzed. This topic has obviously been included in our future research agenda.

[33] We refer here to the main exercise we perform –we also estimate a complementary one which we comment below-. Within this estimation, we have to exclude Luxembourg, Sweden and UK for different reasons. Regarding Sweden and Luxembourg, the information related to first waves is not collected, and present missing values in relevant variables to construct durations within other waves. With respect to the UK, the ECPH offers two alternative surveys to obtain the information: (i) the proper ECPH –just conducted during waves 1-3 for the UK- and (ii) the BHPS. However, this second option does not make any distinction between those unemployed individuals and those out of labour force. Therefore, our competing risk framework cannot be performed by including this country and, consequently, to improve the comparability we decided to exclude it from the single risk one. On the other hand, we also estimate a complementary exercise where we control for individuals having born abroad, for those receiving inherit, gift or lottery winnings. However, the inclusion of these variables implies excluding Germany and The Netherlands from this complementary analysis. Tables A2-A3 and A5-A6 present the distribution of observations across countries, for both main and complementary exercises.

[34] This section draws especially on the "Stephen P. Jenkins' Lecture Notes" corresponding to the course *Survival Analysis* by Stephen P. Jenkins, provided by the University of Essex Summer School among other universities and institutions.

[35] See Kiefer (1988).

vidual remains as self-employed are known, we estimate logistic discrete hazard models, including single and competing risk frameworks in order to study the underlying determinants of self-employment survival. This kind of models shows some advantages over the continuous time ones. They can be easily estimated, taking into account both time-varying covariates and really flexible specification of the duration dependence.

8.5.1 Single Risk Model

Regarding the generation of our sample, we combine flow sampling with stock sampling, which causes two different problems: right censoring –associated to flow sampling-, and left truncation –associated to stock sampling-, which is the main problem faced.[36]

Attending to flow sampling, we observe an individual *i's* spell from period k=1 (1994) through to the end of the j^{th} period (2001). At point j^{th} (2001), we stop following the individuals in the sample and each *i's* spell can be either complete $(c_i = 1)$, when individuals have completed their spells before the j^{th} period (2001), that is, we observe the exact duration, or censored $(c_i = 0)$, when individuals still in self-employment at the time the survey stop (2001), that is, it is just known that their spells lasted at least until the stop occur (2001).

Let T be the number of years the individual is self-employed. The distribution of this variable can be characterized by means of the following hazard function or exit rate:

$$h_{ij} = \Pr\left(T_i = j \,|\, T_i \geq j\right),$$

where h_{ij} is the probability of being self-employed, for exactly j years relative to the group of individuals who have been self-employed for at least j years.

Self-employment durations are assumed to be conditional on a set of observed individual characteristics and economic variables x_{ij}, strictly exogenous, such as age, gender, education, labour characteristics, industry and region, among others. The parametric model considered is a logistic hazard of the form:

$$h_{ij} = \Pr\left(T_i = j \,|\, T_i \geq j, x_{ij}, u_i\right) = F\left(\gamma_j + \beta' x_{ij} + u_i\right)$$

where we opt for a log j polynomial as the functional form of γ_j that captures additive duration dependence, x_{ij} is a vector of conditioning variables, strictly exogenous (time-varying covariates)[37], and u_i is a disturbance term that includes the time-invariant unobserved heterogeneity (the person-specific effect).[38] Finally, F denotes the logistic cumulative distribution function with:

[36] See Figure B1 (Appendix B) for claryfing purposes.

[37] The consideration of time-varying covariates allows overcoming the limitation arising from individual characteristics previous to the beginning of the period analysed or at the time of entry as the unique determinants of the probability of self-employment survival across time.

[38] Assuming that the effects are important but "ignored" in modelling, Lancaster's (1979) seminal article suggest over-estimations of the degree of negative duration dependence in the hazard. Hence, by allowing for unobserved individual effects (usually referred to as "frailty" in the bio-medical sciences), we control for the hypothetical presence of omitted variables (unobserved in the available data, or intrinsi-

$$F(z)=\frac{\exp(z)}{1+\exp(z)}$$

The likelihood contribution for a censored spell is given by the discrete time survivor function:

$$L_i=\Pr(T_i>j)=S_i(j)=\prod_{k=1}^{j}(1-h_{ik})$$

and the likelihood contribution for each completed spell is given by the discrete time density function:

$$L_i=\Pr(T_i=j)=\frac{h_{ij}}{1-h_{ij}}\prod_{k=1}^{j}(1-h_{ik})$$

Thus, the likelihood contribution for each completed or censored spell is given by:

$$L_i=\left(\frac{h_{ij}}{1-h_{ij}}\right)^{c_i}\prod_{k=1}^{j}(1-h_{ik})=\left(\frac{h_{ij}}{1-h_{ij}}\right)^{c_i}S_i(j)$$

As regards stock sampling, there is a sample from the stock of individuals at a point of time (1994), who are interviewed some time later (1995-2001) –"stock sampling with follow-up"-. Entry is *delayed* because the observation of the subjects under study occurs some time after they are first time at risk, that is, self-employment spell start dates might take place before the date of the stock sample. In this sense, our sample, for instance, includes individuals who started in self-employment in 1983 and were still self-employed in 1994, and excludes individuals who started in self-employment in 1983 and were not self-employed in 1994.

In this sense, and due to the way the sample is constructed, we necessarily exclude from our sample any individual whose self-employment spell ended before 1994, that is, given a starting year, (1983 in the proposed example) these excluded spells are necessarily shorter than those spells of individuals whose self-employment spells ended in 1994 or later. Therefore, we cannot assume that the missing observations are randomly excluded. In other words, a sample like this is a non-random sample because longer spells in self-employment –"slower exiters"- are over-represented, while shorter spells in self-employment –"faster exiters"- are under-represented. We will call left truncation problem or length-biased sampling to the sample selection problem caused by stock sampling.

A way to avoid this problem is proposed by MacKie-Mason (1992), and later Jenkins (1995), who envisage using readily available packages like STATA. The condition has to be established that the person survived sufficiently long in the state to be sampled in the stock.[39] In particular, during our exercise, we handle the "selection bias" by estimating the probability of remaining as

cally unobservable such as tastes, preference for leisure, ability, or "entrepreneurial spirit". In this sense and following usual conventions, we model random individual effects and assume this term as a normally distributed random variable with mean 0 and variance u_n and independence with all observable characteristics.

[39] See Falter (2002) for an example of the estimation of a conditional probability of remaining in business.

self-employed between the start of their spells and their exit, *conditional on not having left self-employment before 1994* (the condition which made them eligible for selection in the sample).

Hence, with left-truncated data, the likelihood contribution is:

$$L_i = \frac{\left(\frac{h_{ij}}{1-h_{ij}}\right)^{c_i} \prod_{k=1}^{j}\left(1-h_{ik}\right)}{S_i(1994)}$$

But:

$$S_i(1994) = \prod_{k=1}^{1994}\left(1-h_{ik}\right)$$

and this leads to a "convenient cancelling" result (see Guo, 1993, or Jenkins, 1995):

$$L_i = \left(\frac{h_{ij}}{1-h_{ij}}\right)^{c_i} \frac{\prod_{k=1}^{j}\left(1-h_{ik}\right)}{\prod_{k=1}^{1994}\left(1-h_{ik}\right)} = \left(\frac{h_{ij}}{1-h_{ij}}\right)^{c_i} \prod_{k=1994}^{j}\left(1-h_{ik}\right)$$

Taking logarithms, the contribution of the i^{th} individual to the log-likelihood is given by:

$$\log L_i = \sum_{k=1994}^{j}\left[y_{ik}\log h_{ik} + \left(1-y_{ik}\right)\log\left(1-h_{ik}\right)\right]$$

where $y_{ik}=1$ if person *i* end this business (their spell ends by starting a new business, by setting up a new business, or switching to paid employment, unemployment or out of labour force) in month *k*, and $y_{ik}=0$ otherwise. That is,

$$c_i = 1 \Rightarrow y_{ik} = 1 \; for \; k = T_i \; ; \; y_{ik} = 0 \; otherwise$$
$$c_i = 0 \Rightarrow y_{ik} = 0 \; for \; all \; k$$

which is very similar to the expression in the no-delayed-entry case, except that the summation now runs from the year of delayed entry.(e.g. when the stock sample was drawn) to the year when last observed.

8.5.2 Competing Risk Model

Until now modelled transitions out self-employment (exit to any state from self-employment) have been considered. The possibility is now considered of exit to one of several destination states: paid employment, unemployment or inactivity. As an example, we want to know not only about time until exit self-employment by whatever route, but also about time to exit to paid-employment compared to time to exit to unemployment. To illustrate this, we will suppose that there are two destination states (*A*, *B*), but the arguments generalize to any number of destinations. Thus, considering the existence of two destinations (*A*, *B*) with independence on desti-

nation hazard risks $\left(h_{ij}^{A}\,;\,h_{ij}^{B}\right)$, the important implication is that we end up estimating standard single risks models for each single risk. The only requirement is to define new censoring variables for each destination that consider as censored survival times both the original right censored survival times and the ones corresponding to survival times ending in a different destination.

In this case, the discrete hazard rate for exit at time *j* to any destination is the sum of the destination-specific discrete hazard rates. That is,

$$h_{ij} = h_{ij}^{A} + h_{ij}^{B}$$

As survival times are intrinsically discrete, if there is an exit to one of the destinations at a given survival time, then there cannot be an exit to the other destination at the same survival time. However this property does not lead to a neat separability result for the likelihood analogous to that for the continuous time case. To see why, consider the likelihood contributions for the discrete time model. There are three types: that for an individual exiting to A $\left(L_i^A\right)$, that for an individual exiting to B $\left(L_i^B\right)$, and that for a censored case $\left(L_i^C\right)$. Supposing that the observed survival time for an individual is *j* cycles, then:

$$L_i^A = \frac{h_{ij}^{A}}{1-h_{ij}}\prod_{k=1}^{j}\left(1-h_{ik}\right) = \frac{h_{ij}^{A}}{1-h_{ij}^{A}-h_{ij}^{B}}S_i(j)$$

Similarly,

$$L_i^B = \frac{h_{ij}^{B}}{1-h_{ij}}\prod_{k=1}^{j}\left(1-h_{ik}\right) = \frac{h_{ij}^{B}}{1-h_{ij}^{A}-h_{ij}^{B}}S_i(j)$$

and

$$L_i^C = S_i(j)$$

In the L_i^A case, the likelihood contribution summarizes the chances of a transition to A combined with no transition to B, and vice versa in the L_i^B case. Now destination-specific censoring indicators are defined:

$$\delta^A = 1 \; if \; i \; exits \; to \; A$$
$$\delta^A = 0 \; otherwise \;\; (exit \; to \; B \; or \; censored)$$

$$\delta^B = 1 \; if \; i \; exits \; to \; B$$
$$\delta^B = 0 \; otherwise \;\; (exit \; to \; A \; or \; censored)$$

The overall likelihood contribution for an individual with an observed spell length of *j* cycles is:

$$L_i = \left(L_i^A\right)^{\delta^A}\left(L_i^B\right)^{\delta^B}\left(L_i^C\right)^{1-\delta^A-\delta^B} = \left(\frac{h_{ij}^A}{1-h_{ij}^A-h_{ij}^B}\right)^{\delta^A}\left(\frac{h_{ij}^B}{1-h_{ij}^A-h_{ij}^B}\right)^{\delta^B}\prod_{k=1}^{j}\left(1-h_{ik}^A-h_{ik}^B\right)$$

Although there is no neat separability result in this case, it turns out that there is still a straightforward means of estimating an independent competing risk model, that is, we assume a particular form for the destination-specific hazards[40]:

$$h_{ik}^A = \frac{\exp\left(\beta_A' X_{i,k-1}\right)}{1+\exp\left(\beta_A' X_{i,k-1}\right)+\exp\left(\beta_B' X_{i,k-1}\right)}$$
$$h_{ik}^B = \frac{\exp\left(\beta_B' X_{i,k-1}\right)}{1+\exp\left(\beta_A' X_{i,k-1}\right)+\exp\left(\beta_B' X_{i,k-1}\right)}$$

and hence

$$1-h_{ik}^A-h_{ik}^B = \frac{1}{1+\exp\left(\beta_A' X_{i,k-1}\right)+\exp\left(\beta_B' X_{i,k-1}\right)}$$

With destination-specific censoring indicators δ^A and δ^B defined as before, the likelihood contribution for the individual with spell length *j* can be written:

$$L_i = \left[\frac{\exp\left(\beta_A' X_{i,k-1}\right)}{1+\exp\left(\beta_A' X_{i,k-1}\right)+\exp\left(\beta_B' X_{i,k-1}\right)}\right]^{\delta^A} \times \left[\frac{\exp\left(\beta_B' X_{i,k-1}\right)}{1+\exp\left(\beta_A' X_{i,k-1}\right)+\exp\left(\beta_B' X_{i,k-1}\right)}\right]^{\delta^B}$$
$$\times \left[\frac{1}{1+\exp\left(\beta_A' X_{i,k-1}\right)+\exp\left(\beta_B' X_{i,k-1}\right)}\right]^{1-\delta^A-\delta^B} \times \prod_{k=1}^{j-1}\left[\frac{1}{1+\exp\left(\beta_A' X_{i,k-1}\right)+\exp\left(\beta_B' X_{i,k-1}\right)}\right]$$

However, as Allison (1982) pointed out, this likelihood has the same form as the likelihood for a standard multinomial logit model.

Finally, we want to stress that the particular values for the dependent variable that are chosen do not matter. What is important is that they are distinct (and also that one's software knows which value corresponds to the base category). In this sense, within our exercise, dependent variable $y_{ik}=1$ for individuals who are self-employed in period *j* and end this business by starting a new business in period *j*+1. The variable $y_{ik}=2$ for individuals who are self-employed in period *j* and switch to paid employment in period *j*+1. The variable $y_{ik}=3$ for individuals who are self-employed in period *j* and switch to unemployment in period *j*+1. The variable $y_{ik}=4$ for individuals who are self-employed in period *j* and leave the labour force in period *j*+1. Finally, the variable $y_{ik}=0$ for individuals who are self-employed in periods *j* and *j*+1.

Regarding the extension to left-truncated data, faced during this work, our model can be easily adapted. As has been seen above, to derive the correct likelihood contributions in this case,

[40] See Allison (1982) for a demonstration.

survival needs to be conditioned up to the truncation date. This means dividing the likelihood contribution expression for the random sample of spells case (as considered earlier) by $S_i(1994)$.

Now, each of the likelihood expressions for interval-censored data considered earlier $\left(L_i^A, L_i^B\right)$ is of the form

$$L_i^r = \frac{h_{ij}^r}{1-h_{ij}} \prod_{k=1}^{j} \left(1-h_{ik}\right) = \frac{h_{ij}^r}{1-h_{ij}^A-h_{ij}^B} S_i(j) \;\; with \;\; r = A, B$$

so the likelihood expression for the left truncation case is simply

$$L_i^r = \frac{\dfrac{h_{ij}^r}{1-h_{ij}^A-h_{ij}^B} S_i(j)}{S_i(1994)} \;\; with \;\; r = A, B$$

But, given the relationship between the survivor function and the in-terval hazard, there is also a convenient cancelling result, which gives us the final likelihood expression for the left truncation case:

$$L_i^r = \frac{h_{ij}^r}{1-h_{ij}^A-h_{ij}^B} \times \frac{S_i(j)}{S_i(1994)} = \frac{h_{ij}^r}{1-h_{ij}^A-h_{ij}^B} \times \frac{\prod_{k=1}^{j}\left(1-h_{ik}\right)}{\prod_{k=1}^{1994}\left(1-h_{ik}\right)} =$$

$$= \frac{h_{ij}^r}{1-h_{ij}^A-h_{ij}^B} \times \prod_{k=1994}^{j}\left(1-h_{ik}\right) \;\; with \;\; r = A, B$$

8.6 Results

Tables A1 and A4 present the results of the maximum likelihood estimation of the hazard rate of self-employment.[41] Columns 1, within both tables, concern the single risk of exiting self-employment, whereas columns 2 through 4 refer to the competing risks framework, by analyzing the risks of exiting self-employment switching to wage employment, unemployment or inactivity. In this sense, a coefficient greater (less) than zero implies a positive (negative) impact on the hazard rate or a negative (positive) impact on survival.

[41] We approximate the distribution of the unobserved heterogeneity as a random normal distribution. As pointed out in the section devoted to the empirical framework, the parameters are overestimated when unobservable heterogeneity is important but ignored. After reestimating the model with plus and minus 4 the number of quadrature points that we currently have –12-, we observe that our estimates do not vary by much, then we conclude that they are stable and we can confidently proceed with interpretation. In this sense, our likelihood ratio test of the null hypothesis of zero variance (i.e. the parameter related to heterogeneity is zero) clearly do reject the null hypothesis of no unobservable heterogeneity.

8.6.1 Single Risk Model

Regarding question 1, our results are consistent with that obtained by Evans and Leighton (1989), Bruderl *et al.* (1992), Bates (1990), Holtz-Eakin *et al*. (1994), Taylor (1999), Carrasco (1999), Falter (2002), Martínez-Granado (2002), Jensen *et al*. (2003), Van Praag (2003), Taylor (2004), Tervo and Haapanen (2005) or Rissman (2006). In this sense, the shape of the empirical hazard rate self-employment duration presents a negative effect on the exit rate, that is, the hazard decreases with duration as expected.

As far as individual characteristics are concerned, our principal findings can be summarized as follows. Males –question 2- are more likely to stay longer in self-employment than females[42] which is consistent with that obtained by Holmes and Schmitz (1996), Taylor (1999), Nziramasanga and Lee (2001), Falter (2002), Tervo and Haapanen (2005), Block and Sandner (2006) or Georgellis *et al.* (2007). Furthermore, and consistent with Taylor (1999) and Martínez-Granado (2002) but unlike Cooper *et al.* (1991, 1992, 1994), Falter (2002), Lofstrom and Wang (2006) and Georgarakos and Tatsiramos (2007), we do not observe that foreigners –question 3- have a significantly lower or higher probability to survive within self-employment.[43] Marital status and the number of children aged under 14 –question 4- have not a statistically significant effect on self-employment duration. As regards question 5, and consistent with that obtained by Holtz-Eakin *et al*. (1994), Taylor (2004), Tervo and Haapanen (2005) and Block and Sandner (2006), we also find a non-linear impact of age on self-employment exits where the turning point is reached when the self-employed is 42 years old.[44]

Focusing on question 6, as Cooper *et al*. (1991, 1992, 1994), Gimeno-Gascon *et al*. (1997), Tervo and Haapanen (2005) or Falter (2002) find, the effect of family background (proxied through the existence of relatives working as employers or own-account workers) are positive on survival.

Another interesting result relates to educational attainment –question 7-. Thus, consistent with the finding that to have high qualifications has positive and statistically significant effects on survival rates. Similarly, Bates (1990), Brunderl *et al*. (1992), Cooper *et al*. (1991, 1994), Cressy (1996), Falter (2002), Cueto and Mato (2003), Tervo and Haapanen (2005) and Ejrnæs and Hochguertel (2007), we find a positive effect between formal education and the probability of surviving within self-employment.[45] On the other hand, the presence of relatives with university studies is insignificant to survival. In this sense, Van Praag (2003) and Tervo and Haapanen (2005) also find that variables measuring parental background, such as the educational levels have not any effect.

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[42] See Figure 3 (Appendix A).

[43] The ECHP includes whether or not the individual was born in the country of residence. However, this information is not available for countries as Germany or The Netherlands. Therefore, we had to run different estimations excluding these countries that are presented in Table A4. The effect related to having born abroad or not can also be observed in Figure 7 (Appendix A).

[44] It is straightforward to include standard functional forms among the explanatory variables. For example, in the model $\Pr(Y_{i,t}=1)=G(\beta_0+ \beta_1X_1+\beta_2X_1^2+\ldots+ \beta_nX_n)$ the partial effect of X_1 on $\Pr(Y_{i,t}=1)$ is $\partial\Pr(Y_{i,t}=1)/\partial X_1=g(X\beta)(\beta_1+2\beta_2X_1)$ where $X\beta = \beta_0+ \beta_1X_1+\beta_2X_1^2+\ldots+ \beta_nX_n$. It follows that if the quadratic in X_1 has a hump shape or a U shape, the turning point in the response probability is $|\beta_1/2\beta_2|$ (because $g(X\beta)>0$). As $\partial^2\Pr(Y_{i,t}=1)/\partial X_1^2=g'(X\beta)(\beta_1+2\beta_2X_1)^2 + g(X\beta)(2\beta_2)$, then $\partial^2\Pr(Y_{i,t}=1)/\partial X_1^2$ evaluated at the critical point $X_1=|\beta_1/2\beta_2|$ equals $g(X\beta)(2\beta_2)$. Thus, this turning point finds the maximum value of $\Pr(Y_{i,t}=1)$ if $\beta_2<0$ and the minimum value if $\beta_2>0$ (because $g(X\beta)>0$).

[45] See Figure 11 (Appendix A).

Our results also provide some insight into the role of previous labour status –question 8-, which seem to have an important effect on survival. Thus, as Taylor (1999), Carrasco (1999), Johansson (2001), Van Praag (2003) and Georgellis *et al*. (2007) find, previous spells of unemployment before entering self-employment has a strong negative effect on survival within self-employment.[46] On the other hand, and consistent with Holmes and Schmitz (1996), Taylor (1999) and Georgellis *et al*. (2007), we observe that previous self-employment experience presents a positive and statistically significant relation with self-employment duration.[47] Finally, paid-employment experience seems to have the same effect, which is also consistent with that obtained by Bruderl *et al*. (1992), Taylor (1999), and Tervo and Haapanen (2005).[48]

Turning the attention to variables describing the wealth of the individual –question 9-, we control for the initial wealth, measured by means of the *proxy* "being a home owner". Furthermore, we use a dummy accounting for the presence (or absence) or capital and property earnings, and another wealth variable as self-employment incomes, which we interpret as a *proxy* of the existing demand each business face. However, these last two variables are lagged one year due to the obvious endogeneity problem of the changes in incomes related to business failures.[49]

Thus, consistent with Johansson (2001), Tervo and Haapanen (2005) and Block and Sandner (2006), we observe how home ownership significantly reduces the risk of exiting self-employment. On the other hand, and consistent with Taylor (1999) or Georgellis *et al*. (2007), we do not observe a significantly effect of capital and property earnings over survival.[50] However, accounting that one of our destination consists of remaining as self-employment –although running a different business- we must be cautious and interpret this finding within the competing risk framework. Finally, we observe a positive effect of self-employment incomes over the probability of survival.[51]

We focus now on the effects of the activity sector –question 10-. Thus, similar with that obtained by Cooper *et al*. (1991, 1992, 1994) but unlike some other works, we do not find any significant difference between survival chances of those working in different sectors.

Other interesting result refers to firm size, measured by the number of employees –question 11-. Thus, despite positive influence on survival supported by Bruderl *et al*. (1992) and Jørgensen (2005), we observe that individuals running small firms (1-4 employees), and own-account workers (0 employees) are more likely to survive within self-employment.[52]

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[46] See Figure 23 (Appendix A).

[47] An individual can be first self-employed, then work as a paid-employee (for instance), and eventually become self-employed again. Hence, for this individual, we observe two self-employment spells (repeated spells) that probably are not independent. This is one of the effects we try to control with this variable. On the other hand, this variable refers one of the most interesting results. Thus, it shows the absence of some kind of "stigma of failure" which we might expect from all those who were self-employed in the past, and "failed". The effect related to previous experience as self-employed (employer and own-account worker) can be observed in Figure 15 (Appendix A).

[48] See Figure 19 (Appendix A).

[49] Moreover, we also control the complementary specification for households where anyone inherits any property capital, or receive a gift or lottery winnings, worth €2,000 or more. These results are available in Table A4.

[50] See Figure 39 (Appendix A).

[51] However, as we observe in Figure 43 (Appendix A), the size of the effect for those earning €5,000 under and over the mean is not as strong as expected.

[52] The ECHP includes the size of the firm, measured in terms of the number of employees. However, this information is not available for all countries, so we test the effect of this variable within the comple-

Finally, regarding the business cycle effect –question 12-, proxied by means of unemployment rate[53], a negative relationship is obtained between unemployment rate and the probability of survival, which is consistent with Taylor (1999), Carrasco (1999), Tervo and Haapanen (2005) and Ejrnæs and Hochguertel (2007). In this sense, our results seem to support the "prosperity pull" hypothesis.[54]

Other covariates such as weekly working hours or country dummies are also analyzed. Thus, working hours are interpreted as a *proxy* of the existing demand each business face. In this line, the number of working hours reduces the probability of exiting. However, the quadratic term begins to dominate the linear term at 70 working hours, indicating that past this number or hour, people become more likely to exit self-employment, probably looking for better job conditions in terms of working hours. Regarding country specific effects, the fact that these dummies are significant might be interpreted as a sign of the presence of specific regional factors –institutional, cultural, etc.- affecting the probability of remaining within self-employment. Thus, using Spain as the reference country, higher exit rates are observed across Denmark, Finland, Germany, Greece, Portugal and The Netherlands. In the case of Austria, Belgium, Ireland and Italy, higher exit rates are also observed, but these are not statistically significant. Finally, France is the country which presents lower exit rates.[55]

8.6.2 Competing Risk Model

How long an entrepreneur lasts depends upon the value of his discovery and his success at exploiting this discovery. Over time, entrepreneurs probably learn both about how good their discovery really is and how good they are at running a business. Those who learn that their discoveries are not as good as they hoped will set up a new business (if possible) or will switch to wage work. On the other hand, those who learn that they are not as capable as they thought will switch to wage work (if possible) or to unemployment. From this perspective, we assume the existence of different explanatory circumstances which explain different exits from self-employment, which justify the need to use a competing risk framework.[56]

This section reports the results of the competing-risk model, where differences in estimated coefficients across different destination states emerge. Regarding these specifications, we adjust standard errors for intra-individual correlation, starting with question 1, Figures 1 and 2 show under non-parametric and parametric survival analysis techniques how the exit probabilities vary with both time and the destination state under the competing-risks assumption. Thus the probability of moving to paid-employment is markedly higher than the probability of moving to other destination states. Therefore, the most likely destination state is paid-employment, followed by unemployment and inactivity.

mentary specification presented in Table A4. This effect can also be observed in Figure 31 (Appendix A).

[53] Van Praag (2003) includes as business cycle *proxy* the business failure rate which shows a very significant relationship with the hazard rate: the higher the business failure rate, the higher the individual hazard out of self-employment. We considered this option, but the existing business demography indicators presented by Eurostat neither fully allows cover the period 1994-2001, nor the EU-15 region.

[54] See Figure 35 (Appendix A).

[55] Luxembourg, Sweden and The United Kingdom are excluded from our specifications. This effect can also be observed in Figure 47 (Appendix A).

[56] Thus, as Taylor (1999) argues, a substantial of self-employment spells are terminated through moves to alternative employment, suggesting that not all self-employment spells are terminated by bankruptcy.

Regarding individual characteristics, unlike Johansson (2001), Falter (2002) or Georgellis *et al*. (2007), we observe how men –question 2- are more likely to switch to wage-earner. As regards transitions to unemployment, and consistent with Johansson (2001) but unlike Georgellis *et al*. (2007), we do not find any significant difference between survival chances of males and females. Finally, consistent with Falter (2002) but not with Georgellis *et al*. (2007), we observe how men are clearly less likely to switch to inactive. In this sense, as individuals living in a couple are also more likely to enter inactivity, the existence of familiar responsibilities must be behind these results.[57]

We also observe how foreigners –question 3- have a higher likelihood of becoming unemployed.[58] These results support the idea that not enough skilled individuals may become self-employed –those switching to unemployment-, together with those skilled –those able to identify better business opportunities-. As a consequence, survival rates among immigrants decrease. Regarding Falter (2002) results, he observes how the greater hazard rate of foreigners is due mainly to their higher probability of going into wage-work, which does not support our estimations.

When we focus on the effect of dependent children –question 4-, we do not observe any relationship between the number of children under fourteen, and the probabilities of switching to paid-employment or unemployment. Regarding the transitions to inactivity, we observe a small and negative effect of the number of children over the probability of exiting to inactivity. In this sense, Georgellis *et al*. (2007) show how the number of children presents a positive effect over self-employment failures, whatever exit route.

Turning to the effect of age –question 5-, we estimate a positive effect of age over transitions to paid-employment, which is consistent with that obtained Georgellis *et al*. (1997), Falter (2002), Martínez-Granado (2002) and Van Praag (2003). However, regarding other studies, such as Taylor (1999) and Johansson (2001), these authors do not report any significant effect of age, when the final state is wage-work. Related with transitions to unemployment, we do not find any effect, which is consistent with Georgellis *et al*. (1997), Taylor (1999), Johansson (2001), and Martínez-Granado (2002). Moreover, we find a strong positive effect on survival, when the individual face hazard of inactivity. In this sense, Georgellis *et al*. (1997) report a similar result.

Regarding the effect of family background –question 6-, our results show that the existence of self-employed relatives decreases the probability of switching to paid-employment or inactivity. Falter (2002), by means of the *proxy* having a spouse self-employed, finds similar results. On the other hand, we do not observe any effect either for individuals running a new business, or for transitions to unemployment, which is consistent with that obtained by Georgellis *et al*. (1997).

Turning to educational attainment –question 7-, we do not find any relation between education and the transitions to paid-employment, while Georgellis *et al*. (1997), Taylor (1999) –just for men-, Johansson (2001) and Martínez-Granado (2002) report a positive impact. On the other hand, we find a negative effect of education on the probability of leaving self-employment when the exits occur to unemployment, which is consistent with Johansson (2001), Falter (2002) and Martínez-Granado (2002). Finally, as Georgellis *et al*. (1997) and Falter (2002), we also find that education decreases the probability of switching to inactivity.[59]

[57] See Figures 4-6 (Appendix A).
[58] See Figures 8-10 (Appendix A).
[59] See Figures 12-14 (Appendix A).

The labour market situation of an individual before entering self-employment –question 8- has different effects on the probability of survival within self-employment. Thus, previous spells of self-employment before current self-employment spell has a strong positive effect on survival whatever hazard considered, which is consistent with that obtained by Georgellis *et al*. (1997) and Taylor (1999).[60]

On the other hand, previous spells of paid-employment have a strong positive effect to inactivity, while Georgellis *et al*. (1997) do not find any effect. Moreover, these spells also increase survival rates when the final state is unemployment, which is consistent with Carrasco (1999), Taylor (1999). Finally, consistent with Georgellis *et al*. (1997), Martínez-Granado (2002), but unlike Carrasco (1999) and Taylor (1999), this experience does not cause any effect over the probability of switching to paid-employment.[61]

Moreover, unlike Georgellis *et al*. (1997), we find how previous unemployment has no-effect over transitions to inactive. However, previous spells of unemployment are positively related with transitions to paid-employment, which is consistent with that obtained by Taylor (1999) and Georgellis *et al*. (1997). In this sense, these results support that a self-employment activity might be seen as a step for the unemployed between unemployment and wage-work. Furthermore, and consistent with Georgellis *et al*. (1997), Johansson (2001), we observe how unemployment experience increases the probabilities of switching back to unemployment. Hence, one might argue that those unskilled individuals are sometimes encouraged by several entrepreneurial promotions, but these individuals face higher risks to return to unemployment, when these incentives disappear.[62]

Finally, previous spells of inactivity increases the probability of switching to this state again, which is consistent with Falter (2002).[63]

Turning our attention to the importance of the wealth of the individual –question 9-, and consistent with Holtz-Eakin *et al*. (1994), we observe how receiving an inheritance, gift or lottery winning, decreases the probability of switching to paid-employment. Moreover, home ownership decreases the risk of switching to paid-employment and unemployment, whereas it does not affect the risk of exiting to other destinations. Falter (2002), however does not find any impact of being a homeowner over the transitions to paid-employment, but observes how this property reduces the exits to unemployment and inactivity. Furthermore, Van Praag (2003) does not find any effect of homeownership over survival rates.

Regarding other wealth measures, we observe how capital and property earnings do not have a significant effect on any exit.[64] Georgellis *et al*. (2007), however, do not find any effect in transitions to a new self-employment spell but observe how these earnings reduces the transi-

[60] The effect related to previous experience as self-employed (employer and own-account worker) can be observed in Figures 16-18 (Appendix A).

[61] See Figures 20-22 (Appendix A).

[62] In this sense, the criteria for eligibility of beneficiaries of the self-employment programmes for the unemployed vary between countries and also have changed with the experience of the measures undertaken. In some cases, the required minimum time of unemployment has been reduced, with the aim of increasing the number of potential beneficiaries, or under the assumption that less time unemployed means greater likelihood of survival. Thus, by means of reducing the required minimum time of unemployment in the UK and Australia, survival rates increased in five and eleven points respectively (Wilson and Adams, 1994). The effect related to previous experience as unemployed can be observed in Figures 24-26 (Appendix A).

[63] See Figures 28-30 (Appendix A).

[64] See Figures 40-42 (Appendix A).

tions to other exits. Furthermore, by using post 1991 data for males, Taylor (1999) observes as high annual interest receipts prior to becoming self-employed significantly reduce the exit rate to unemployment, whereas do not have any effect over the transitions to paid-employment. Finally, self-employment incomes significantly reduce the probability of exit self-employment to paid-employment, unemployment and inactivity.[65]

We focus now on industrial affiliation –question 10-. Thus, we observe how wholesale, hotels, restaurants and transport have lower survival rates than financial services, construction sector, or other services, when the final destination is unemployment. However, regarding other destinations, we do not observe any significant effect.

Regarding the size of the establishment, measured by the number of paid-employees –question 11-, we observe that this number does not affect the risk to exit to inactivity. However, those running a small firm (1-4 employees) and own-account workers (0 employees) are less likely to switch to paid-employment and unemployment than those managing larger firms.[66] In this sense, Georgellis *et al*. (2007) report lower survival rates for those self-employed who has employees.

Regarding the effect of macroeconomic conditions –question 12-, we observe how recession periods strongly increases the probability of exiting self-employment to whatever exit route, supporting "prosperity pull" hypothesis.[67] Carrasco (1999), Falter (2002), and Georgellis *et al*. (2007), however, just observe this effect in transitions to paid-employment, while do not find any other impact. Martínez-Granado (2002), on the other hand, observes the presence of this effect over transitions to unemployment, but not over transitions to wage-earner.

Just to conclude, the analysis of the effect of other covariates as weekly working hours or country dummies also report interesting results, within the competing risk framework. Focusing on working hour's effect, we observe how the number of working hours, reduces the probability of exiting to paid-employment, unemployment or inactivity. In regards to country specific effects, and using again Spain as the benchmark, we observe how Belgium, Finland, France, Germany, Greece, and Italy present higher exit rates to exit to unemployment. Turning our attention to the risk of exiting to paid-employment, we find that Denmark, Germany, The Netherlands and Portugal are riskier countries than Finland. Finally, as regards exits to inactivity, Greece seems to be the riskier place.[68]

8.7 Conclusions

In this work, we have provided additional empirical evidence on the underlying determinants of self-employment duration in the EU-15, devoting special attention to the differences across different destination states –paid-employment, unemployment and inactivity-.

In line with previous studies we present some relevant results. First, we observe how the hazard decreases with duration whatever exit route, which might be interpreted in terms of "learning". Second, we find that formal education reduces the exits to unemployment and inactivity. Third, we observe how previous unemployment experiences reduce the length of self-

[65] See Figures 44-46 (Appendix A).
[66] See Figures 32-34 (Appendix A).
[67] See Figures 36-38 (Appendix A).
[68] We remind that Luxembourg, Sweden and The UK are excluded from our specifications. These effects can also be observed in Figures 48-50 (Appendix A).

employment spells while previous self-employment and paid-employment experiences increase it. Fourth, initial assets –proxied by means of home ownership- seem to play an important role on survival. Finally, regarding business cycle and labour market conditions, our results show that expanding economic situations have a positive and significant effect over the probability of surviving within self-employment.

As a consequence, if the objective is the promotion of long-term successful self-employment as a way to reduce unemployment, the prescription should not only be to facilitate entry by means of subsidies or guaranties, but also to favour the acquisition of the necessary entrepreneurial human capital. Furthermore, the fact that previous unemployment experiences strongly increases the risk of exit self-employment to this state again, and in line with that argued by Rodríguez-Planas (2007), it becomes necessary to compare how successful employment services and small-business assistance programmes are at getting the unemployed back to work. Just working in this sense, we might stop distorting the occupational choice by encouraging unskilled individuals to enter self-employment.

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Appendix A: Graphs and Results

Table A1. Departure from self-employment *conditional on not having left self-employment before 1994* (Main exercise)

	Single risk model -Binomial-		Competing risk model -Multinomial-					
Destination states	END OF PRESENT BUSINESS		PAID-EMPLOYMENT		UNEMPLOYMENT		INACTIVE	
Number of observations	23417		23417					
Number of individuals	7423		7423					
Number of spells	7661		7661					
Number of censored spells	6346		6346					
Number of completed spells	1315		680		286		349	
Variables	**Coef.**	**t-stat.**	**Coef.**	**t-stat.**	**Coef.**	**t-stat.**	**Coef.**	**t-stat.**
Constant	2,2098	2,91***	0,967	1,04	-2,3561	-1,59	1,4602	1,22
Demographic characteristics								
Constant	2.2098	2.91***	0.967	1.04	-2.3561	-1.59	1.4602	1.22
Demographic characteristics								
Male	-0.3662	-4.76***	0.2409	2.31**	0.0291	0.2	-1.4704	-10.92***
Age	-0.1415	-4.74***	-0.1097	-3.02***	-0.0681	-1.18	-0.1756	-3.64***
Age (squared)	0.0017	4.49***	0.001	2.22**	0.0009	1.24	0.0024	4.08***
Cohabiting (1)	0.1242	1.41	0.0064	0.06	-0.2906	-1.82*	0.7749	4.59***
Number of children under 14	-0.0118	-0.28	0.0157	0.32	0.0774	0.99	-0.1405	-1.93*
Relat. working as self-employed	-0.1524	-1.88*	-0.1976	-1.86*	-0.0376	-0.25	-0.233	-1.75*
Education								
Secondary education (2)	-0.1471	-1.84*	-0.0866	-0.86	-0.2421	-1.64	0.0028	0.02
University studies (2)	-0.3915	-3.64***	-0.1868	-1.39	-0.4334	-2.09**	-0.5139	-2.38**
Relatives with university studies	-0.0778	-0.87	-0.0272	-0.25	-0.0466	-0.26	-0.2121	-1.28
Self-employment characteristics								
Hours of work	-0.0702	-4.94***	-0.0628	-3.31***	-0.0551	-2.04**	-0.085	-4.06***
Hours of work (squared)	0.0005	4.1***	0.0005	2.7***	0.0004	1.48	0.0007	3.7***
Industry dummies								
Industrial sector (3)	0.0664	0.53	-0.0344	-0.24	0.2841	1.17	0.342	1.15
Financial services (3)	-0.037	-0.27	0.0352	0.24	-0.3165	-1.02	0.211	0.67
Wholesale, hot., rest. & transp. (3)	0.0911	0.86	-0.1129	-0.95	0.3907	1.88*	0.4135	1.54
Other services (3)	-0.0436	-0.32	-0.0572	-0.36	-0.1184	-0.41	0.4208	1.41
Firm's characteristics								
Own-acc. work (0 employees) (4)	-0.1819	-1.8*	-0.1641	-1.34	-0.3281	-1.71*	-0.1323	-0.71
Small firm (1-4 employees) (4)	-0.3389	-3.32***	-0.351	-2.85***	-0.3715	-1.92*	-0.276	-1.44
Incomes								
Dwelling owner	-0.313	-4.29***	-0.3851	-4.4***	-0.3726	-2.78***	-0.0269	-0.19
Cap. & property incomes (1 lag)	-0.0996	-1.33	-0.028	-0.3	-0.0757	-0.54	-0.1628	-1.15
Incomes as self-employed (1 lag)	-2.2E-05	-5.78***	-1.4E-05	-3.05***	-4E-05	-3.54***	-3.1E-05	-3.56***
Observed previous experience								
Prev. spell(s) as self-employed	-0.4494	-4.22***	-0.2392	-1.84*	-0.4439	-2.2**	-0.4627	-2.32**
Prev. spell(s) as paid-employed	-0.1392	-1.66*	0.1343	1.34	-0.5248	-2.93***	-0.3192	-1.86*
Prev. spell(s) as unemployed	0.4083	5.76***	0.267	3.11***	0.8095	5.72***	0.2136	1.73*
Prev. spell(s) as inactive	-0.0494	-0.47	-0.2391	-1.66*	-0.2996	-1.44	0.3397	2.03**
Business cycle								
Annual unemployment rate	0.0996	5.52***	0.0946	4.34***	0.1844	5.13***	0.0778	2.59***
Duration								
Ln (Self-employment duration)	-0.521	-11.07***	-0.498	-8.37***	-0.6857	-7.11***	-0.4168	-4.99***
Country								
Austria (5)	0.3698	1.1	0.4865	1.21	0.7013	0.81	0.2357	0.43
Belgium (5)	0.2123	0.85	0.1646	0.52	1.1005	2.24**	0.0368	0.08
Denmark (5)	0.9424	3.2***	1.2546	3.68***	0.7446	0.89	0.4766	0.95
Finland (5)	0.361	1.99**	0.5016	2.24**	1.2144	3.72***	-0.3373	-0.98
France (5)	-0.0066	-0.03	0.005	0.02	0.7108	1.65*	-0.2964	-0.66
Germany (5)	0.9718	4.71***	0.9778	4.1***	1.6878	3.88***	0.3695	0.97
Greece (5)	0.4211	2.64***	0.1481	0.78	1.2276	4.03***	0.5028	2.01**
Ireland (5)	0.2975	1.49	0.2601	1.1	0.5372	1.31	0.5035	1.56
Italy (5)	0.0273	0.18	-0.148	-0.79	0.8576	2.9***	0.0881	0.35
Luxembourg (5)	*No observations*		*No observations*		*No observations*		*No observations*	
Netherlands (5)	0.7216	2.12**	1.2092	3.1***	0.5034	0.45	-0.4526	-0.63
Portugal (5)	0.6558	2.83***	1.0059	3.58***	0.5072	0.94	0.2475	0.63
Sweden (5)	*No observations*		*No observations*		*No observations*		*No observations*	
United Kingdom (5)	*No observations*		*No observations*		*No observations*		*No observations*	
Reference categories: (1) Non-cohabiting individuals, (2) No education or primary education, (3) Construction sector, (4) Medium or large firm (> 4 employees), (5) Spain								
Log likelihood	-4607.8		-5714.1					

Notes:
(***) 1 % significativity level; (**) 5 % significativity level; (*) 10 % significativity level

Tables A2-A3. Number of observations and spells in the analysis of duration within self-employment across the European Union 15 (Main exercise)

	Single risk model –Binomial–		
	Total observations CONDITIONAL*	**Censored spells**	**Completed spells**
European Union 15	*23417*	*6346*	*1315*
Austria	648	189	23
Belgium	964	294	35
Denmark	511	139	33
Finland	1051	371	69
France	938	226	32
Germany	1555	482	104
Greece	4399	1012	237
Ireland	1328	394	65
Italy	4895	1240	242
Luxembourg	*No observations*		
Netherlands	434	200	24
Portugal	2933	712	167
Spain	3761	1087	284
Sweden	*No observations*		
United Kingdom	*No observations*		

* Conditional on not having left self-employment before 1994

	Competing risk model –Multinomial–				
	Total observations CONDITIONAL*	**Censored spells**	**Paid-employment**	**Unemployment**	**Inactive**
European Union 15	*23417*	*6346*	*680*	*286*	*349*
Austria	648	189	14	2	7
Belgium	964	294	18	8	9
Denmark	511	139	23	2	8
Finland	1051	371	36	21	12
France	938	226	16	9	7
Germany	1555	482	68	19	17
Greece	4399	1012	94	62	81
Ireland	1328	394	33	11	21
Italy	4895	1240	101	71	70
Luxembourg	*No observations*				
Netherlands	434	200	20	1	3
Portugal	2933	712	115	11	41
Spain	3761	1087	142	69	73
Sweden	*No observations*				
United Kingdom	*No observations*				

* Conditional on not having left self-employment before 1994

Table A4. Departure from self-employment *conditional on not having left self-employment before 1994* (Complementary exercise)

	Single risk model -Binomial-		Competing risk model -Multinomial-					
Destination states	**END OF PRESENT BUSINESS**		**PAID-EMPLOYMENT**		**UNEMPLOYMENT**		**INACTIVE**	
Number of observations	16264		16264					
Number of individuals	5208		5208					
Number of spells	5335		5335					
Number of censored spells	4159		4159					
Number of completed spells	1176		586		264		326	
Variables	**Coef.**	**t-stat.**	**Coef.**	**t-stat.**	**Coef.**	**t-stat.**	**Coef.**	**t-stat.**
Constant	5.0573	6.01***	3.5268	3.37***	0.071	0.05	3.7565	2.95***
Demographic characteristics								
Male	-0.4315	-5.11***	0.2413	2.11**	0.0308	0.2	-1.5673	-10.96***
Born abroad	0.1952	1.16	-0.0174	-0.08	0.5497	2.1**	0.1547	0.53
Age	-0.1647	-5.03***	-0.1286	-3.23***	-0.0837	-1.42	-0.1932	-3.74***
Age (squared)	0.002	4.82***	0.0013	2.54**	0.0011	1.49	0.0026	4.13***
Cohabiting (1)	0.1076	1.11	-0.0269	-0.22	-0.3863	-2.22**	0.8192	4.51***
Number of children under 14	-0.0294	-0.65	0.0032	0.06	0.0803	0.95	-0.1607	-2.15**
Relat. working as self-employed	-0.1598	-1.85*	-0.2153	-1.89*	-0.1137	-0.72	-0.1829	-1.34
Education								
Secondary education (2)	-0.1799	-2.06**	-0.148	-1.34	-0.2831	-1.83*	0.0374	0.26
University studies (2)	-0.3978	-3.3***	-0.1526	-1.03	-0.5324	-2.47**	-0.5066	-2.2**
Relatives with university studies	-0.1012	-1.02	-0.0769	-0.63	-0.0285	-0.15	-0.2245	-1.31
Self-employment characteristics								
Hours of work	-0.09	-5.74***	-0.0803	-3.81***	-0.0746	-2.77***	-0.1006	-4.51***
Hours of work (squared)	0.0007	4.86***	0.0006	3.2***	0.0005	2.13**	0.0008	4.12***
Industry dummies								
Industrial sector (3)	0.0318	0.23	-0.1297	-0.86	0.4471	1.74*	0.3929	1.23
Financial services (3)	-0.0254	-0.17	0.0356	0.21	-0.2024	-0.61	0.326	0.95
Wholesale, hot., rest. & transp. (3)	0.037	0.32	-0.1986	-1.56	0.4401	1.96**	0.4509	1.54
Other services (3)	0.0058	0.04	-0.0409	-0.23	0.047	0.15	0.5041	1.56
Firm's characteristics								
Own-acc. work (0 employees) (4)	-0.2756	-2.43**	-0.2767	-2.04**	-0.407	-1.91*	-0.1569	-0.78
Small firm (1-4 employees) (4)	-0.3752	-3.27***	-0.4265	-3.1***	-0.3631	-1.71*	-0.2388	-1.15
Incomes								
Inherit. gift or lottery winnings	-0.2866	-1.11	-0.6171	-1.71*	0.5346	1.43	-0.6144	-1.17
Dwelling owner	-0.3734	-4.58***	-0.4334	-4.47***	-0.4114	-2.84***	-0.1075	-0.73
Cap. & property incomes (1 lag)	-0.1207	-1.45	-0.0378	-0.36	-0.145	-0.94	-0.1487	-0.98
Incomes as self-employed (1 lag)	-3.3E-05	-6.78***	-2.2E-05	-3.92***	-5.2E-05	-4.34***	-3.5E-05	-3.81***
Observed previous experience								
Prev. spell(s) as self-employed	-0.3121	-2.54**	-0.114	-0.78	-0.3493	-1.58	-0.3381	-1.57
Prev. spell(s) as paid-employed	-0.0069	-0.07	0.2806	2.55**	-0.4819	-2.52**	-0.2317	-1.24
Prev. spell(s) as unemployed	0.5065	6.46***	0.3813	4.04***	0.8101	5.34***	0.2508	1.93*
Prev. spell(s) as inactive	0.1291	1.08	-0.0995	-0.63	-0.14	-0.63	0.4848	2.72***
Business cycle								
Annual unemployment rate	0.0133	0.66	0.0122	0.49	0.1139	2.86***	-0.0015	-0.04
Duration								
Ln (Self-employment duration)	-0.4608	-8.85***	-0.4455	-6.93***	-0.6477	-6.59***	-0.3708	-4.1***
Country								
Austria (5)	-0.7475	-2.04**	-0.5167	-1.17	-0.274	-0.31	-0.7648	-1.31
Belgium (5)	-0.4521	-1.7*	-0.4267	-1.28	0.4628	0.91	-0.5358	-1.16
Denmark (5)	0.0515	0.16	0.5037	1.38	-0.1275	-0.15	-0.3323	-0.63
Finland (5)	0.0532	0.28	0.2786	1.21	0.8759	2.66***	-0.6386	-1.82*
France (5)	-0.4851	-1.92*	-0.4044	-1.3	0.3219	0.74	-0.8283	-1.69*
Germany (5)	*No observations*		*No observations*		*No observations*		*No observations*	
Greece (5)	-0.1423	-0.81	-0.3529	-1.71*	0.7187	2.21**	0.015	0.06
Ireland (5)	-0.107	-0.49	-0.0789	-0.31	0.1437	0.33	0.1134	0.32
Italy (5)	-0.4871	-3.05***	-0.5886	-3.03***	0.3606	1.19	-0.3549	-1.39
Luxembourg (5)	*No observations*		*No observations*		*No observations*		*No observations*	
Netherlands (5)	*No observations*		*No observations*		*No observations*		*No observations*	
Portugal (5)	-0.3792	-1.49	0.0795	0.26	-0.3954	-0.7	-0.6614	-1.57
Sweden (5)	*No observations*		*No observations*		*No observations*		*No observations*	
United Kingdom (5)	*No observations*		*No observations*		*No observations*		*No observations*	
Reference categories: (1) Non-cohabiting individuals, (2) No education or primary education, (3) Construction sector, (4) Medium or large firm (> 4 employees), (5) Spain								
Log likelihood	-3779.3		-4767.4					

Notes:
(***) 1 % significativity level; (**) 5 % significativity level; (*) 10 % significativity level

Tables A5-A6. Number of observations and spells in the analysis of duration within self-employment across the European Union 15 (Complementary exercise)

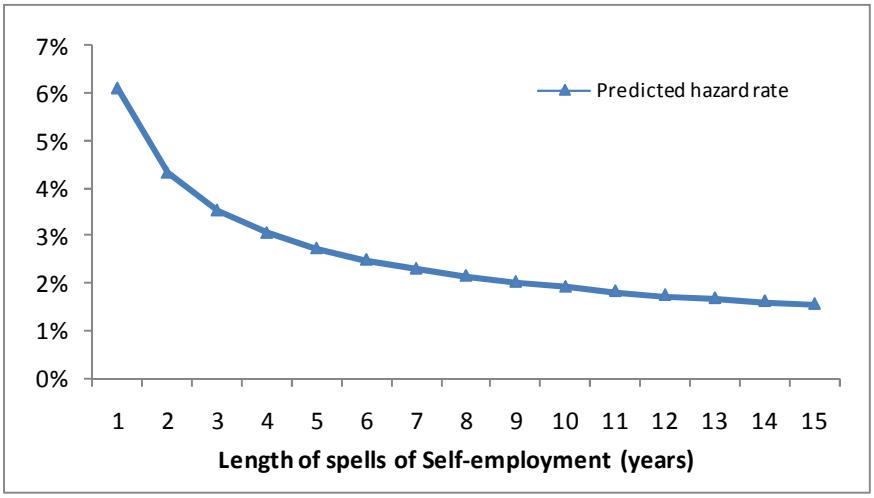
	Single risk model –Binomial–		
	Total observations CONDITIONAL*	**Censored spells**	**Completed spells**
European Union 15	*16246*	*4159*	*1176*
Austria	472	143	22
Belgium	706	220	35
Denmark	377	100	33
Finland	810	279	69
France	738	178	30
Germany	*No observations*		
Greece	3438	789	235
Ireland	931	264	65
Italy	3700	889	238
Luxembourg	*No observations*		
Netherlands	*No observations*		
Portugal	2287	566	165
Spain	2805	731	284
Sweden	*No observations*		
United Kingdom	*No observations*		

* Conditional on not having left self-employment before 1994

	Competing risk model –Multinomial–				
	Total observations CONDITIONAL*	**Censored spells**	**Paid-employment**	**Unemployment**	**Inactive**
European Union 15	*16246*	*4159*	*586*	*264*	*326*
Austria	472	143	13	2	7
Belgium	706	220	18	8	9
Denmark	377	100	23	2	8
Finland	810	279	36	21	12
France	738	178	15	9	6
Germany	*No observations*				
Greece	3438	789	92	62	81
Ireland	931	264	33	11	21
Italy	3700	889	100	69	69
Luxembourg	*No observations*				
Netherlands	*No observations*				
Portugal	2287	566	114	11	40
Spain	2805	731	142	69	73
Sweden	*No observations*				
United Kingdom	*No observations*				

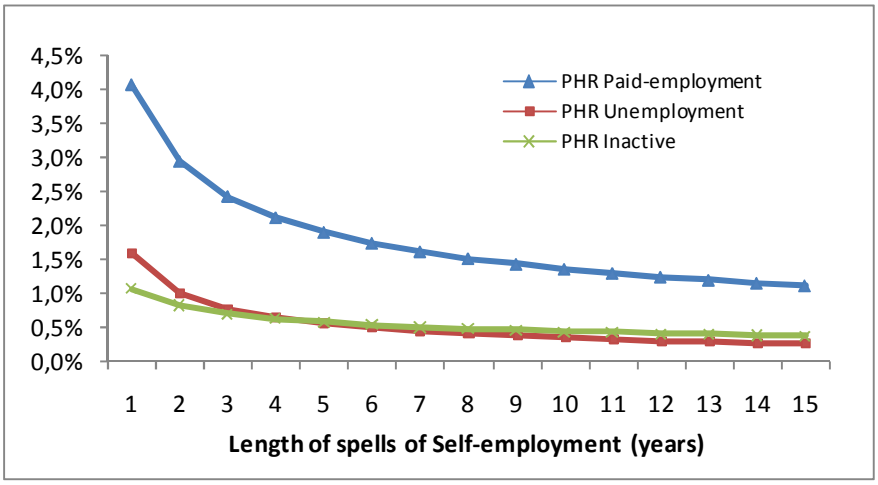
* Conditional on not having left self-employment before 1994

Fig. 1. Departure from self-employment (Main exercise):
Predicted hazard rate *conditional on not having left self-employment before 1994*



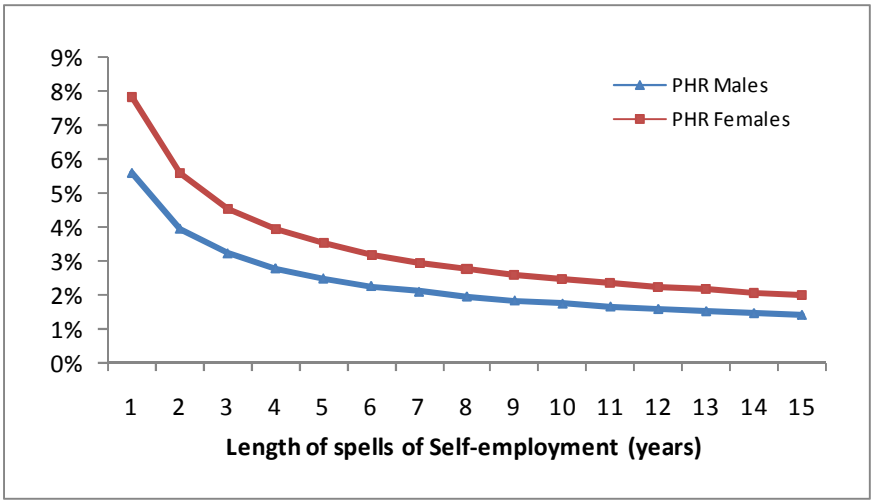
Notes:
(i) Simulation is based on the estimates of Table A1
(ii) Simulation for sample means of continuous and discrete variables

Fig. 2. Departure from self-employment to different states (Main exercise):
Predicted hazard rate *conditional on not having left self-employment before 1994*



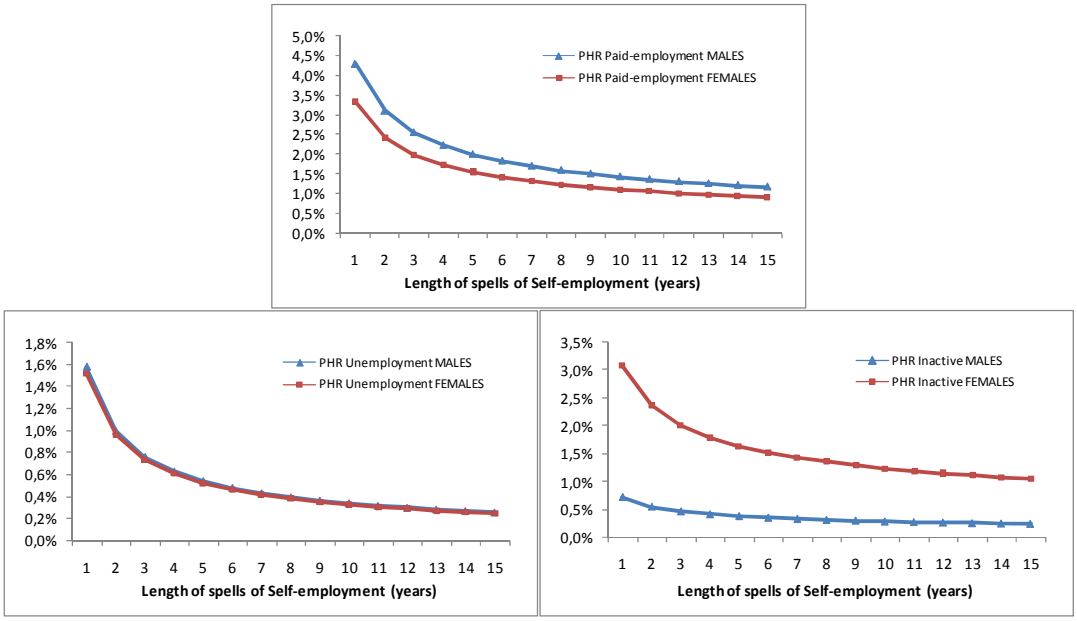
Notes:
(i) Simulation is based on the estimates of Table A1
(ii) Simulation for sample means of continuous and discrete variables

Fig. 3. Departure from self-employment (Main exercise):
Predicted hazard rate *conditional on not having left self-employment before 1994*, for males-females



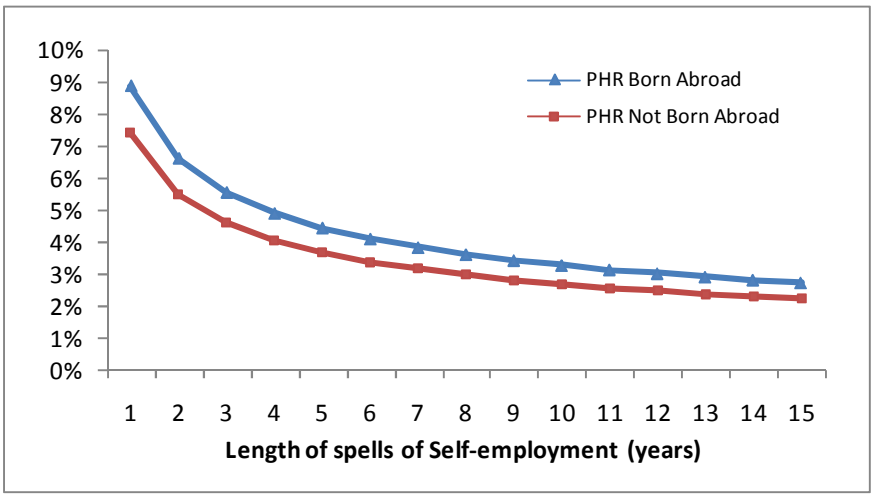
Notes:
(i) Simulation is based on the estimates of Table A1
(ii) Simulation for sample means of continuous and discrete variables

Fig. 4-6. Departure from self-employment to different states (Main exercise):
Predicted hazard rate *conditional on not having left self-employment before 1994*, for males-females



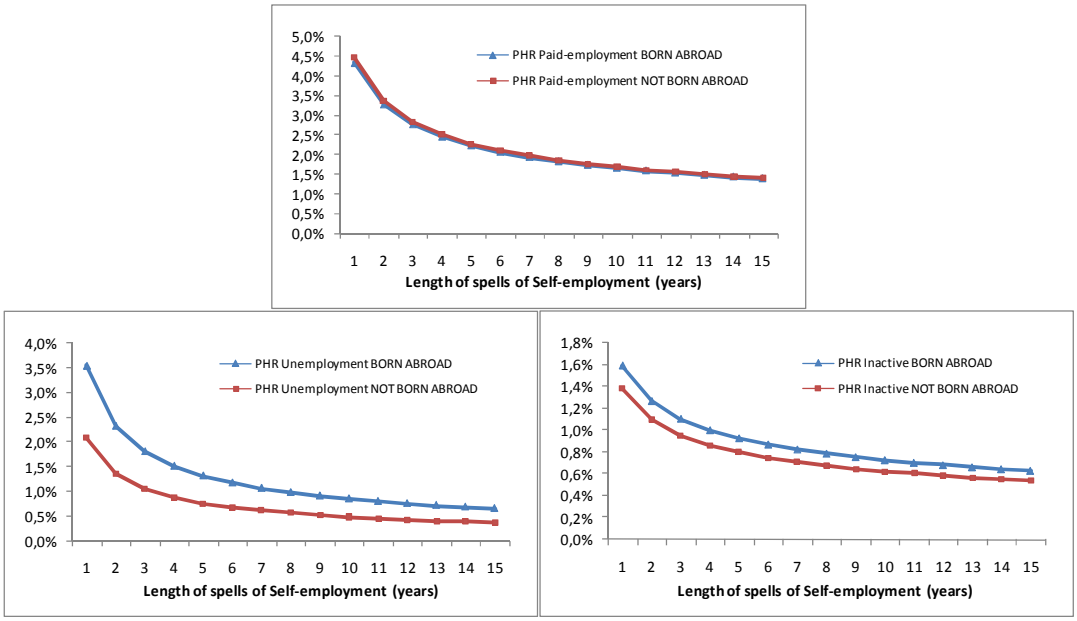
Notes:
(i) Simulation is based on the estimates of Table A1
(ii) Simulation for sample means of continuous and discrete variables

Fig. 7. Departure from self-employment (Complementary exercise):
Predicted hazard rate *conditional on not having left self-employment before 1994*
for those born and not born abroad



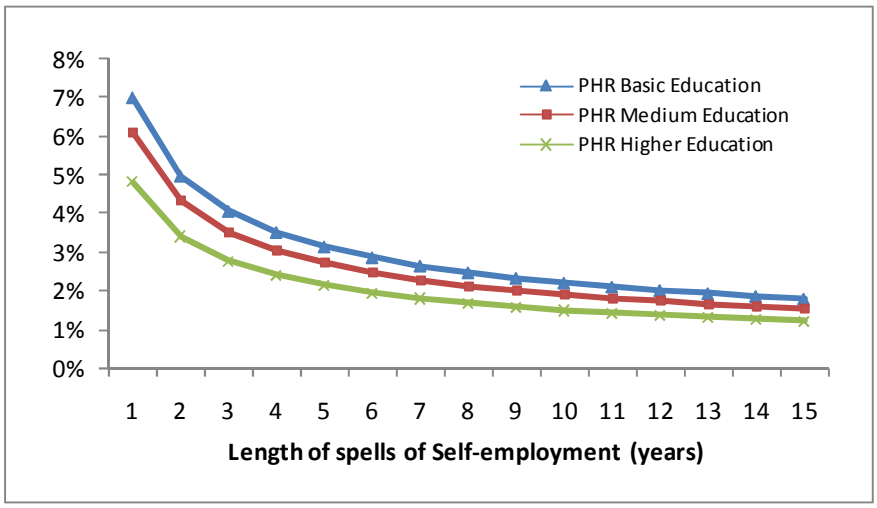
Notes:
(i) Simulation is based on the estimates of Table A4
(ii) Simulation for sample means of continuous and discrete variables

Fig. 8-10. Departure from self-employment to different states (Complementary exercise):
Predicted hazard rate *conditional on not having left self-employment before 1994*
for those born and not born abroad



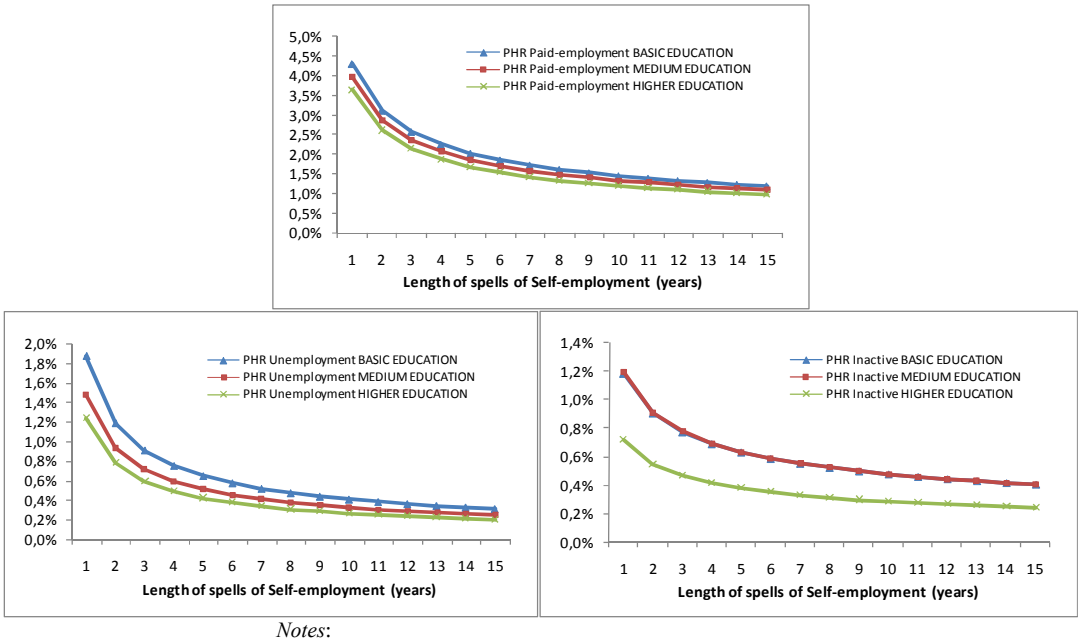
Notes:
(i) Simulation is based on the estimates of Table A4
(ii) Simulation for sample means of continuous and discrete variables

Fig. 11. Departure from self-employment (Main exercise):
Predicted hazard rate *conditional on not having left self-employment before 1994*
for different stages on education



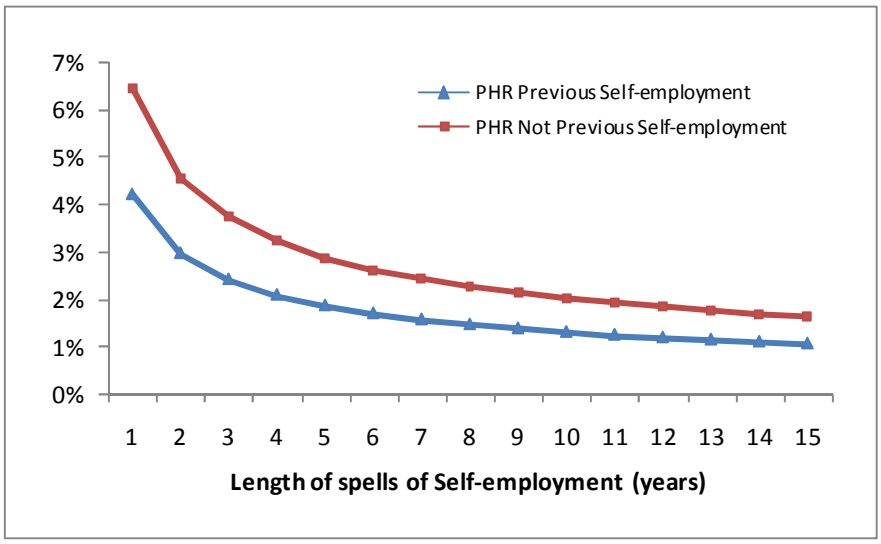
Notes:
(i) Simulation is based on the estimates of Table A1
(ii) Simulation for sample means of continuous and discrete variables

Fig. 12-14. Departure from self-employment to different states (Main exercise):
Predicted hazard rate *conditional on not having left self-employment before 1994*
for different stages on education



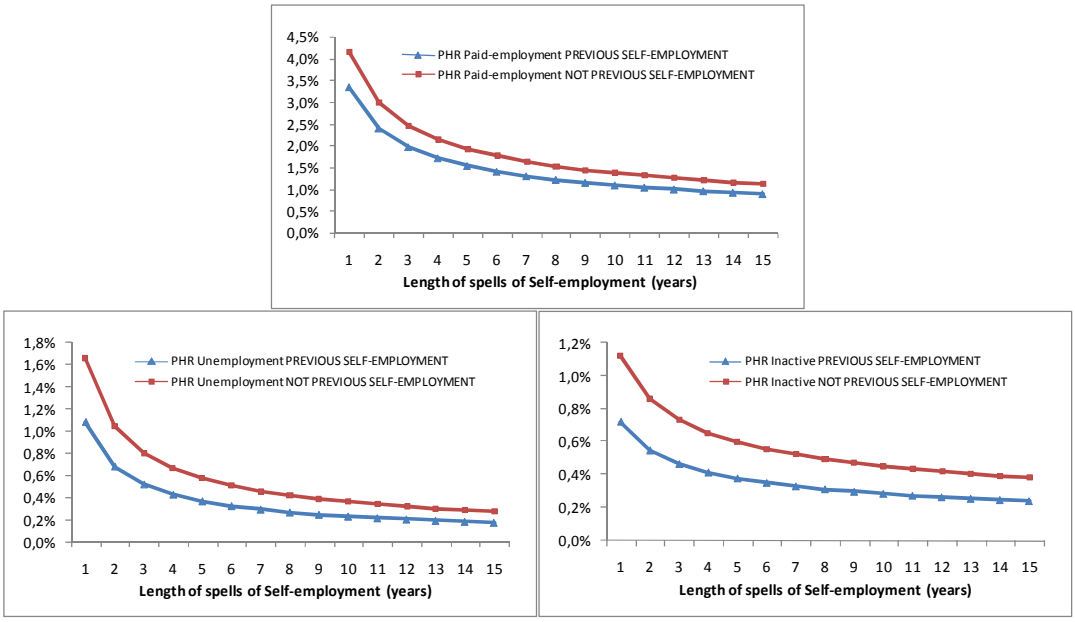
Notes:
(i) Simulation is based on the estimates of Table A1
(ii) Simulation for sample means of continuous and discrete variables

Fig. 15. Departure from self-employment (Main exercise):
Predicted hazard rate *conditional on not having left self-employment before 1994*
for those with and without previous experience as self-employed



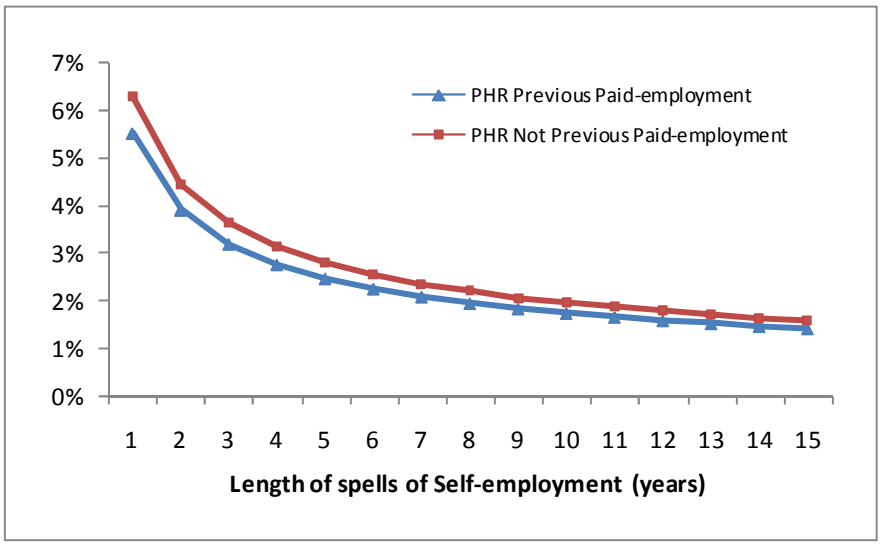
Notes:
(i) Simulation is based on the estimates of Table A1
(ii) Simulation for sample means of continuous and discrete variables

Fig. 16-18. Departure from self-employment to different states (Main exercise):
Predicted hazard rate *conditional on not having left self-employment before 1994*
for those with and without previous experience as self-employed



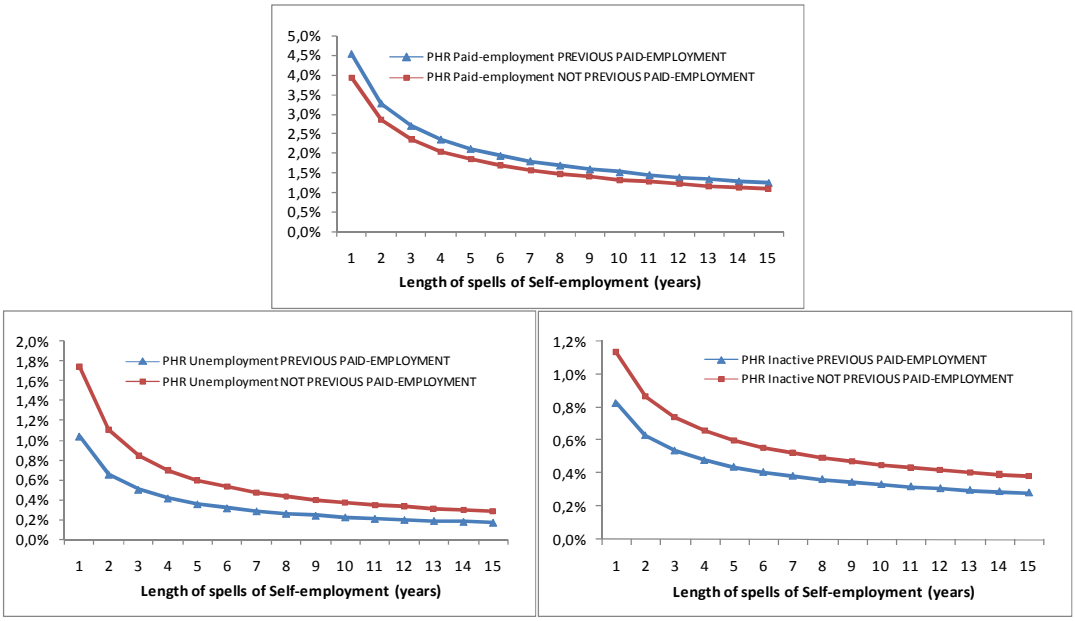
Notes:
(i) Simulation is based on the estimates of Table A1
(ii) Simulation for sample means of continuous and discrete variables

Fig. 19. Departure from self-employment (Main exercise):
Predicted hazard rate *conditional on not having left self-employment before 1994*
for those with and without previous experience as paid-employed



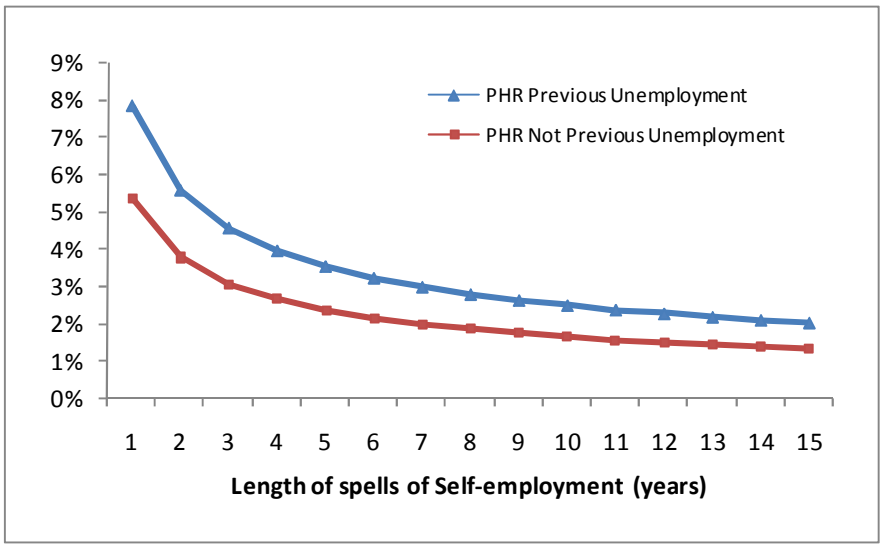
Notes:
(i) Simulation is based on the estimates of Table A1
(ii) Simulation for sample means of continuous and discrete variables

Fig. 20-22. Departure from self-employment to different states (Main exercise):
Predicted hazard rate *conditional on not having left self-employment before 1994*
for those with and without previous experience as paid-employed



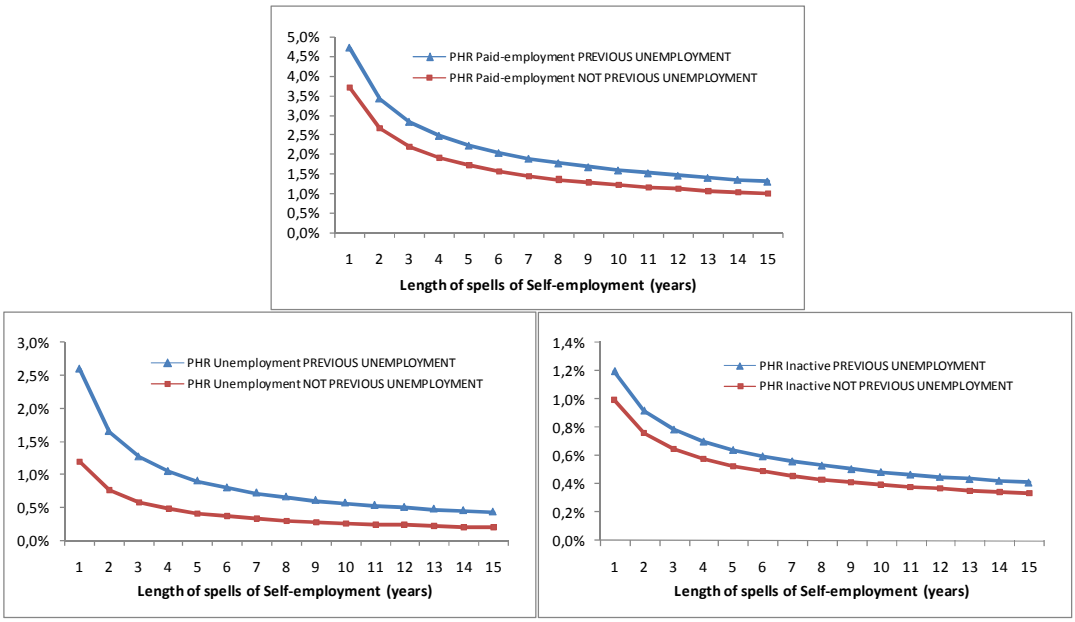
Notes:
(i) Simulation is based on the estimates of Table A1
(ii) Simulation for sample means of continuous and discrete variables

Fig. 23. Departure from self-employment (Main exercise):
Predicted hazard rate *conditional on not having left self-employment before 1994*
for those with and without previous experience as unemployed



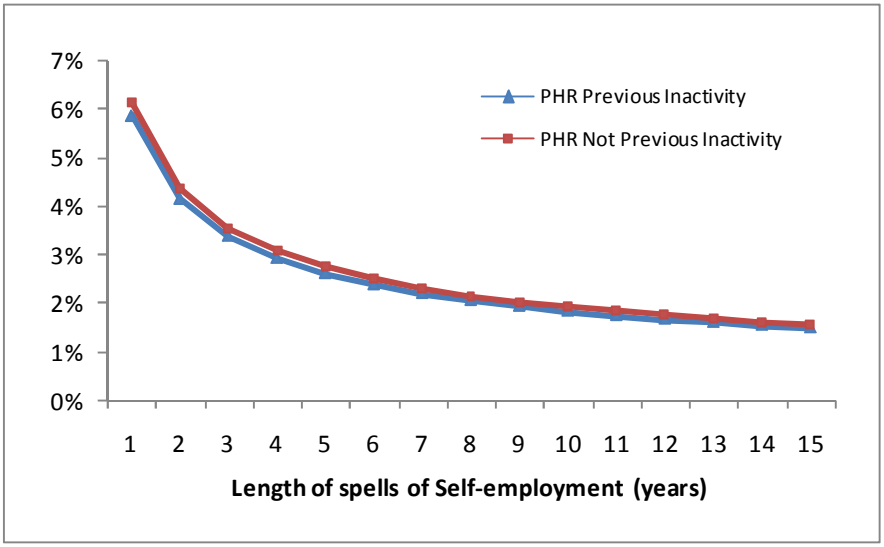
Notes:
(i) Simulation is based on the estimates of Table A1
(ii) Simulation for sample means of continuous and discrete variables

Fig. 24-26. Departure from self-employment to different states (Main exercise):
Predicted hazard rate *conditional on not having left self-employment before 1994*
for those with and without previous experience as unemployed



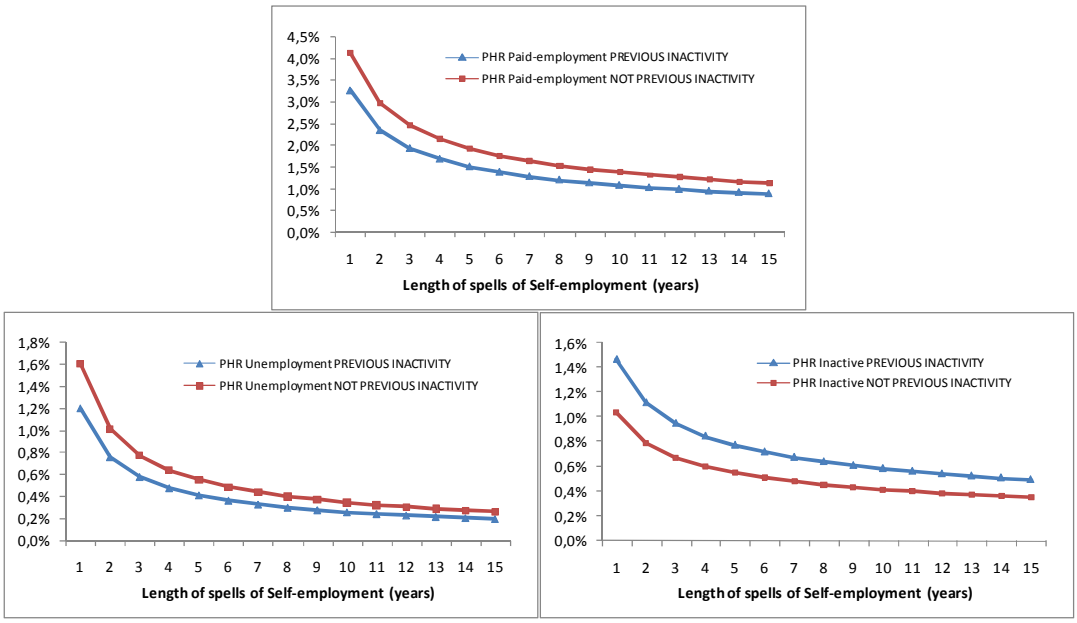
Notes:
(i) Simulation is based on the estimates of Table A1
(ii) Simulation for sample means of continuous and discrete variables

Fig. 27. Departure from self-employment (Main exercise):
Predicted hazard rate *conditional on not having left self-employment before 1994*
for those with and without previous experience as inactive



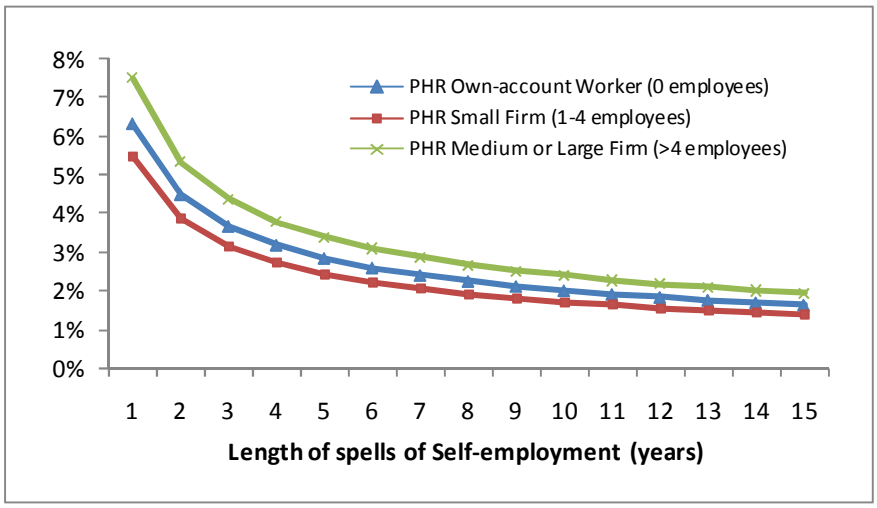
Notes:
(i) Simulation is based on the estimates of Table A1
(ii) Simulation for sample means of continuous and discrete variables

Fig. 28-30. Departure from self-employment to different states (Main exercise):
Predicted hazard rate *conditional on not having left self-employment before 1994*
for those with and without previous experience as inactive



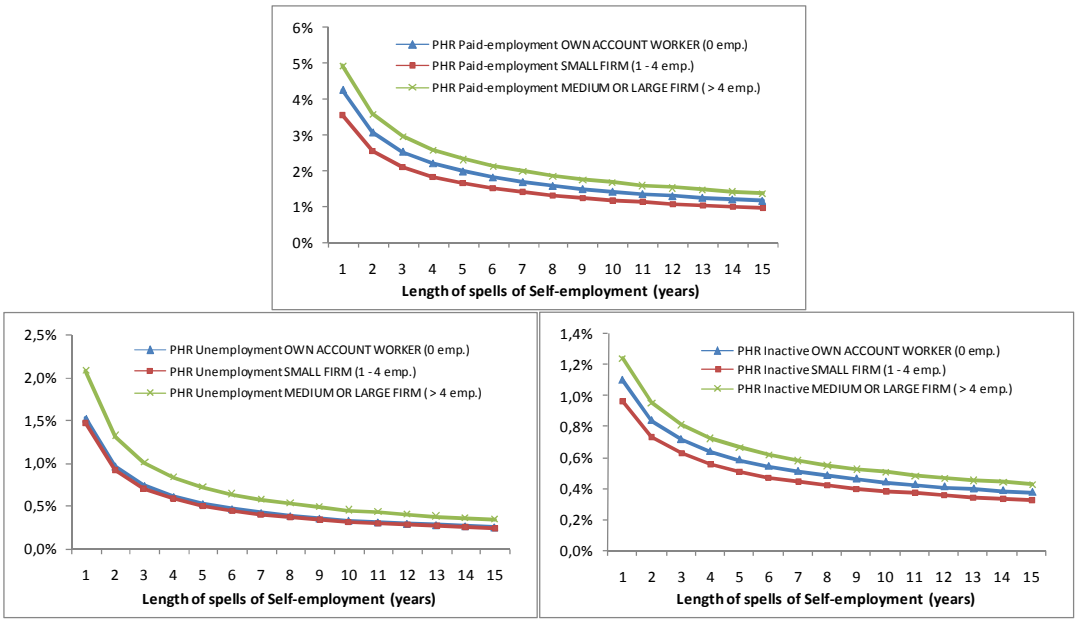
Notes:
(i) Simulation is based on the estimates of Table A1
(ii) Simulation for sample means of continuous and discrete variables

Fig. 31. Departure from self-employment (Main exercise):
Predicted hazard rate *conditional on not having left self-employment before 1994*
for different number of employees



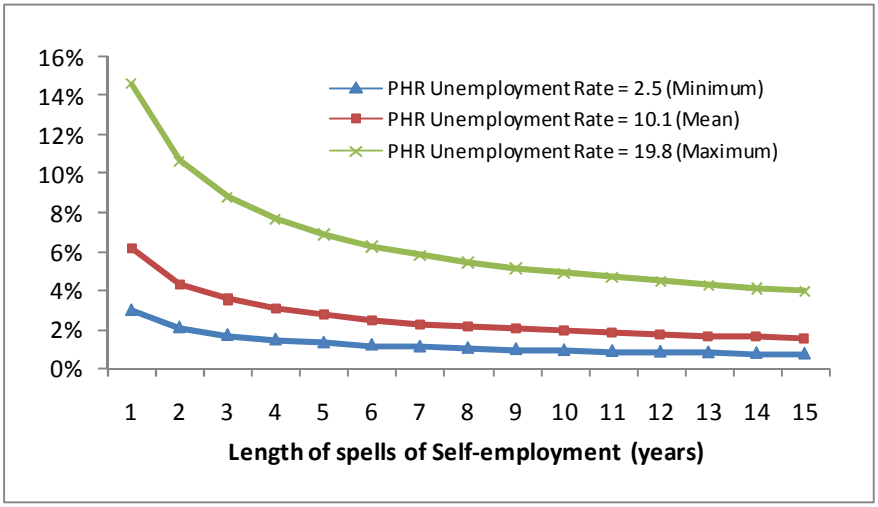
Notes:
(i) Simulation is based on the estimates of Table A1
(ii) Simulation for sample means of continuous and discrete variables

Fig. 32-34. Departure from self-employment to different states (Main exercise):
Predicted hazard rate *conditional on not having left self-employment before 1994*
for different number of employees



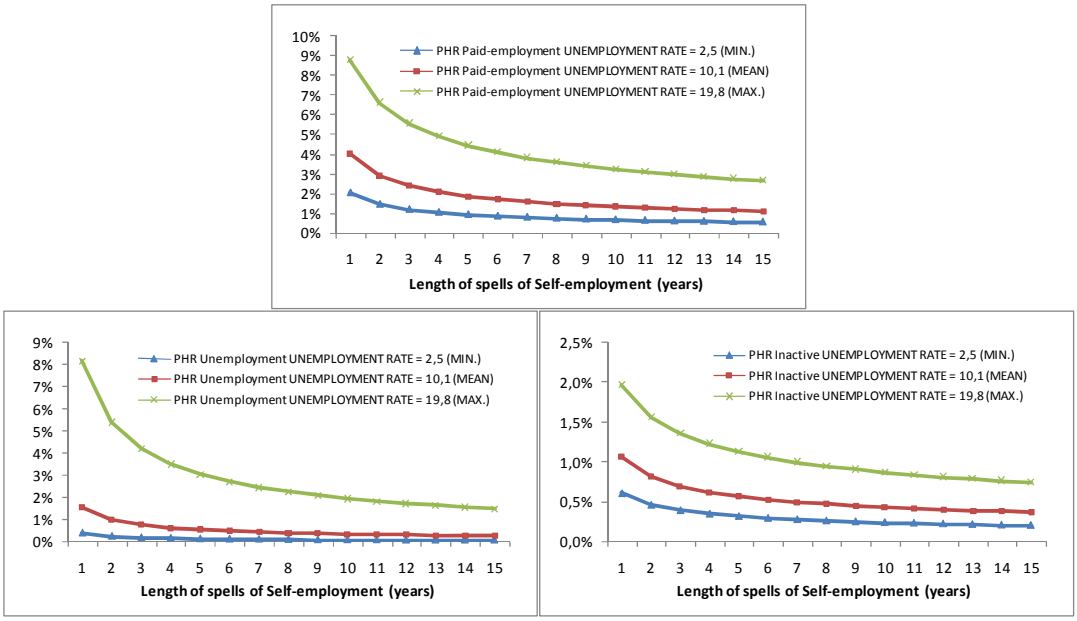
Notes:
(i) Simulation is based on the estimates of Table A1
(ii) Simulation for sample means of continuous and discrete variables

Fig. 35. Departure from self-employment (Main exercise):
Predicted hazard rate *conditional on not having left self-employment before 1994*
for different values of the unemployment rate



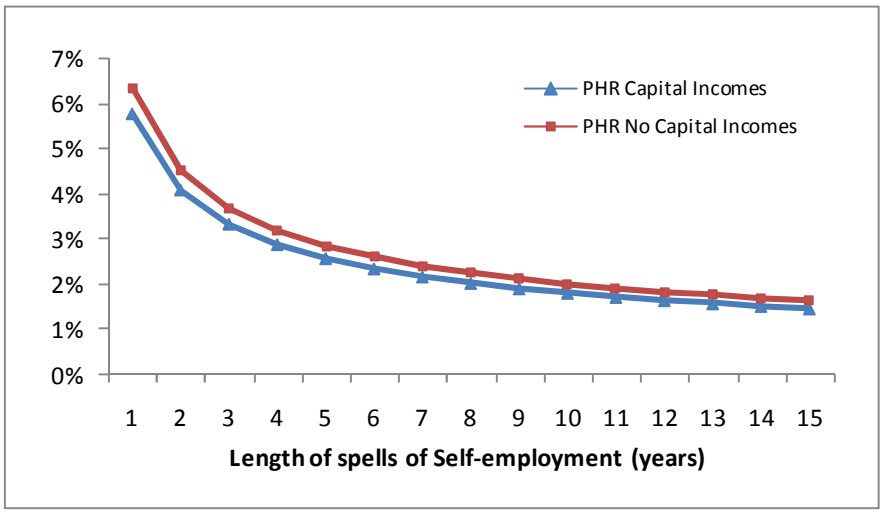
Notes:
(i) Simulation is based on the estimates of Table A1
(ii) Simulation for sample means of continuous and discrete variables

Fig. 36-38. Departure from self-employment to different states (Main exercise):
Predicted hazard rate *conditional on not having left self-employment before 1994*
for different values of the unemployment rate



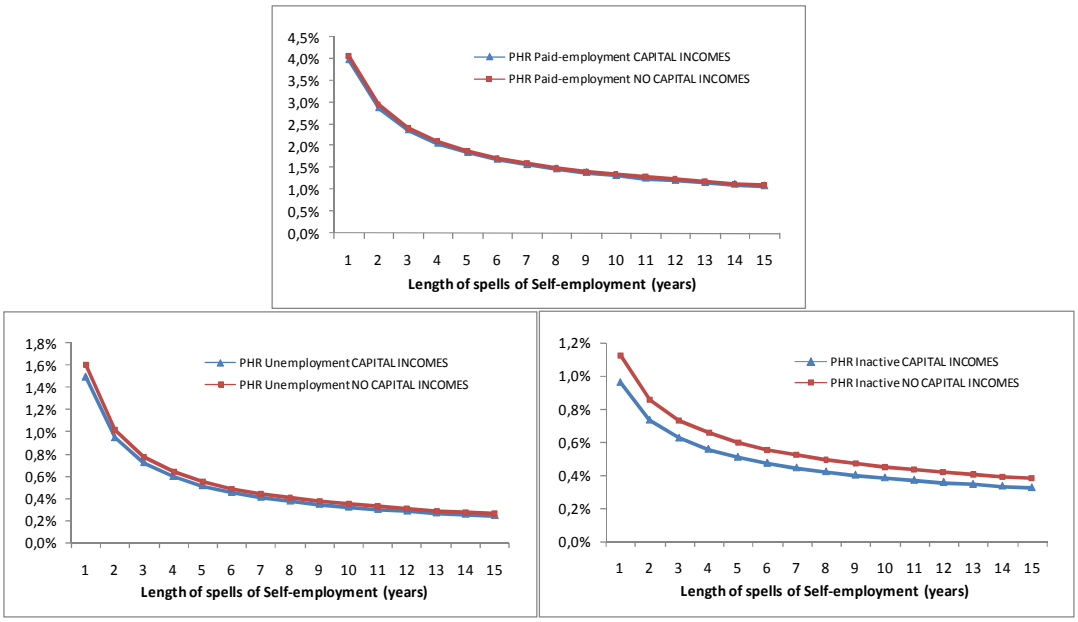
Notes:
(i) Simulation is based on the estimates of Table A1
(ii) Simulation for sample means of continuous and discrete variables

Fig. 39. Departure from self-employment (Main exercise):
Predicted hazard rate *conditional on not having left self-employment before 1994*
for those receiving and not receiving capital and property incomes, and private transfers



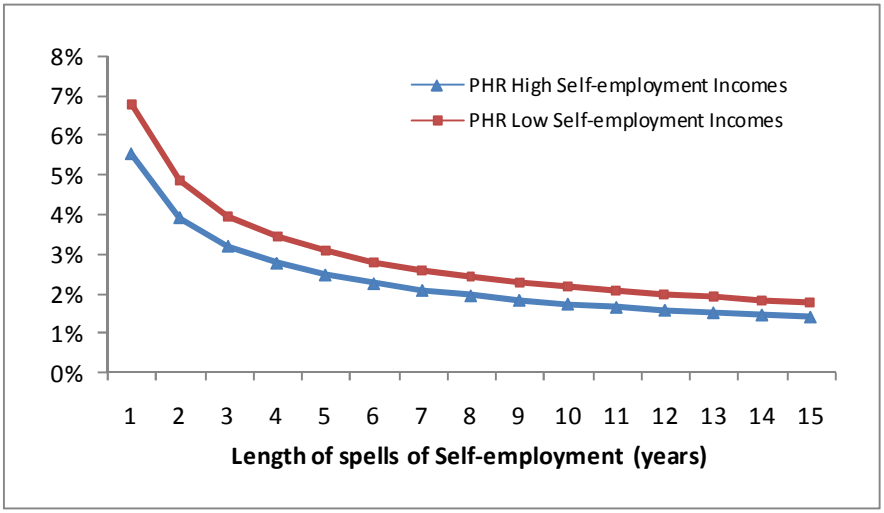
Notes:
(i) Simulation is based on the estimates of Table A1
(ii) Simulation for sample means of continuous and discrete variables

Fig. 40-42. Departure from self-employment to different states (Main exercise):
Predicted hazard rate *conditional on not having left self-employment before 1994*
for those receiving and not receiving capital and property incomes, and private transfers



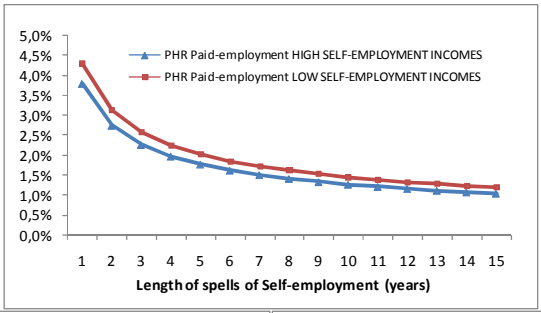
Notes:
(i) Simulation is based on the estimates of Table A1
(ii) Simulation for sample means of continuous and discrete variables

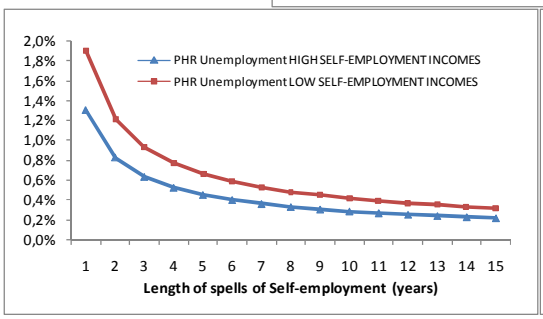
Fig. 43. Departure from self-employment (Main exercise):
Predicted hazard rate *conditional on not having left self-employment before 1994*
for different levels of self-employment incomes

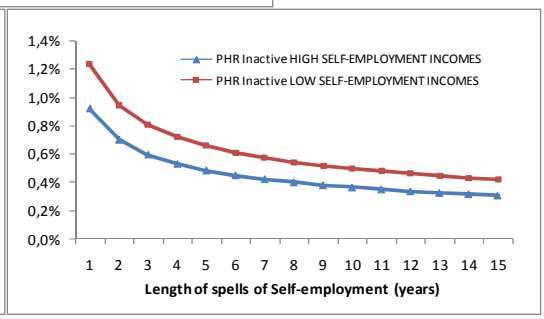


Notes:
(i) Simulation is based on the estimates of Table A1
(ii) Simulation for sample means of continuous and discrete variables
(iii) Low and High incomes are €5,000 under and over the mean, respectively

Fig. 44-46. Departure from self-employment to different states (Main exercise):
Predicted hazard rate *conditional on not having left self-employment before 1994*
for different levels of self-employment incomes

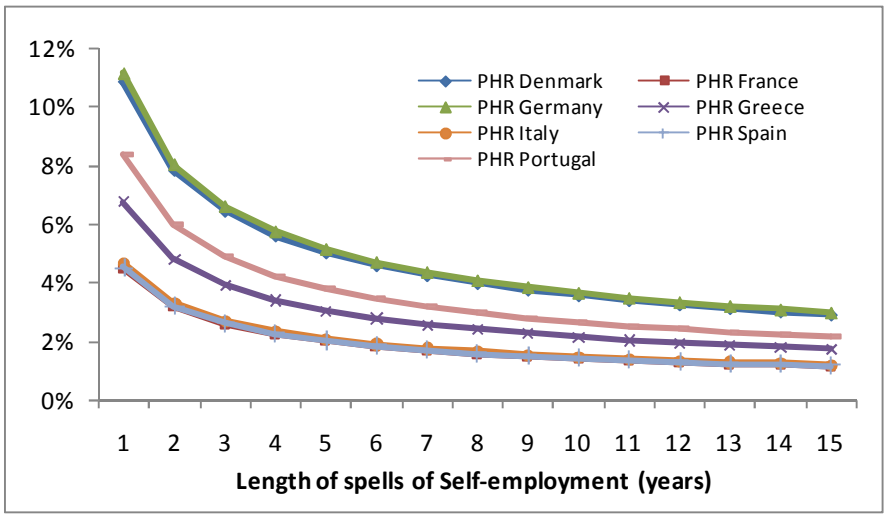






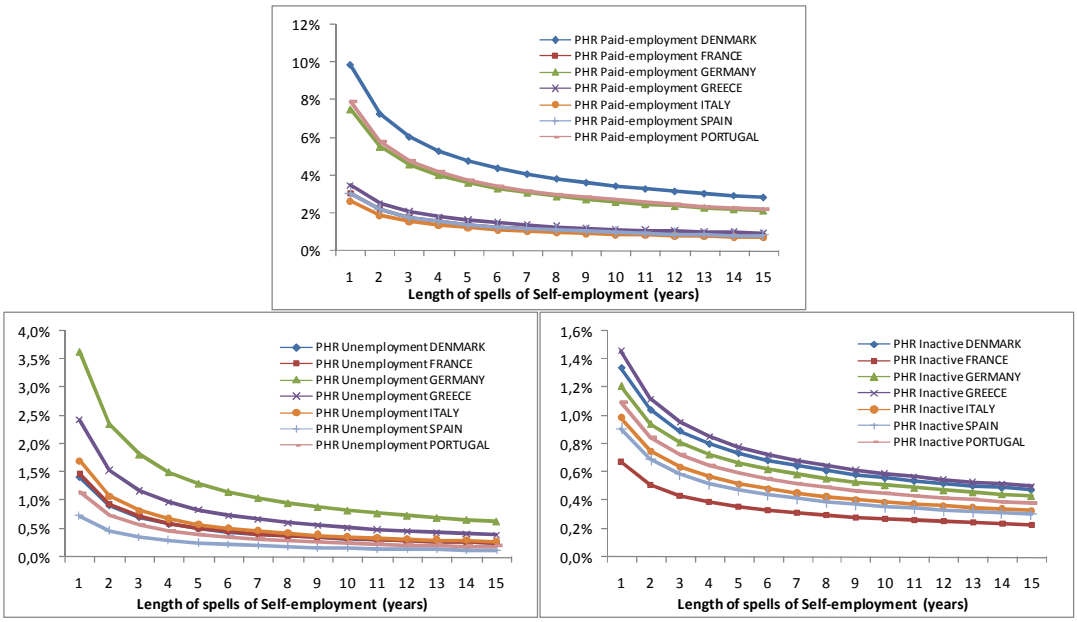
Notes:
(i) Simulation is based on the estimates of Table A1
(ii) Simulation for sample means of continuous and discrete variables
(iii) Low and High incomes are €5,000 under and over the mean, respectively

Fig. 47. Departure from self-employment (Main exercise):
Predicted hazard rate *conditional on not having left self-employment before 1994*
for different countries



Notes:
(i) Simulation is based on the estimates of Table A1
(ii) Simulation for sample means of continuous and discrete variables

Fig. 48-50. Departure from self-employment to different states (Main exercise):
Predicted hazard rate *conditional on not having left self-employment before 1994*
for different countries



Notes:
(i) Simulation is based on the estimates of Table A1
(ii) Simulation for sample means of continuous and discrete variables

Appendix B: Data description

Variable definitions referring to exercises developed with the European Community Household Panel (ECHP) are reported below.

Explanatory variables

Demographic characteristics:

Male	Dummy equals 1 for males.
Born abroad	Dummy equals 1 for born abroad individuals.
Age	Age reported by the individual, ranging from 21 to 59.
Cohabiting	Dummy equals 1 for cohabiting individuals and 0 otherwise.
Number of children under 14	Number of children aged under than 14 living within the household.
Relative(s) working as self-employed	Dummy equals to 1 if there are any in the household.

Education:

No education or primary education	Dummy equals 1 for illiterate, no schooling individuals, or individuals with primary schooling as highest education level achieved, and 0 otherwise.
Secondary education	Dummy equals 1 for individuals with secondary schooling as highest education level achieved and 0 otherwise.
University studies	Dummy equals 1 for individuals with university studies and 0 otherwise.
Relatives with university studies	Dummy equals to 1 if there are any in the household.

Self-employment work characteristics:

Hours of work	Hours of work per week.

Firm's characteristics:

Construction sector	Dummy equals 1 for individuals whose codes of main activity of the local unit of the business are F (construction), by the "Nomenclature of Economic Activities" (NACE-93).
Industrial sector	Dummy equals 1 for individuals whose codes of main activity of the local unit of the business are C (mining and quarrying), D (manufactures) and E (electricity, gas and water supply), by the "Nomenclature of Economic Activities" (NACE-93).
Wholesale, hotels, restaurants & transport	Dummy equals 1 for individuals whose codes of main activity of the local unit of the business are G (wholesale and retail trade; repair of motor vehicles, motorcycles and personal/household goods), H (hotels and restaurants) and I (transport, storage and communication), by the "Nomenclature of Economic Activities" (NACE-93).
Financial services	Dummy equals 1 for individuals whose codes of main activity of the local unit of the business are J (Financial intermediation) and K (real estate, renting and business activities), by the "Nomenclature of Economic Activities" (NACE-93).

Other services	Dummy equals 1 for individuals whose codes of main activity of the local unit of the business are L (public administration and defense; compulsory social security), M (education), N (health and social work) and O-Q (other community, social and personal service activities; private households with employed persons; extra-territorial organizations and bodies), by the "Nomenclature of Economic Activities" (NACE-93).
Own account worker (0 employees)	Dummy equals 1 for own-account workers.
Small firm (1-4 employees)	Dummy equals 1 for individuals working in small firms.
Medium or large firm (> 4 employees)	Dummy equals 1 for individuals working in medium or large firms.
Observed previous experience:	
Previous spell(s) as self-employed	Dummy equals 1 for individuals with observed previous spell(s) as self-employed.
Previous spell(s) as paid-employee	Dummy equals 1 for individuals with observed previous spell(s) as paid-employee.
Previous spell(s) as unemployed	Dummy equals 1 for individuals with observed previous spell(s) as unemployed.
Previous spell(s) as inactive	Dummy equals 1 for individuals with observed previous spell(s) as inactive.
Incomes:	
Inherit, gift or lottery winnings	Dummy equals 1 for households where anyone inherit any property capital, or receive a gift or lottery winnings, worth €2,000 or more during period *t-1*, and 0 otherwise.
Dwelling owner	Dummy equals 1 for households owning the dwelling in period *t-1*, and 0 otherwise.
Capital and property incomes (1 lag)	Capital and property incomes, and private transfers received during period *t-2*, converted to average euros of 1996, being corrected by Purchasing Power Parity (across countries) and Harmonised Consumer Price Index (across time).
Incomes as self-employed (1 lag)	Incomes earned as self-employed during period *t-2*, converted to average euros of 1996, being corrected by Purchasing Power Parity (across countries) and Harmonised Consumer Price Index (across time).
Business cycle:	
Annual unemployment rate	Standardized annual unemployment rate (source: OCDE).
Duration dependence:	
Ln (Self-employment duration)	Natural logarithm of the number of years within self-employment.
Country dummies	Dummies equal 1 for individuals living in the named country, and 0 otherwise.

Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden and the United Kingdom.

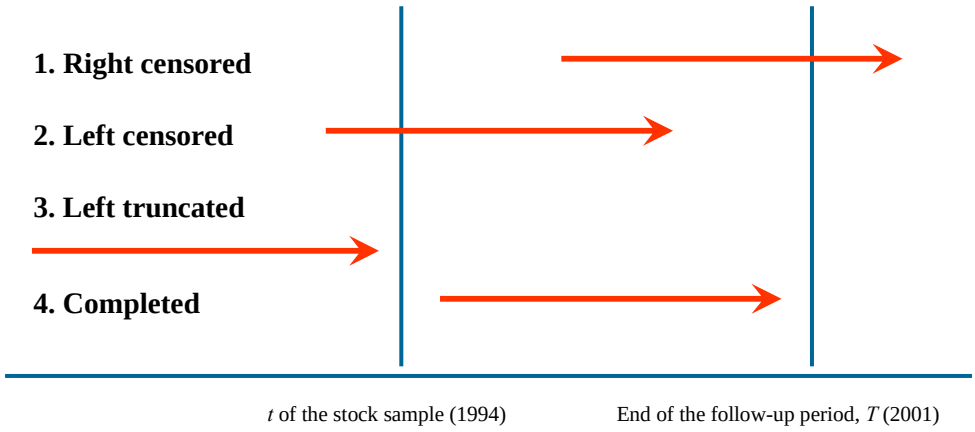
Table B1. Descriptive statistics of the departure from self-employment (Main exercise)

Final destination	**Censored**	**Paid Employment**	**Unemployment**	**Inactive**
Number of spells	6346	680	286	349
Demographic characteristics				
Females	27.3 %	24.1 %	31.1 %	67.9 %
Average age	39.3 years	35.3 years	36.1 years	39.8 years
Age 21-30 years	20.4 %	34.1 %	35 %	22.6 %
Age 31-40 years	37.3 %	39.1 %	33.6 %	31.5 %
Age 41-50 years	27.6 %	18.8 %	22.7 %	24.1 %
Age 51-59 years	14.7 %	7.9 %	8.7 %	21.8 %
No education / Very basic education	40.2 %	44.4 %	48.3 %	49.9 %
Primary schooling / Secondary schooling	35.6 %	34.4 %	35.7 %	37 %
University studies	24.2 %	21.2 %	16.1 %	13.2 %
Relatives with university studies	23.2 %	19.9 %	17.1 %	17.8 %
Cohabiting	76.9 %	72.1 %	66.4 %	83.7 %
Number of children under 14	0.68 child.	0.71 child.	0.67 child.	0.55 child.
Relative(s) working as self-employed	22.2 %	18.8 %	23.4 %	26.4 %
Firm's characteristics				
Construction sector	14.6 %	18.4 %	11.9 %	5.2 %
Industrial sector	13.2 %	14.1 %	14.3 %	11.5 %
Financial services	15.4 %	15.3 %	7.7 %	9.2 %
Wholesale, hotels, restaurants & transport	43.1 %	39.3 %	56.3 %	57.6 %
Other services	13.8 %	12.9 %	9.8 %	16.6 %
Own-account worker (0 employees)	42.7 %	51.2 %	52.1 %	55.6 %
Small firm (1-4 employees)	41.1 %	32.8 %	34.3 %	33 %
Medium firm (5-49 employees)	11.7 %	11 %	8.7 %	6.9 %
Large or very large firm (>49 employees)	4.5 %	5 %	4.9 %	4.6 %
Experience within self-employment				
Average hours of work per week	51.1 hours	49.7 hours	49.5 hours	48.8 hours
Average duration as self-employed (in years)	7.1 years	4.4 years	4.2 years	5.3 years
Duration: 1 year	10.3 %	18.2 %	24.8 %	18.3 %
Duration: 2 or 3 years	21.2 %	36.3 %	37.8 %	28.4 %
Duration: 4 - 6 years	22.4 %	22.6 %	16.1 %	22.9 %
Duration: 7 - 10 years	20.4 %	14.9 %	9.8 %	14.3 %
Duration: more than 10 years	25.7 %	7.9 %	11.5 %	16 %
Previous labour market situation				
Previous spell(s) as self-employed	15.6 %	12.5 %	11.5 %	9.7 %
Previous spell(s) as paid-employed	28.9 %	32.5 %	18.9 %	16 %
Previous spell(s) as unemployed	38.5 %	49.7 %	65 %	45 %
Previous spell(s) as inactive	12.1 %	11.2 %	12.2 %	22.1 %
Incomes				
Dwelling owner	75.1 %	64.9 %	66.4 %	75.6 %
Receiving capital and property incomes.	37.1 %	32.8 %	29 %	23.5 %
Average annual capital and property incomes	€846	€431	€302	€459
Average annual capital and property incomes (those who receive)	€2,282	€1,316	€1,040	€1,951
Average annual incomes as self-employed	€12,457	€7,919	€5,598	€5,865
Country				
Austria	3 %	2.1 %	0.7 %	2 %
Belgium	4.6 %	2.6 %	2.8 %	2.6 %
Denmark	2.2 %	3.4 %	0.7 %	2.3 %
Finland	5.8 %	5.3 %	7.3 %	3.4 %
France	3.6 %	2.4 %	3.1 %	2 %
Germany	7.6 %	10 %	6.6 %	4.9 %
Greece	15.9 %	13.8 %	21.7 %	23.2 %
Ireland	6.2 %	4.9 %	3.8 %	6 %
Italy	19.5 %	14.9 %	24.8 %	20.1 %
Luxembourg	*No observations*			
Netherlands	3.2 %	2.9 %	0.3 %	0.9 %
Portugal	11.2 %	16.9 %	3.8 %	11.7 %
Spain	17.1 %	20.9 %	24.1 %	20.9 %
Sweden	*No observations*			
United Kingdom	*No observations*			

Table B2. Descriptive statistics of the departure from self-employment (Complementary exercise)

Final destination	**Censored**	**Paid Employment**	**Unemployment**	**Inactive**
Number of spells	4159	586	264	326
Demographic characteristics				
Females	26.2 %	23.9 %	31.4 %	69.9 %
Born abroad	4.8 %	4.4 %	6.8 %	4.9 %
Average age	39.3 years	35 years	35.9 years	39.6 years
Age 21-30 years	19.7 %	36 %	36 %	23.3 %
Age 31-40 years	38.4 %	37.9 %	34.1 %	31.6 %
Age 41-50 years	27.6 %	18.8 %	21.6 %	24.2 %
Age 51-59 years	14.3 %	7.3 %	8.3 %	20.9 %
No education / Very basic education	42.8 %	48.1 %	50.4 %	51.5 %
Primary schooling / Secondary schooling	35.1 %	31.6 %	34.8 %	35.9 %
University studies	22.2 %	20.3 %	14.8 %	12.6 %
Relatives with university studies	22.7 %	19.3 %	17 %	17.8 %
Cohabiting	78 %	70.6 %	64.8 %	83.7 %
Number of children under 14	0.73 child.	0.72 child.	0.69 child.	0.56 child.
Relative(s) working as self-employed	23.5 %	20.3 %	23.9 %	27.9 %
Firm's characteristics				
Construction sector	14.3 %	20 %	11.4 %	4.6 %
Industrial sector	13.9 %	14.2 %	15.5 %	11.3 %
Financial services	13.6 %	14 %	7.2 %	8.6 %
Wholesale, hotels, restaurants & transport	46 %	39.1 %	55.7 %	58.9 %
Other services	12.2 %	12.8 %	10.2 %	16.6 %
Own-account worker (0 employees)	43.2 %	52 %	53.8 %	57.1 %
Small firm (1-4 employees)	41.4 %	32.4 %	33.7 %	32.5 %
Medium firm (5-49 employees)	11.5 %	10.6 %	8.3 %	6.7 %
Large or very large firm (>49 employees)	3.9 %	4.9 %	4.2 %	3.7 %
Experience within self-employment				
Average hours of work per week	51.5 hours	49.1 hours	49 hours	48.5 hours
Average duration as self-employed (in years)	7.6 years	4.5 years	4.4 years	5.5 years
Duration: 1 year	9.3 %	19.6 %	25.8 %	18.4 %
Duration: 2 or 3 years	18.3 %	32.4 %	35.2 %	26.7 %
Duration: 4 - 6 years	21.7 %	23.2 %	16.3 %	22.7%
Duration: 7 - 10 years	21.1 %	16.2 %	10.2 %	15 %
Duration: more than 10 years	29.6 %	8.5 %	12.5 %	17.2 %
Previous labour market situation				
Previous spell(s) as self-employed	12.3 %	10.9 %	10.6 %	8.9 %
Previous spell(s) as paid-employed	24 %	32.3 %	17.4 %	14.7 %
Previous spell(s) as unemployed	36.4 %	53.4 %	65.5 %	45.4 %
Previous spell(s) as inactive	9 %	11.4 %	12.5 %	22.1 %
Incomes				
Inherit, gift or lottery winnings	2.3 %	1.4 %	3 %	1.2 %
Dwelling owner	78.7 %	68.3 %	69.3 %	77.3 %
Receiving capital and property incomes.	35 %	30 %	26.1 %	22.1 %
Average annual capital and property incomes	€779	€355	€291	€479
Average annual capital and property incomes (those who receive)	€2,224	€1,184	€1,115	€2,170
Average annual incomes as self-employed	€12,122	€6,648	€4,887	€5,382
Country				
Austria	3.4 %	2.2 %	0.8 %	2.1 %
Belgium	5.3 %	3.1 %	3 %	2.8 %
Denmark	2.4 %	3.9 %	0.8 %	2.5 %
Finland	6.7 %	6.1 %	8 %	3.7 %
France	4.3 %	2.6 %	3.4 %	1.8 %
Germany	*No observations*			
Greece	19 %	15.7 %	23.5 %	24.8 %
Ireland	6.3 %	5.6 %	4.2 %	6.4 %
Italy	21.4 %	17.1 %	26.1 %	21.2 %
Luxembourg	*No observations*			
Netherlands	*No observations*			
Portugal	13.6 %	19.5 %	4.2 %	12.3 %
Spain	17.6 %	24.2 %	26.1 %	22.4 %
Sweden	*No observations*			
United Kingdom	*No observations*			

Fig. B1. Schematic Representation of the Data



Chapter 9. Employers vs. Own-account Workers: Success and Failure[1]

9.1 Introduction

Own-account self-employment covers a diverse range of occupational realities, from carpenters, plumbers, electricians, artisans, farmers, to liberal professions (i.e. consultants, lawyers, engineers, architects, accountants, pharmacists…). Together with this wide range of activities, there is also a wide range of motivations behind these occupational choices. Thus, some self-employed individuals choose to pursue this kind of work environment –they are pulled into it[2]-, while others opt for self-employment as the only realistic job choice open to them –they are pushed into self-employment[3]-.

In this sense, the existence of public schemes encouraging people to become self-employed, as an employment opportunity for the long-term unemployed, might interfere with the job generation processes and economic growth. Thus, the vast majority of unemployed persons participating on schemes do not have the necessary abilities to run a business on their own. Furthermore, leaving aside the possible adverse selection problems created, the degree of effectiveness of this policy, in terms of persistency of its effects becomes a key question (i.e. to established whether the own-account self-employed switch to paid-employment when labour market conditions are good). Therefore, by analyzing the determinants of own-account self-employment survival –compared with those affecting employers' survival-, this work can provide some guidelines for improving public policies and programs supporting this kind of self-employment.

On the other hand, factors such as structural change, outsourcing, or even the new opportunities opened up as a consequence of privatization of parts of the public services should affect the decision of expanding the labour force. However, the business cycle and the incomes obtained as self-employed are, undoubtedly, two main causes behind businesses' surviving and growing. Therefore, to face up these demand shocks, an own-account self-employed would decide to hire employees if and only if he considers this shock to be permanent, or if there are not important sunk costs –dismissal costs- associated to this decision.

Therefore, by means of single and competing risk frameworks and by considering the exit to employer as one successful hazard for own-account workers, this work serves as an evaluation strategy to assess the impact of previous unemployment experience, and the importance of la-

[1] This chapter benefited from a research stay at the *Max-Planck-Institut für Ökonomik* in Jena in 2005 for which I am indebted. I wish to thank Javier Álvarez, Juan A. Máñez, María E. Rochina, Juan A. Sanchis and André van Stel for their help, encouragement and friendship. Errors remaining are my own.

[2] "Pull" factors are stronger when the business cycle is expanding. The prospects for business are better and people may be drawn into self-employment, knowing that if the venture fails another job offer will not be far away.

[3] In accordance with the push-pull hypothesis an unemployed may be pushed into self-employment because of the lack of opportunities in getting a job as a paid worker.

bour market institutions and regulations on the emergence of new job creators. Furthermore, by considering own-account workers and employers as two related, but distinct groups, this analysis seeks to improve our understanding of self-employed survival attitudes. Finally, this work also allows us to analyze the effect that business cycles have on employers' survival.[4] Therefore, these results might be considered as new element in the debate about self-employment potential contributions to employment and economic growth.

This work therefore uses micro data drawn from the European Community Household Panel data (ECHP, 1994-2001) for the EU-15. Thus, this chapter estimates some logistic discrete hazard models, including some single and competing risk duration models in order to separately analyze own-account workers and employers decisions to exit self-employment in Europe.

The organization of this chapter is as follows. Section 2 describes the data used in our analysis while Section 3 briefly describes the econometric framework. Section 4 contains the empirical results obtained and, finally, the last section presents the main conclusions and suggests some policy rules. Tables and figures are at the end of the chapter.

9.2 Data

The data for this analysis is from the European Community Household Panel survey (ECHP).[5] The ECHP is a cross-national, longitudinal survey of the populations of 15 European nations, begun in 1994 and finished in 2001. The intention of the survey is to have a longitudinal data set with a common set of questions asked in all of the countries. Using this data, duration variables are constructed for each spell as own-account worker or employer among the population working out of the agricultural sector[6] and aged between 21 to 59 years old in order to avoid undesirable effects from youngest and oldest people.

The duration variables are constructed as follows.The individuals in our dataset were asked whether or not their main activity is self-employment –flow sampling-, and how many years they have been in their current status –stock sampling-. Moreover, own-account workers are distinguished from employers by the "number of regular paid employees in the local unit in current job". Thus, those self-employed with 0 employees are considered as own-account workers and employers otherwise. This information is used to construct durations for up to 15 years for individuals entering own-account work, or becoming employer at the time of interview (the *observation window* 1994-2001) or before 1994. However, all individuals who are not full-time workers, that is, working under 30 hours per week[7] are excluded from our final sample.

[4] The existence of exit costs –dismissal costs- might result in the observation of a certain absence of business cycle effects on the probability of failure.

[5] ECHP data are used in accordance with the permission of European Commission-Eurostat; contract ECHP/2006/09, held with the *Universidad de Huelva*.

[6] Firstly, the "agricultural industries", defined to include agriculture, hunting, forestry and fishing, are structurally different from the rest of the economy, in that self-employment is the natural employment status in these industries. Moreover, the reported earnings of self-employed farmers are well known to be notoriously inaccurate.

[7] We decided not to include part-time workers within our estimations. This is due to the fact that those individuals doing both jobs (own-account work or employer, and paid-employment) at the same time might face short-term problems in one of the two activities, and look for complementary incomes just for a particular period of time. That would make the determinants of the duration of those individuals simultaneously doing both jobs different from the determinants of those who opt for a single activity. We believe, therefore, part-time workers need to be independently analyzed.

The data set includes many other personal, family, and job-related variables that are included as control variables in the hazard analyses.[8] The fact that a relatively long period of data is available also allows us to study the influence of changes in the business cycle. Furthermore, our analysis is conducted for a merged data set of countries, but not all of the countries covered by the ECHP are used in the analysis.[9]

Regarding wealth variables, incomes are corrected by Purchasing Power Parity (comparability across countries) and Harmonised Consumer Price Index (comparability across time). Finally, as national unemployment rates are tested as determining factors of the survival within self-employment, we need to use standardised unemployment rates for Europe to avoid comparability problems. Thus, after filtering, the final sample used for the analysis of duration as employer has 12,689 observations where 4,797 different individuals be identified. On the other hand, the analysis of duration as own-account worker accounts for 10,447 observations where we observe 4,125 different individuals.[10]

Tables B1-B4 (see Appendix B) summarize the mean values of all spells as own-account worker or employer, distinguishing by all different destination states: survivors (censored) and exiters to employer (just for own-account workers), own-account worker (just for employers), paid employment, unemployment or inactivity.

9.3 Empirical framework[11]

As the duration variables are measured in discrete time intervals (years), discrete time models are specified. In addition, we assumed that the cumulative distribution of all exit decisions over time is logistic. Thus, single and competing risk frameworks are included in order to study the underlying determinants of survival.

[8] Variable definitions are presented in Appendix B.

[9] We have to exclude France, Luxembourg, Sweden and UK for different reasons. Firstly, during the period 1997-2001 we cannot distinguish own-account workers from employers in France due to the high number of missing values we observe in the variable which allows making such distinction –number of regular paid employees in the local unit in current job-. Regarding Sweden and Luxembourg, the information related to first waves is not collected, and present missing values in relevant variables to construct durations within other waves. With respect to the UK, the ECPH offers two alternative surveys to obtain the information: (i) the proper ECPH –just conducted during waves 1-3 for the UK- and (ii) the BHPS. However, this second option does not make any distinction between those unemployed individuals and those out of labour force. Therefore, our competing risk framework cannot be performed by including this country and, consequently, to improve the comparability we decided to exclude it from the single risk one. Tables A2-A3 and A8-A9 present the distribution of observations across countries for our main exercises.

[10] We refer here to the main exercises performed. However, we also estimate complementary ones where we control for individuals having born abroad and for those receiving inherit, gift or lottery winnings. However, the inclusion of these variables implies to exclude Germany and The Netherlands from this complementary analysis. Tables A5-A6 and A11-A12 present the distribution of observations across countries for these exercises.

[11] This section draws particularly on the "Stephen P. Jenkins' Lecture Notes" corresponding to the *Survival Analysis* course by Stephen P. Jenkins, given at the University of Essex Summer School among other universities and institutions. Empirical framework on previous chapter provides a deeper analysis.

9.3.1 Single Risk Model

Let *T* be the number of years the individual is own-account worker –or employer-. The distribution of this variable can be characterized by means of the following hazard function or exit rate:

$$h_{ij} = \Pr\left(T_i = j \,|\, T_i \geq j\right),$$

where h_{ij} is the probability of being own-account worker –or employer-, for exactly *j* years relative to the group of individuals who have been own-account worker –or employer- for at least *j* years.

Self-employment durations are assumed to be conditional on a set of ob-served individual characteristics and economic variables x_{ij}, that are strictly exogenous, such that, age, gender, education, labour characteristics, industry and region, among others. The parametric model considered is a logistic hazard of the form:

$$h_{ij} = \Pr\left(T_i = j \,|\, T_i \geq j, x_{ij}, u_i\right) = F\left(\gamma_j + \beta' x_{ij} + u_i\right)$$

where we opt for a log *j* polynomial as the functional form of γ_j that captures additive duration dependence, x_{ij} is a vector of conditioning variables, that are strictly exogenous (time-varying covariates), and u_i is a disturbance term that includes the time-invariant unobserved heterogeneity (the person-specific effect). Finally, *F* denotes the logistic cumulative distribution.

Given that these duration models are estimated on data where individuals are observed as own-account workers or employers between 1994 and 2001, each *i's* spell can be either complete $\left(c_i = 1\right)$, when individuals have completed their spells before the j^{th} period (2001), that is, we observe the exact duration, or censored $\left(c_i = 0\right)$, when individuals still in self-employment at the time the survey stop (2001).

Consequently, we have to condition the fact that the person survived sufficiently long in the state to be sampled in the stock. In particular, our exercises handle the "selection bias" by estimating the probability of remaining as own-account worker –or employer- between the start of their spells and their exit, *conditional on not having left self-employment before 1994* (the condition which made them eligible for selection in the sample).

Hence, with left-truncated data, the likelihood contribution is:

$$L_i = \left(\frac{h_{ij}}{1-h_{ij}}\right)^{c_i} \prod_{k=1994}^{j} \left(1-h_{ik}\right)$$

where $y_{ik} = 1$ if person *i* ends present spell as own-account worker –or employer- in year *k*, and $y_{ik} = 0$ otherwise.

9.3.2 Competing Risk Model

We next consider the case where there are competing risks. Thus, own-account workers may end in paid work, unemployment, inactivity, but also incorporating new employees to their business, i.e. they become employers. On the other hand, employers may become paid-employees, switch to unemployment or inactivity, or just reduce the number of employees to zero, i.e. they may become own-account workers.

For illustration, we will suppose that there are two destination states (*A*, *B*), but the arguments generalise to any number of destinations. Thus, considering the existence of two destinations (*A*, *B*) with independence of destination hazard risks $\left(h_{ij}^{A}\,;\,h_{ij}^{B}\right)$, the important implication is that we end up estimating standard single risks models for each single risk. In this case, the discrete hazard rate for exit at time *j* to any destination is the sum of the destination-specific discrete hazard rates. That is,

$$h_{ij} = h_{ij}^{A} + h_{ij}^{B}$$

Now, each of the likelihood expressions for interval-censored data considered earlier $\left(L_i^A, L_i^B\right)$ is of the form

$$L_i^r = \frac{h_{ij}^r}{1-h_{ij}} \prod_{k=1}^{j} \left(1-h_{ik}\right) = \frac{h_{ij}^r}{1-h_{ij}^A-h_{ij}^B} S_i(j) \quad with \;\; r = A, B$$

so the likelihood expression for the left truncation case is simply

$$L_i^r = \frac{\dfrac{h_{ij}^r}{1-h_{ij}^A-h_{ij}^B} S_i(j)}{S_i(1994)} = \frac{h_{ij}^r}{1-h_{ij}^A-h_{ij}^B} \times \prod_{k=1994}^{j} \left(1-h_{ik}\right) \quad with \;\; r = A, B$$

9.4 Results

Tables A1 and A4 present the results of the maximum likelihood estimation of the probabilities of exiting from the employer state. Columns 1 within both tables concern the single risk of stop being employer, whereas columns 2 through 4 refer to the competing risks framework, by analysing the risks of switching to own-account work, wage employment, unemployment or inactivity. On the other hand, Tables A7 and A10 present the results concerning the hazard rate of own-account work. Columns 1 within both tables refer the single risk of stop being own-account worker, whereas columns 2 through 4 refer to the risks of switching to employer, wage employment, unemployment or inactivity.[12] Remember that a coefficient greater (less) than zero implies a positive (negative) impact on the hazard rate or a negative (positive) impact on survival. Finally, we should stress that all risks that employers face are interpreted as failures, while the same does not apply for own-account workers –i.e. those own-account workers who switch to employers are considered successful entrepreneurs-. Therefore, the observed differ-

[12] We approximate the distribution of the unobserved heterogeneity as a random normal distribution. In this sense, our likelihood ratio test of the null hypothesis of zero variance (i.e. the parameter related to heterogeneity is zero) clearly does reject the null hypothesis of no unobservable heterogeneity.

ences within the single risk framework have to be cautiously interpreted, and it is preferable to analyze those obtained under the competing risk framework.

We first note that the shapes of the hazard rates of duration as employer and own-account worker present a negative effect on the exit rates, that is, the hazards decrease with duration.[13] Thus, when focusing on the competing risk frameworks, we observe how the probability of switching from employer to own-account worker is markedly higher than the probability of moving from employer to other destination states as paid-employment, unemployment or inactivity.[14] Similarly, the probability of switching from own-account worker to employer is also higher than the probabilities of transition from own-account work to paid-employment, unemployment and inactivity.[15] Interestingly, the lower risks for both kinds of self-employment are exits to unemployment or out of labour force.

Turning our attention to the effect of individual characteristics and family background, our principal findings can be summarized as follows. Females are more likely to switch to inactivity, whatever starting status –employers or own-account workers- while males present marginally higher probabilities of switching from own-account workers to paid-employees.[16] Consequently, when analysing different exit routes, no evidence is found of different performance as entrepreneurs explained by gender, apart for those caused by family circumstances.[17] Nationality is observed not to have a statistically significant effect on self-employment duration either as employer or as own-account worker.[18] With regards the non-linear impact of age on exits, our analysis also confirms how those exits from own-account work which are related with failures – paid-employment, unemployment and out of labour force- are more likely when the individual is young. However, exits from employer status are just adversely explained by age when the route out is inactivity. Finally, the effect of intergenerational transfers of entrepreneurial human capital and ability (proxied through the existence of relatives working as employers or own-account workers) reduces the exits from employer to own-account worker or paid-employee, and makes the transitions from own-account work to employer more likely.

One of the most interesting results relates to educational attainment. Thus, we find that high qualifications have positive and statistically significant effects on survival rates of employers while is insignificant to survival of own-account workers.[19] In this sense, the fact that own-account workers are a diverse group formed by both low-skilled occupations and liberal professions with high qualifications might be causing two effects working together but in opposite directions, which is coherent with this zero effect observed. On the other hand, we also expect more schooling to improve i) detection and capture of better profitable opportunities in the market[20]; ii) reduction of the inefficiencies of the firm[21]; iii) innovations[22] and iv) attempts to predict the future, bearing the uncertainty of market dynamics.[23] Consequently, understanding employers as those self-employed whose entrepreneurial activity is closer to the fulfilment of these functions, it also makes sense that those employers with higher qualifications are more likely to

[13] See Figures 1 and 3 (Appendix A).
[14] See Figure 2 (Appendix A).
[15] See Figure 4 (Appendix A).
[16] See Figures 5-14 (Appendix A).
[17] Young married women are seen to make up the riskier group of this kind of transitions.
[18] See Figures 15-24 (Appendix A).
[19] See Figures 25-34 (Appendix A).
[20] See Kirzner (1973, 1979, 1985).
[21] See Leibenstein (1969, 1979).
[22] See Schumpeter (1912, 1947, 1950).
[23] See Knight (1921).

succeed within self-employment. Finally, also regarding the existent relationship between entrepreneurship and education, we also observe how the presence of relatives with university studies is insignificant to survival, which we interpret as a sign of absence of intergenerational transfers of entrepreneurial human capital through formal education.

As far as work characteristics are concerned, the number of working hours is interpreted as a *proxy* of the existing demand each business face, as pointed out during previous chapter. Thus, our separated analysis for employers and own-account workers supports this hypothesis. In this line, we observe how this variable increases the survival chances for employers, whatever hazard considered. Consistently, this variable does not just increase the survival chances to paid-employment, unemployment or inactivity of own-account workers, but also increases the probability of becoming employer.[24]

Concerning industrial affiliation, we do not observe any significant effect in regards to employers' survival rates. On the other hand, our results indicate how own-account workers are more likely to become employers within construction and industrial activities than in wholesale, hotels, restaurants, transport or other services. When the final destination is paid-employment, however, own-account self-employed present better survival chances when the individual works in construction projects compared with those working for industry or other services.

Differences in exit rates also emerge by organizational size. Own-account workers are observed to show smaller rates of exits to paid-employment than their employer counterparts.[25] On the other hand, those employers employing fewer people are much more likely to switch to own-account work.[26] Thus, they are more exposed than larger ones to difficulties in raising capital, meeting government regulations, and competing for labour with larger organizations that pay more and offer greater benefits (see Aldrich and Auster, 1986). However, although the effect is much smaller, those small employers are seen to be less likely to exit to paid-employment or unemployment than larger employers.[27]

Turning to the effects of variables describing the wealth of the individual[28], home ownership is seen not to affect employers' survival chances while it reduces own-account workers' risk of exiting to paid-employment or unemployment, and significantly increases the transitions from self-employed without employees to employer. Similarly, we do not find any effect of capital and property earnings over employers' survival rates[29] but reduces the hazard of inactivity of own-account workers while increases their chances of hiring paid-employees.[30] Finally, the stronger effect observed concerning wealth is related to self-employment incomes. Thus, a posi-

[24] As can be observed in Table A7, exits from own-account work to employer are not significantly affected by the number of working hours. However, we believe that the positive effect of this variable associated to these exits while the effect over other exits is negative (positive on survival) is remarkable.

[25] See Figures 2 and 4 (Appendix A).

[26] See Figure 86 (Appendix A).

[27] See Figures 87 and 88 (Appendix A).

[28] As described in the previous chapter, we control for initial wealth, measured by means of the *proxy* "being a home ownership". Furthermore, a dummy accounting is used for the presence (or absence) or capital and property earnings, and other wealth variables, such as self-employment incomes, which we interpret as a *proxy* of the existing demand each business face. However, these last two variables are lagged one year due to the obvious endogeneity problem of the changes in incomes related to business failures. Finally, we also control for the complementary specification for households where anyone inherits any property capital, or receive a gift or lottery winnings, worth €2000 or more. These results are available in Tables A4 and A10.

[29] See Figures 100-104 (Appendix A).

[30] See Figures 106 and 109 (Appendix A).

tive effect of self-employment incomes over the probability of survival of employers is observed, particularly for exits to own-account work.[31] As is logical, an opposite effect is observed when the exits occur from own-account work to employer.[32] To conclude, we also find how these incomes reduce the exits from own-account self-employment to unemployment.[33]

One of the most interesting results refers to the role of previous labour status which seems to have an important effect on survival. Previous spells as employer before current employer spell are observed to have a strong positive effect on survival whatever hazard considered, and this experience also explain exits from own-account self-employment to employer.[34] However, previous spells as own-account worker merely reduce the exits from own-account work to unemployment while they do not affect employer's survival rates.[35] In regard to previous paid-employment, these spells do not affect duration as employer, but turned out to be relevant to the length of spells as own-account work workers. In this sense, exits to employer or paid-employment are positively affected by this experience, while exits to unemployment or paid-employment are reduced.[36] The role of previous unemployment over survival should also be emphasized. Thus, our results indicate how previous unemployment has no-effect over transitions from own-account worker to employer and inactive while it significantly decreases other exits from self-employment without employees and all exits from the status of employer.[37] Finally, previous inactivity reinforces exits from employer to inactivity, but does not show any other effect.[38]

All hazards for employers except own-account work are also noted to be positively and significantly related to the unemployment rate. Furthermore, we also obtain a positive relation between exits from self-employment without employees to paid-employment or unemployment and recession situations. In this sense, our results seem to support the "prosperity pull" hypothesis for both employers and own-account workers.[39]

To conclude, all hazards are significantly linked to the presence of country specific effects. This fact might be interpreted as a sign of the presence of specific regional factors –institutional, cultural, etc- affecting the probability of remaining within self-employment. Therefore, as we cannot interpret these dummies, further research –and debate- is needed in order to discover the underlying determinants of survival across countries which would probably result in practical recommendations and economic policy corollaries.[40]

9.5 Conclusions

This chapter has analyzed the role of different factors on self-employment survival in Europe, from a new perspective: opposing the determinants of survival in each type of self-employment. Therefore, this chapter separately evaluates success as employer and own-account worker which

[31] See Figures 110-114 (Appendix A).
[32] See Figure 116 (Appendix A).
[33] See Figure 118 (Appendix A).
[34] See Figures 35-44 (Appendix A).
[35] See Figures 45-54 (Appendix A).
[36] See Figures 55-64 (Appendix A).
[37] See Figures 65-74 (Appendix A).
[38] See Figures 75-84 (Appendix A).
[39] See Figures 95-99 (Appendix A).
[40] See Figures 120-129 (Appendix A).

also allows the exit from own-account worker to employer, that is, one successful hazard for own-account workers, to be considered.

In coherence with previous studies devoted to self-employment survival, the hazard rates for employers and own-account self-employed also separately decrease with duration. The second finding worth mentioning alludes to movements within self-employment. The probability of exit from own-account worker to employer –sign of success- is higher than the probability of switching to other states and, as expected, it is positively correlated with the results of the entrepreneurial activity –earnings-. On the other hand, when an employer must face an adjustment, he opts for switching to own-account with higher probabilities. Therefore, the prediction on the possible negative effects of the labour market regulation on transitions from own-account work to employer and on the adjustment costs, in the case of exit from employers, does not seem to have a significant effect.

Thirdly, and with regard to business cycle effects, the probability of survival increases when economic conditions are better, irrespective of the kind of self-employment analyzed –employers or own-account workers-. In this sense, there is an absence of exits from own-account work to paid-employment when paid-employment offers arrive. Thus, this result seems to reject the existing controversy on character, permanent or transitory, of certain incentives for promoting entry into self-employment. However, our results also confirm that the probability of failure increases with the presence of a previous spell of unemployment prior to the current self-employment spell. The underlying explanation should be related to an absence of the necessary entrepreneurial human capital within this group, and the adverse selection problem which emerges by promoting transitions from unemployment to self-employment without previous investment in human capital.

In relation to this last conclusion, we also observe how formal education presents a statistically significant effect on the probability of survival as employer but not as own-account worker. Furthermore, all informal acquisition processes of this capital (i.e. previous experience in the labour market or intergenerational transfers) present stronger effects on survival of employers, and the exit from own-account worker to employer. This result addresses the importance of the entrepreneurial human capital endowment for capturing more and better profit opportunities, and for ensuring higher levels of efficiency.

In short, the success or failure of any self-employment initiative is the result of many factors, some of which present a stronger impact than others. Thus, this work shows how some factors are linked to the essential aspects of any business, such as the income generated or the skills and talent with which each individual is endowed –and may affect employers and own-account workers to a different degree-. Furthermore, these effects coexist with broader external circumstances that also affect businesses such as the state of the economy and regulation. Consequently, all these results allow us to improve our understanding of the factors contributing to the success or failure of entrepreneurial ventures. However, this research also generates the need for a future research agenda, both to support –or reject- all this new evidence obtained, and again to study in greater depth the factors behind the detected country-specific idiosyncratic factors.

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Appendix A: Graphs and Results

Table A1. Departure from work as employer *conditional on not having left self-employment before 1994* (Main exercise)

	Single risk model -Binomial-		Competing risk model -Multinomial-							
Destination states	**END OF PRESENT SPELL AS EMPLOYER**		**OWN-ACCOUNT WORK**		**PAID EMPLOYMENT**		**UNEMPLOYMENT**		**INACTIVE**	
Number of observations	12689		12689							
Number of individuals	4797		4797							
Number of spells	5237		5237							
Number of censored spells	3504		3504							
Number of completed spells	1733		1120		325		135		153	
Variables	**Coef.**	**t-stat.**	**Coef.**	**t-stat.**	**Coef.**	**t-stat.**	**Coef.**	**t-stat.**	**Coef.**	**t-stat.**
Constant	0.1399	1.79*	-0.3429	-0.4	0.0164	0.01	-2.3158	-1.09	1.2864	0.72
Demographic characteristics										
Male	-0.2816	-3.51	-0.1273	-1.42	0.1617	1.03	-0.3002	-1.4	-1.4543	-7.3***
Age	-0.0309	-0.99	0.0047	0.14	-0.0421	-0.78	-0.0136	-0.18	-0.1935	-2.7***
Age (squared)	3.8E-04	0.96	-5.1E-05	-0.12	2.4E-04	0.35	1.8E-04	0.18	0.0026	2.92***
Cohabiting (1)	-0.0396	-0.45	-0.074	-0.77	-0.1319	-0.84	-0.1973	-0.85	0.7612	3.02***
Number of children under 14	-0.0273	-0.69	-0.02	-0.49	-0.0229	-0.31	0.0214	0.19	-0.22	-1.85*
Relat. work as employer(s)	-0.3381	-3.83***	-0.2914	-2.99***	-0.4481	-2.5**	-0.3598	-1.47	-0.2755	-1.31
Relat. work as ow-acc. worker(s)	-0.304	-2.12**	-0.3264	-2.1**	-0.4011	-1.38	-0.4571	-1.03	0.0339	0.11
Education										
Secondary education (2)	-0.1617	-2.05**	-0.1106	-1.36	-0.1477	-1.03	-0.3147	-1.48	-0.1136	-0.57
University studies (2)	-0.374	-3.62***	-0.2242	-2.15**	-0.3474	-1.7*	-0.7963	-2.51**	-0.6849	-2.18**
Relatives with university studies	-0.0924	-1.07	-0.0907	-1.04	-0.0353	-0.22	0.0917	0.34	-0.3408	-1.31
Characteristics of work										
Hours of work	-0.0531	-3.58***	-0.0381	-2.32**	-0.0481	-1.68*	-0.1114	-3.1***	-0.0839	-2.55**
Hours of work (squared)	3.6E-04	2.81***	2.5E-04	1.74*	0.0003	1.21	8.1E-04	2.46**	6.4E-04	2.3**
Industry dummies										
Industrial sector (3)	0.0019	0.02	-0.0625	-0.5	0.1926	0.99	0.0842	0.25	0.1784	0.43
Financial services (3)	0.1129	0.9	0.1775	1.31	0.0614	0.27	-0.4607	-1.06	0.3821	0.93
Wholesale, hot., rest. & transp. (3)	0.039	0.39	0.0308	0.29	-0.081	-0.46	0.3688	1.24	0.3233	0.87
Other services (3)	0.0244	0.18	-0.0752	-0.52	0.2437	1.06	-0.3314	-0.8	0.4755	1.13
Firm's characteristics										
Small firm (1-4 employees) (4)	0.2887	3.74***	0.6791	7.58***	-0.3078	-2.4**	-0.3991	-2.07**	-0.2312	-1.15
Incomes										
Dwelling owner	-0.037	-0.49	0.0348	0.42	-0.2086	-1.59	-0.0583	-0.29	-0.1366	-0.65
Cap. & property incomes (1 lag)	0.0042	0.06	-0.0481	-0.63	0.0369	0.28	-0.0362	-0.17	0.336	1.65*
Incomes as self-employed (1 lag)	-1.3E-05	-4.67***	-8.1E-06	-2.58***	-1.6E-5	-2.5**	-2.9E-5	-2.16**	-4.2E-5	-3.6***
Observed previous experience										
Prev. spell(s) as employer	-0.8334	-6.46***	-0.5455	-3.95***	-0.8057	-3.2***	-0.6661	-1.87*	-0.7442	-2.02**
Prev. spell(s) as own-acc. worker	0.2117	1.56	0.2584	1.9*	0.2111	0.88	0.4263	1.31	-0.0946	-0.22
Prev. spell(s) as paid-employed	-0.1334	-1.66*	-0.0694	-0.79	0.0203	0.14	-0.3395	-1.47	-0.2093	-0.87
Prev. spell(s) as unemployed	0.3809	5.29***	0.2454	3.23***	0.2794	2.15**	1.0234	5.06***	0.3072	1.65*
Prev. spell(s) as inactive	-0.1076	-0.91	-0.2268	-1.64	-0.261	-1.3	-0.1359	-0.48	0.5939	2.28**
Business cycle										
Annual unemployment rate	0.0324	1.91*	0.0101	0.66	0.0763	2.2**	0.2097	3.17***	0.1055	2.04**
Duration										
Ln (Duration as Employer)	-0.3572	-7.71***	-0.2141	-4.24***	-0.6471	-7.6***	-0.6665	-4.67***	-0.3234	-2.44**
Country										
Austria (5)	-0.7374	-2.44**	-0.944	-3.1***	-0.1082	-0.17	1.7564	1.5	0.5089	0.55
Belgium (5	-0.6351	-2.91***	-0.8776	-3.95***	0.0949	0.22	1.4698	1.83*	0.4813	0.74
Denmark (5)	-1.3796	-4.07***	-2.2196	-4.79***	0.741	1.46	*No observations*		-0.5614	-0.52
Finland (5)	0.1342	0.75	0.0467	0.26	0.2629	0.66	1.424	2.3**	0.0628	0.1
France (5)	*No observations*		*No observations*		*No observations*		*No observations*		*No observations*	
Germany (5)	-0.1291	-0.68	-0.6209	-3.14***	0.743	2.1**	2.2018	2.99***	0.9637	1.67*
Greece (5)	0.0924	0.63	-0.1033	-0.7	0.0311	0.1	1.7428	3.19***	1.1509	2.66***
Ireland (5)	-0.4287	-2.23**	-0.5301	-2.96***	-0.0224	-0.06	-0.1006	-0.11	0.858	1.57
Italy (5)	-1.2016	-8.45***	-1.7108	-11.61***	-0.2509	-0.91	1.1128	2.12**	0.3202	0.75
Luxembourg (5)	*No observations*		*No observations*		*No observations*		*No observations*		*No observations*	
Netherlands (5)	0.4099	0.78	-0.6276	-0.9	2.1847	2.75***	*No observations*		2.2331	1.72*
Portugal (5)	-0.519	-2.39**	-0.8025	-3.73***	0.5941	1.36	1.2309	1.38	0.3261	0.47
Sweden (5)	*No observations*		*No observations*		*No observations*		*No observations*		*No observations*	
United Kingdom (5)	*No observations*		*No observations*		*No observations*		*No observations*		*No observations*	
Reference categories: (1) Non-cohabiting individuals, (2) No education or primary education, (3) Construction sector, (4) Medium or large firm (> 4 employees), (5) Spain										
Log likelihood	-4656.9		-6150.7							

Notes: (***) 1 % significativity level; (**) 5 % significativity level; (*) 10 % significativity level

Tables A2-A3. Number of observations and spells in the analysis of duration as employer across the European Union 15
(Main exercise)

	Single risk model –Binomial–		
	Total observations CONDITIONAL*	**Censored spells**	**Completed spells**
European Union 15	*12689*	*3504*	*1733*
Austria	415	125	36
Belgium	632	188	63
Denmark	302	88	18
Finland	449	174	93
France	*No observations*		
Germany	1140	332	151
Greece	2132	545	403
Ireland	787	236	102
Italy	3516	915	301
Luxembourg	*No observations*		
Netherlands	43	17	8
Portugal	1755	432	216
Spain	1518	452	342
Sweden	*No observations*		
United Kingdom	*No observations*		

* Conditional on not having left self-employment before 1994

	Competing risk model –Multinomial–					
	Total observations CONDITIONAL*	**Censored spells**	**Employer**	**Paid Employment**	**Unemployment**	**Inactive**
European Union 15	*12689*	*3504*	*1120*	*325*	*135*	*153*
Austria	415	125	25	6	2	3
Belgium	632	188	39	13	5	6
Denmark	302	88	6	11	*No obs.*	1
Finland	449	174	72	11	6	4
France	*No observations*					
Germany	1140	332	81	42	14	14
Greece	2132	545	302	39	28	34
Ireland	787	236	75	15	2	10
Italy	3516	915	128	76	50	47
Luxembourg	*No observations*					
Netherlands	43	17	3	4	*No obs.*	1
Portugal	1755	432	139	55	8	14
Spain	1518	452	250	53	20	19
Sweden	*No observations*					
United Kingdom	*No observations*					

* Conditional on not having left self-employment before 1994

Table A4. Departure from work as employer *conditional on not having left own-account work before 1994* (Complementary exercise)

	Single risk model -Binomial-		Competing risk model -Multinomial-							
Destination states	**END OF PRESENT SPELL AS EMPLOYER**		**OWN-ACCOUNT WORK**		**PAID EMPLOYMENT**		**UNEMPLOYMENT**		**INACTIVE**	
Number of observations	8549		8549							
Number of individuals	3297		3297							
Number of spells	3540		3540							
Number of censored spells	1982		1982							
Number of completed spells	1558		1025		275		120		138	
Variables	**Coef.**	**t-stat.**	**Coef.**	**t-stat.**	**Coef.**	**t-stat.**	**Coef.**	**t-stat.**	**Coef.**	**t-stat.**
Constant	4.8783	5.39***	2.4552	2.6***	3.1561	1.88*	1.5225	0.65	4.8507	2.39**
Demographic characteristics										
Male	-0.3458	-3.81***	-0.1447	-1.47	0.0905	0.54	-0.3208	-1.4	-1.58	-7.33***
Born abroad	-0.0886	-0.45	-0.0431	-0.21	-0.3639	-0.86	0.3544	0.74	-0.1645	-0.32
Age	-0.0431	-1.2	0.0034	0.09	-0.0607	-1.01	-0.042	-0.51	-0.2376	-2.95***
Age (squared)	5.6E-04	1.24	-2.8E-05	-0.06	5.6E-04	0.73	5.3E-04	0.5	0.0031	3.13***
Cohabiting (1)	-0.0615	-0.61	-0.0894	-0.83	-0.1723	-1.01	-0.3255	-1.23	0.8755	3.13***
Number of children under 14	-0.0342	-0.77	-0.0333	-0.75	-0.0124	-0.16	0.0458	0.36	-0.257	-2.06**
Relat. work as employer(s)	-0.38	-3.91***	-0.2891	-2.85***	-0.5429	-2.82***	-0.5068	-2.01**	-0.3133	-1.46
Relat. work as ow-acc. worker(s)	-0.3495	-2.23**	-0.3714	-2.22**	-0.3865	-1.31	-0.6877	-1.44	-0.0127	-0.04
Education										
Secondary education (2)	-0.2067	-2.34**	-0.1299	-1.49	-0.2705	-1.69*	-0.3725	-1.63	-0.1642	-0.74
University studies (2)	-0.3815	-3.21***	-0.2479	-2.14**	-0.2363	-1.03	-1.023	-2.74***	-0.7323	-2.06**
Relatives with university studies	-0.1148	-1.16	-0.0968	-1.01	-0.1453	-0.77	0.099	0.32	-0.3211	-1.11
Characteristics of work										
Hours of work	-0.0765	-4.58***	-0.06	-3.4***	-0.0664	-2.13**	-0.1301	-3.43***	-0.1119	-3.04***
Hours of work (squared)	5.3E-04	3.73***	4.1E-04	2.72***	4.4E-04	1.62	9.4E-04	2.76***	8.6E-04	2.77***
Industry dummies										
Industrial sector (3)	-0.0816	-0.63	-0.1161	-0.86	0.077	0.36	0.2188	0.62	0.2241	0.46
Financial services (3)	0.0367	0.25	0.0838	0.56	0.0318	0.13	-0.3367	-0.7	0.6057	1.27
Wholesale, hot., rest. & transp. (3)	0.0342	0.3	0.0302	0.26	-0.1175	-0.61	0.4178	1.28	0.5804	1.35
Other services (3)	0.1023	0.68	-0.0316	-0.2	0.2598	1.03	-0.026	-0.06	0.7557	1.54
Firm's characteristics										
Small firm (1-4 employees) (4)	0.3783	4.27	0.789	7.94***	-0.3362	-2.37**	-0.3658	-1.71*	-0.19	-0.87
Incomes										
Inherit, gift or lottery winnings	-0.0786	-0.34	0.0589	0.25	-0.5732	-1.14	0.254	0.4	-0.1799	-0.28
Dwelling owner	-0.0688	-0.79	0.0388	0.42	-0.2931	-2.03**	-0.1445	-0.66	-0.3007	-1.36
Cap. & property incomes (1 lag)	-0.09	-1.1	-0.1434	-1.67*	-0.0453	-0.29	-0.2055	-0.83	0.4038	1.83*
Incomes as self-employed (1 lag)	-1.5E-05	-4.79***	-8.2E-06	-2.38**	-3.1E-05	-3.69***	-4.1E-05	-2.72***	-4.7E-05	-3.43***
Observed previous experience										
Prev. spell(s) as employer	-0.6584	-4.06***	-0.4361	-2.5**	-0.4952	-1.76*	-0.538	-1.28	-0.6479	-1.44
Prev. spell(s) as own-acc. worker	0.4971	2.97***	0.4815	2.83***	0.3903	1.47	0.7466	2.08**	0.1968	0.44
Prev. spell(s) as paid-employed	0.1371	1.48	0.1757	1.81*	0.2687	1.75*	-0.2755	-1.09	-0.0617	-0.24
Prev. spell(s) as unemployed	0.4717	5.7***	0.2861	3.43***	0.3483	2.46**	1.0747	4.75***	0.4507	2.22**
Prev. spell(s) as inactive	0.309	2.13**	0.0753	0.46	0.0383	0.17	0.2055	0.68	0.9372	3.28***
Business cycle										
Annual unemployment rate	-0.1071	-5.22***	-0.1095	-5.98***	-0.0362	-0.89	0.0757	1.04	-0.0086	-0.14
Duration										
Ln (Duration as Employer)	-0.2569	-4.81***	-0.1364	-2.37**	-0.555	-6.05***	-0.5924	-3.93***	-0.2543	-1.71*
Country										
Austria (5)	-2.3789	-6.79***	-2.298	-6.69***	-1.5467	-2.16**	0.0292	0.02	-0.7036	-0.71
Belgium (5	-1.7697	-7.12***	-1.8281	-7.48***	-0.825	-1.83*	0.3126	0.38	-0.38	-0.57
Denmark (5)	-2.9607	-7.77***	-3.5411	-7.21***	-0.4431	-0.79	*No observations*		-1.8398	-1.67*
Finland (5)	-0.3369	-1.68*	-0.3647	-1.81*	-0.0018	0.01	0.9351	1.5	-0.3341	-0.54
France (5)	*No observations*		*No observations*		*No observations*		*No observations*		*No observations*	
Germany (5)	*No observations*		*No observations*		*No observations*		*No observations*		*No observations*	
Greece (5)	-0.7853	-4.53***	-0.855	-4.92***	-0.6627	-2.01**	0.8277	1.47	0.5592	1.22
Ireland (5)	-1.3136	-5.82***	-1.3058	-6.23***	-0.5944	-1.44	-0.9477	-0.96	0.2143	0.34
Italy (5)	-2.0648	-12.35***	-2.4215	-14.92***	-0.9053	-3.14***	0.1727	0.33	-0.2957	-0.69
Luxembourg (5)	*No observations*		*No observations*		*No observations*		*No observations*		*No observations*	
Netherlands (5)	*No observations*		*No observations*		*No observations*		*No observations*		*No observations*	
Portugal (5)	-2.2144	-8.43***	-2.2143	-8.77***	-0.8125	-1.64	-0.4944	-0.53	-0.966	-1.29
Sweden (5)	*No observations*		*No observations*		*No observations*		*No observations*		*No observations*	
United Kingdom (5)	*No observations*		*No observations*		*No observations*		*No observations*		*No observations*	
Reference categories: (1) Non-cohabiting individuals, (2) No education or primary education, (3) Construction sector, (4) Medium or large firm (> 4 employees), (5) Spain										
Log likelihood	-3639.9		-4932.6							

Notes: (***) 1 % significativity level; (**) 5 % significativity level; (*) 10 % significativity level

Tables A5-A6. Number of observations and spells in the analysis of duration as employer across the European Union 15 (Complementary exercise)

	Single risk model –Binomial–		
	Total observations CONDITIONAL*	**Censored spells**	**Completed spells**
European Union 15	*8549*	*1982*	*1558*
Austria	292	86	35
Belgium	460	129	61
Denmark	214	62	18
Finland	334	112	93
France	*No observations*		
Germany	*No observations*		
Greece	1606	330	396
Ireland	547	140	100
Italy	2621	569	298
Luxembourg	*No observations*		
Netherlands	*No observations*		
Portugal	1357	1357	215
Spain	1118	1118	342
Sweden	*No observations*		
United Kingdom	*No observations*		

* Conditional on not having left self-employment before 1994

	Competing risk model –Multinomial–					
	Total observations CONDITIONAL*	**Censored spells**	**Employer**	**Paid Employment**	**Unemployment**	**Inactive**
European Union 15	*8549*	*1982*	*1025*	*275*	*120*	*138*
Austria	292	86	25	5	2	3
Belgium	460	129	37	13	5	6
Denmark	214	62	6	11	*No obs.*	1
Finland	334	112	72	11	6	4
France	*No observations*					
Germany	*No observations*					
Greece	1606	330	296	38	28	34
Ireland	547	140	73	15	2	10
Italy	2621	569	127	75	49	47
Luxembourg	*No observations*					
Netherlands	*No observations*					
Portugal	1357	314	139	54	8	14
Spain	1118	240	250	53	20	19
Sweden	*No observations*					
United Kingdom	*No observations*					

* Conditional on not having left self-employment before 1994

Table A7. Departure from own-account work *conditional on not having left own-account work before 1994* (Main exercise)

	Single risk model -Binomial-		Competing risk model -Multinomial-							
Destination states	**END OF PRESENT OWN-ACCOUNT WORK SPELL**		**EMPLOYER**		**PAID EMPLOYMENT**		**UNEMPLOYMENT**		**INACTIVE**	
Number of observations	10447		10447							
Number of individuals	4125		4125							
Number of spells	4613		4613							
Number of censored spells	2582		2582							
Number of completed spells	2031		1361		339		142		189	
Variables	**Coef.**	**t-stat.**	**Coef.**	**t-stat.**	**Coef.**	**t-stat.**	**Coef.**	**t-stat.**	**Coef.**	**t-stat.**
Constant	-0.2725	-0.42	-2.8977	-3.87***	1.6579	1.35	-2.2836	-1.05	1.9282	1.2
Demographic characteristics										
Male	-0.046	-0.7	0.0928	1.23	0.2722	1.88*	0.3304	1.56	-1.5304	-8.26***
Age	-0.0483	-1.81*	0.014	0.45	-0.1657	-3.3***	-0.1322	-1.55	-0.1764	-2.66***
Age (squared)	4.5E-04	1.35	-3.8E-04	-0.97	0.0017	2.64***	0.0017	1.61	0.0025	3.07***
Cohabiting (1)	0.1864	2.47**	0.1748	2.02**	0.1628	1.01	-0.3386	-1.46	0.8209	3.46***
Number of children under 14	0.0164	0.49	0.0032	0.08	0.0646	0.94	0.0988	0.89	-0.0648	-0.68
Relat. work as employer(s)	0.0771	0.66	-0.0527	-0.37	0.058	0.24	0.2003	0.56	0.3785	1.51
Relat. work as ow-acc. worker(s)	0.1459	1.93*	0.2489	2.99***	0.0664	0.4	0.2246	0.89	-0.7736	-3.01***
Education										
Secondary education (2)	-0.0328	-0.47	-0.0038	-0.05	-0.0038	-0.03	-0.2108	-0.97	0.1031	0.51
University studies (2)	-0.0256	-0.29	0.0646	0.66	0.0119	0.07	-0.2417	-0.88	-0.4524	-1.4
Relatives with university studies	-0.0426	-0.58	-0.0518	-0.64	-0.0654	-0.43	-0.0775	-0.31	-0.0524	-0.24
Characteristics of work										
Hours of work	-0.0111	-0.88	0.0183	1.19	-0.0688	-2.64***	0.0111	0.25	-0.0792	-2.78***
Hours of work (squared)	7.1E-05	0.63	-1.5E-04	-1.11	5.2E-04	2.23**	-0.0002	-0.52	0.0006	2.41**
Industry dummies										
Industrial sector (3)	0.0605	0.57	0.1171	1.06	-0.403*	-1.78*	0.4925	1.32	0.5105	1.17
Financial services (3)	-0.0533	-0.48	-0.0127	-0.11	-0.0574	-0.28	-0.2666	-0.6	-0.0246	-0.05
Wholesale, hot., rest. & transp. (3)	-0.2523	-2.87***	-0.3557	-3.71***	-0.2637	-1.56	0.3297	1.07	0.4442	1.11
Other services (3)	-0.2491	-2.15**	-0.2236	-1.76*	-0.4391	-1.89*	-0.1112	-0.26	0.2715	0.62
Incomes										
Dwelling owner	0.0192	0.3	0.234	3.12***	-0.4537	-3.65***	-0.6336	-3.39***	0.1165	0.59
Cap. & property incomes (1 lag)	0.0241	0.39	0.1454	2.07**	-0.0955	-0.7	-0.0932	-0.46	-0.5969	-2.91***
Incomes as self-employed (1 lag)	3.8E-06	1.5	7.7E-06	2.75***	-8E-06	-1.15	-5.5E-05	-2.66***	-1.9E-05	-1.52
Observed previous experience										
Prev. spell(s) as employer	0.1673	1.37	0.3243	2.52**	0.0026	0.01	-0.433	-0.91	-0.3625	-0.78
Prev. spell(s) as own-acc. worker	-0.2245	-2.17**	-0.1032	-0.88	-0.0844	-0.4	-0.9185	-2.23**	-0.3649	-1.22
Prev. spell(s) as paid-employed	0.1107	1.49	0.2232	2.72***	0.3487	2.45**	-0.8402	-2.92***	-0.4681	-1.89*
Prev. spell(s) as unemployed	0.0999	1.67*	-0.0146	-0.22	0.2911	2.51**	0.6011	3.01***	0.1761	1.06
Prev. spell(s) as inactive	-0.0544	-0.55	-0.0703	-0.59	-0.193	-0.92	-0.4394	-1.42	0.059	0.27
Business cycle										
Annual unemployment rate	0.0392	2.82***	0.0106	0.78	0.0981	3.39***	0.1455	3.38***	0.041	1.1
Duration										
Ln (Own-acc. work duration)	-0.2619	-6.36***	-0.1319	-2.69***	-0.3553	-4.13***	-0.7124	-5.26***	-0.513	-4.75***
Country										
Austria (4)	0.4621	1.83*	0.4466	1.72*	0.9595	1.77*	*No observations*		-0.052	-0.07
Belgium (4)	0.2703	1.34	0.3234	1.57	0.1019	0.19	0.8357	1.26	-0.4682	-0.67
Denmark (4)	-0.0872	-0.32	-1.1572	-2.69***	1.3957	3.04***	0.7969	0.88	0.416	0.68
Finland (4)	0.6563	5.06***	0.7641	5.29***	0.7758	2.78***	1.122	2.9***	-0.5986	-1.35**
France (4)	*No observations*		*No observations*		*No observations*		*No observations*		*No observations*	
Germany (4)	0.3885	2.29**	0.323	1.71*	1.0378	3.05***	0.939	1.51	-0.8535	-1.21
Greece (4)	0.4997	4.25***	0.594	4.49***	0.2566	1.03	0.8388	2.19**	-0.0352	-0.11
Ireland (4)	0.3958	2.59**	0.4312	2.74***	0.4318	1.37	0.711	1.5	0.1441	0.36
Italy (4)	-0.007	-0.06	0.1288	0.98	-0.3845	-1.35	0.4797	1.24	-0.2662	-0.77
Luxembourg (4)	*No observations*		*No observations*		*No observations*		*No observations*		*No observations*	
Netherlands (4)	-0.9975	-3.35***	-3.0625	-4.15**	1.1509	2.42**	0.0275	0.02	-1.3138	-1.49
Portugal (4)	0.4689	2.66***	0.375	2.01**	1.2362	3.32***	-0.609	-0.76	0.0634	0.13
Sweden (4)	*No observations*		*No observations*		*No observations*		*No observations*		*No observations*	
United Kingdom (4)	*No observations*		*No observations*		*No observations*		*No observations*		*No observations*	
Reference categories: (1) Non-cohabiting individuals, (2) No education or primary education, (3) Construction sector, (4) Spain										
Log likelihood	-4879.6		-6601.3							

Notes: (***) 1 % significativity level; (**) 5 % significativity level; (*) 10 % significativity level

Tables A8-A9. Number of observations and spells in the analysis of duration as own-account worker across the European Union 15 (Main exercise)

	Single risk model –Binomial–		
	Total observations CONDITIONAL*	**Censored spells**	**Completed spells**
European Union 15	*10447*	*2582*	*2031*
Austria	244	64	47
Belgium	327	102	55
Denmark	218	50	28
Finland	641	175	168
France	*No observations*		
Germany	518	151	113
Greece	2413	479	523
Ireland	597	159	134
Italy	1434	314	234
Luxembourg	*No observations*		
Netherlands	367	169	21
Portugal	1283	283	256
Spain	2405	636	452
Sweden	*No observations*		
United Kingdom	*No observations*		

* Conditional on not having left self-employment before 1994

	Competing risk model –Multinomial–					
	Total observations CONDITIONAL*	**Censored spells**	**Employer**	**Paid Employment**	**Unemployment**	**Inactive**
European Union 15	*10447*	*2582*	*1361*	*339*	*142*	*189*
Austria	244	64	35	8	*No obs.*	4
Belgium	327	102	44	5	3	3
Denmark	218	50	7	12	2	7
Finland	641	175	120	25	15	8
France	*No observations*					
Germany	518	151	79	26	5	3
Greece	2413	479	387	55	34	47
Ireland	597	159	96	18	9	11
Italy	1434	314	165	25	21	23
Luxembourg	*No observations*					
Netherlands	367	169	2	16	1	2
Portugal	1283	283	166	60	3	27
Spain	2405	636	260	89	49	54
Sweden	*No observations*					
United Kingdom	*No observations*					

* Conditional on not having left self-employment before 1994

Table A10. Departure from own-account work *conditional on not having left own-account work before 1994* (Complementary exercise)

	Single risk model -Binomial-		Competing risk model -Multinomial-							
Destination states	**END OF PRESENT OWN-ACCOUNT WORK SPELL**		**EMPLOYER**		**PAID EMPLOYMENT**		**UNEMPLOYMENT**		**INACTIVE**	
Number of observations	7550		7550							
Number of individuals	2985		2985							
Number of spells	3271		3271							
Number of censored spells	1386		1386							
Number of completed spells	1885		1272		296		135		182	
Variables	**Coef.**	**t-stat.**	**Coef.**	**t-stat.**	**Coef.**	**t-stat.**	**Coef.**	**t-stat.**	**Coef.**	**t-stat.**
Constant	2.6367	3.61***	-0.0592	-0.07	4.7846	3.51***	0.5921	0.27	4.3478	2.6***
Demographic characteristics										
Male	-0.0494	-0.68	0.1197	1.47	0.2879	1.8*	0.3105	1.4	-1.6127	-8.24***
Born abroad	-0.0475	-0.32	-0.2115	-1.26	0.1053	0.38	0.3612	0.97	0.2737	0.72
Age	-0.0725	-2.47	-0.0139	-0.41	-0.1913	-3.48***	-0.1505	-1.74*	-0.1836	-2.64***
Age (squared)	7.4E-04	2.02**	3.8E-05	-0.09	0.002	2.8***	0.002	1.82*	0.0026	3.04***
Cohabiting (1)	0.1905	2.26**	0.1835	1.96**	0.1673	0.95	-0.3687	-1.5	0.8080	3.24***
Number of children under 14	-0.0154	-0.42	-0.0345	-0.83	0.0403	0.53	0.0827	0.71	-0.0668	-0.69
Relat. work as employer(s)	0.1517	1.19	0.0097	0.06	0.0434	0.16	0.2994	0.83	0.5231	2.08**
Relat. work as ow-acc. worker(s)	0.1356	1.67*	0.2259	2.57***	0.1038	0.59	0.1318	0.51	-0.709	-2.72***
Education										
Secondary education (2)	0.0089	0.12	0.04	0.5	-0.0175	-0.11	-0.2223	-0.99	0.1832	0.9
University studies (2)	0.001	0.01	0.0944	0.89	-0.0464	-0.23	-0.3231	-1.18	-0.3697	-1.12
Relatives with university studies	-0.0316	-0.39	-0.0373	-0.42	-0.0618	-0.37	-0.0403	-0.16	-0.1163	-0.52
Characteristics of work										
Hours of work	-0.0325	-2.3**	-0.0036	-0.22	-0.0946	-3.3***	-0.0276	-0.65	-0.0951	-3.26***
Hours of work (squared)	2.4E-04	1.95*	2.8E-05	0.2	7.2E-04	2.85***	1.2E-04	0.32	7.3E-04	2.84***
Industry dummies										
Industrial sector (3)	0.0722	0.62	0.1392	1.18	-0.4801	-1.99**	0.6541	1.7*	0.4772	1.09
Financial services (3)	0.0077	0.06	0.0719	0.54	0.0126	0.06	-0.1281	-0.28	-0.0695	-0.13
Wholesale, hot., rest. & transp. (3)	-0.3266	-3.38***	-0.389	-3.8***	-0.4194	-2.35	0.3571	1.11	0.2519	0.63
Other services (3)	-0.2636	-2.03**	-0.2138	-1.53	-0.4631	-1.78*	-0.058	-0.13	0.1394	0.32
Incomes										
Inherit, gift or lottery winnings	0.0712	0.35	0.2645	1.18	-0.6478	-1.25	0.5648	1.07	-1.3259	-1.44
Dwelling owner	0.0146	0.2	0.2244	2.67***	-0.4639	-3.32***	-0.6016	-3.01***	0.0943	0.45
Cap. & property incomes (1 lag)	-0.0786	-1.13	0.0058	0.08	-0.0521	-0.35	-0.1242	-0.58	-0.6171	-2.88***
Incomes as self-employed (1 lag)	4.9E-06	1.6	9.8E-06	2.64***	8.7E-06	-1.01	-6.4E-05	-2.98***	2.4E-05	-1.79*
Observed previous experience										
Prev. spell(s) as employer	0.5151	3.48***	0.6867	4.57***	0.363	1.31	-0.3449	-0.65	-0.1928	-0.37
Prev. spell(s) as own-acc. worker	-0.0809	-0.68	0.1394	1.07	-0.1893	-0.76	-1.0333	-2.28**	-0.2835	-0.88
Prev. spell(s) as paid-employed	0.36	4.17***	0.5077	5.5***	0.4745	2.94***	-0.7098	-2.28**	-0.3371	-1.27
Prev. spell(s) as unemployed	0.1877	2.81***	0.0663	0.91	0.4739	3.66***	0.554	2.66***	0.1757	1.01
Prev. spell(s) as inactive	0.1992	1.73*	0.201	1.5	-0.0445	-0.19	-0.2933	-0.9	0.2131	0.91
Business cycle										
Annual unemployment rate	-0.0672	-4.13***	-0.0961	-5.9***	-0.0058	-0.18	0.0744	1.53	-0.0471	-1.12
Duration										
Ln (Own-acc. work duration)	-0.1494	-3.18***	0.0137	0.25	-0.3163	-3.33***	-0.6844	-4.95***	-0.4618	-4.01***
Country										
Austria (4)	-0.8142	-2.88***	-0.7569	-2.66***	-0.2628	-0.45	*No observations*		-1.2825	-1.68*
Belgium (4)	-0.4098	-1.86*	-0.3522	-1.55	-0.4611	-0.82	0.2632	0.38	-1.0965	-1.52
Denmark (4)	-1.2919	-4.37***	-2.3754	-5.23***	0.3761	0.77	-0.1151	-0.12	-0.5507	-0.85
Finland (4)	0.2862	2.03**	0.4196	2.71***	0.4865	1.69*	0.7438	1.88*	-0.9146	-2.02**
France (4)	*No observations*		*No observations*		*No observations*		*No observations*		*No observations*	
Germany (4)	*No observations*		*No observations*		*No observations*		*No observations*		*No observations*	
Greece (4)	-0.1966	-1.46	-0.084	-0.56	-0.3305	-1.2	0.3261	0.77	-0.6272	-1.84*
Ireland (4)	-0.1911	-1.11	-0.177	-0.98	-0.0167	-0.05	0.3495	0.69	-0.2803	-0.65
Italy (4)	-0.6289	-4.64***	-0.4558	-3.18***	-0.96	-3.24***	-0.0449	-0.11	-0.8383	-2.39**
Luxembourg (4)	*No observations*		*No observations*		*No observations*		*No observations*		*No observations*	
Netherlands (4)	*No observations*		*No observations*		*No observations*		*No observations*		*No observations*	
Portugal (4)	-0.6787	-3.37***	-0.7357	-3.48***	0.202	0.5	-1.4581	-1.75*	-0.9712	-1.9*
Sweden (4)	*No observations*		*No observations*		*No observations*		*No observations*		*No observations*	
United Kingdom (4)	*No observations*		*No observations*		*No observations*		*No observations*		*No observations*	
Reference categories: (1) Non-cohabiting individuals, (2) No education or primary education, (3) Construction sector, (4) Spain										
Log likelihood	-4074.4		-5565.4							

Notes: (***) 1 % significativity level; (**) 5 % significativity level; (*) 10 % significativity level

Tables A11-A12. Number of observations and spells in the analysis of duration as own-account worker across the European Union 15 (Complementary exercise)

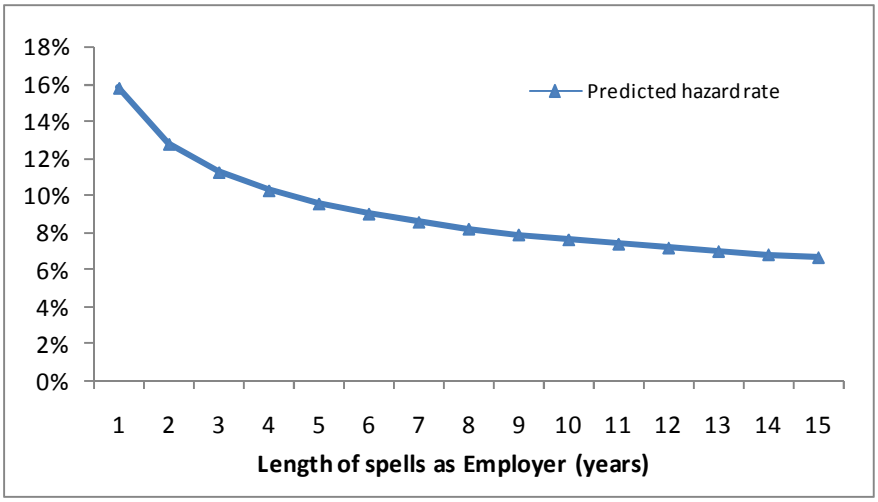
	Single risk model –Binomial–		
	Total observations CONDITIONAL*	**Censored spells**	**Completed spells**
European Union 15	*7550*	*1386*	*1885*
Austria	191	46	47
Belgium	241	56	55
Denmark	172	34	28
Finland	515	111	168
France	*No observations*		
Germany	*No observations*		
Greece	1974	310	520
Ireland	439	89	131
Italy	1134	177	231
Luxembourg	*No observations*		
Netherlands	*No observations*		
Portugal	1035	193	254
Spain	1849	370	451
Sweden	*No observations*		
United Kingdom	*No observations*		

* Conditional on not having left self-employment before 1994

	Competing risk model –Multinomial–					
	Total observations CONDITIONAL*	**Censored spells**	**Employer**	**Paid Employment**	**Unemployment**	**Inactive**
European Union 15	*7550*	*1386*	*1272*	*296*	*135*	*182*
Austria	191	46	35	8	*No obs.*	4
Belgium	241	56	44	5	3	3
Denmark	172	34	7	12	2	7
Finland	515	111	120	25	15	8
France	*No observations*					
Germany	*No observations*					
Greece	1974	310	385	54	34	47
Ireland	439	89	93	18	9	11
Italy	1134	177	164	25	20	22
Luxembourg	*No observations*					
Netherlands	*No observations*					
Portugal	1035	193	165	60	3	26
Spain	1849	370	259	89	49	54
Sweden	*No observations*					
United Kingdom	*No observations*					

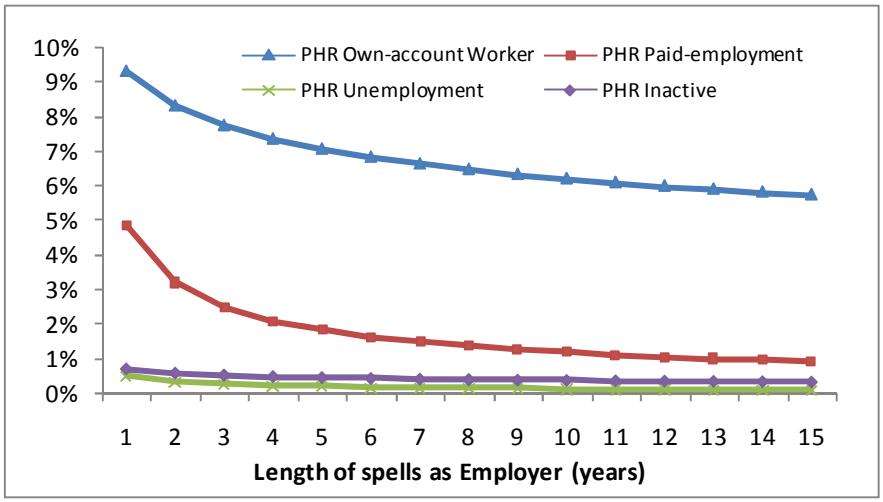
* Conditional on not having left self-employment before 1994

Fig. 1. Departure from work as employer (Main exercise):
Predicted hazard rate *conditional on not having left work as employer before 1994*



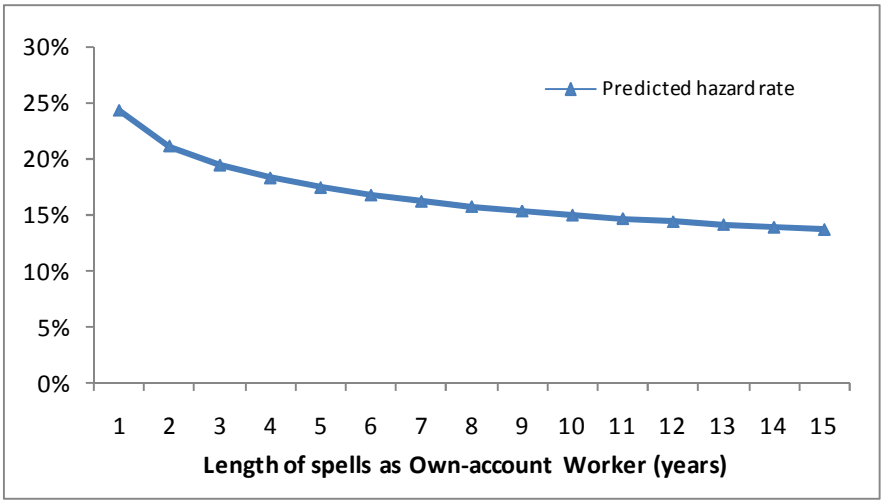
Notes:
(i) Simulation is based on the estimates of Table A1
(ii) Simulation for sample means of continuous and discrete variables

Fig. 2. Departure from work as employer to different states (Main exercise):
Predicted hazard rate *conditional on not having left work as employer before 1994*



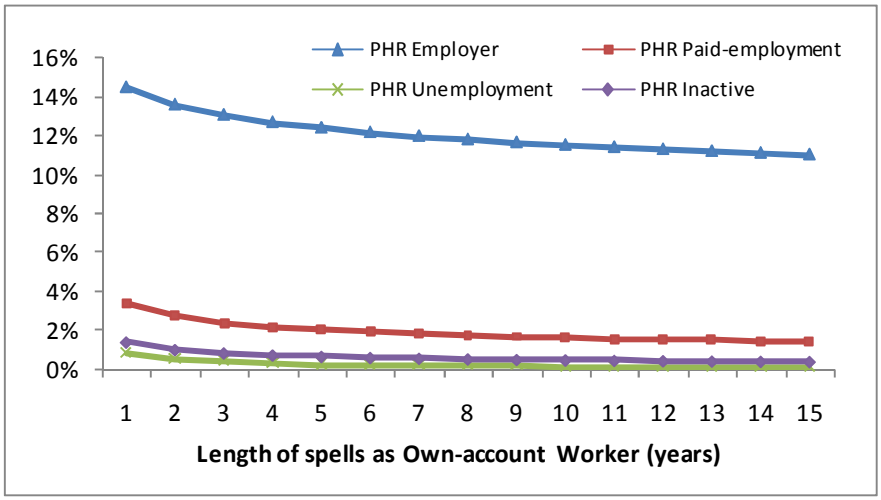
Notes:
(i) Simulation is based on the estimates of Table A1
(ii) Simulation for sample means of continuous and discrete variables

Fig. 3. Departure from own-account work (Main exercise):
Predicted hazard rate *conditional on not having left own-account work before 1994*



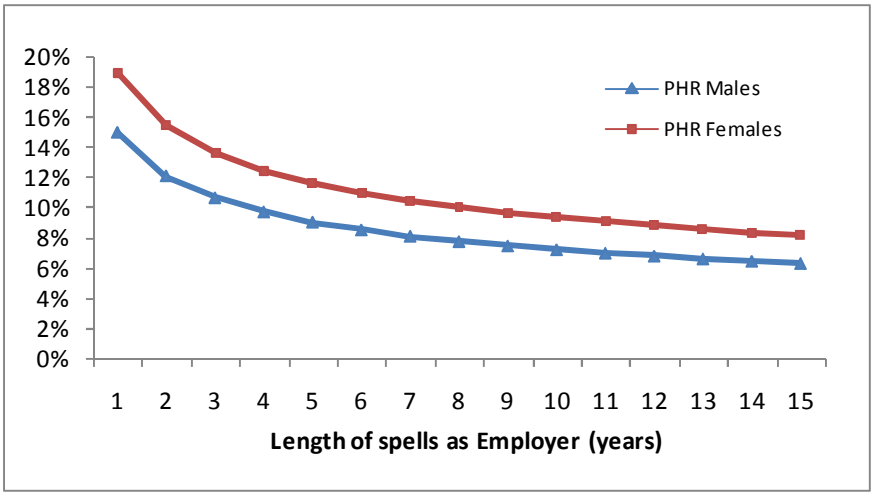
Notes:
(i) Simulation is based on the estimates of Table A7
(ii) Simulation for sample means of continuous and discrete variables

Fig. 4. Departure from own-account work to different states (Main exercise):
Predicted hazard rate *conditional on not having left own-account work before 1994*



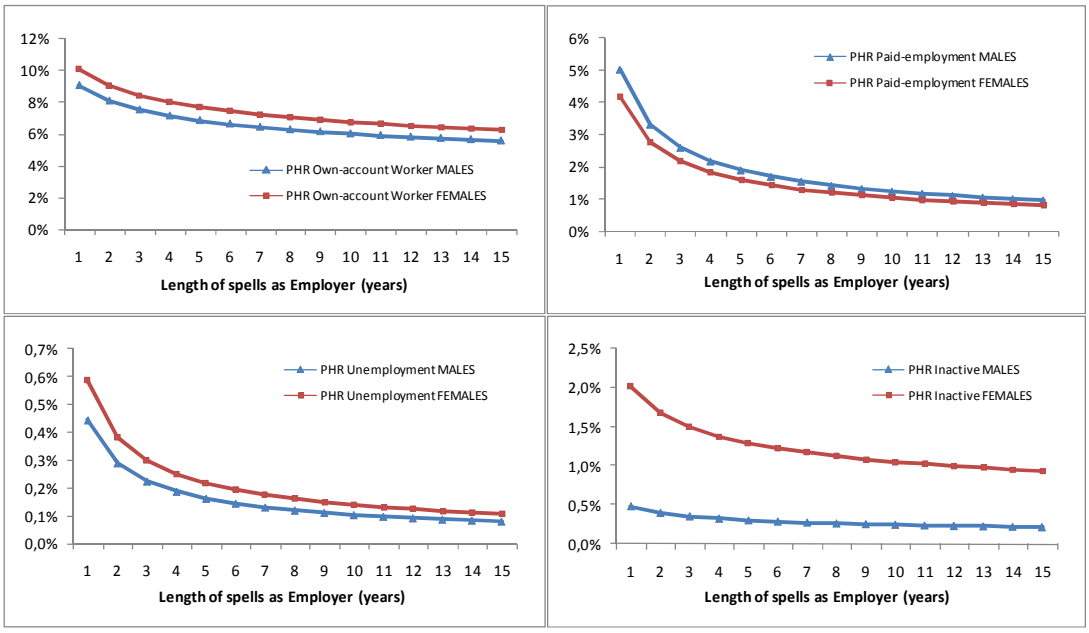
Notes:
(i) Simulation is based on the estimates of Table A7
(ii) Simulation for sample means of continuous and discrete variables

Fig. 5. Departure from work as employer (Main exercise):
Predicted hazard rate *conditional on not having left work as employer before 1994* for males-females



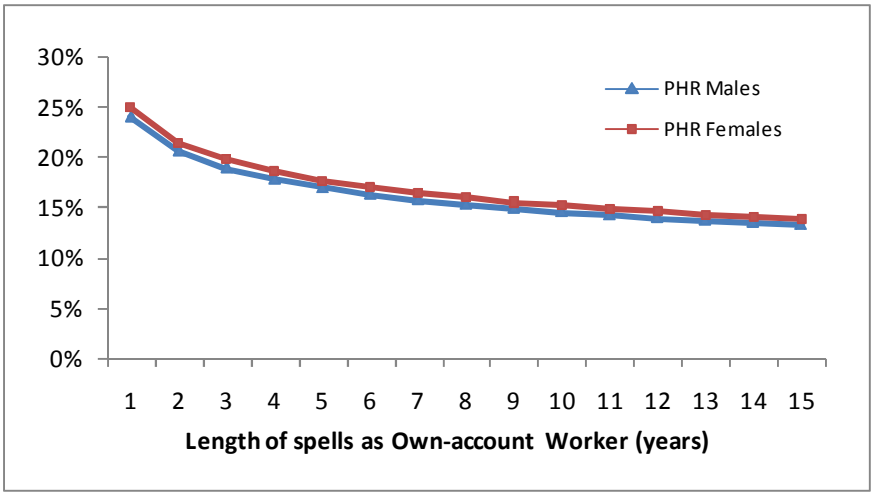
Notes:
(i) Simulation is based on the estimates of Table A1
(ii) Simulation for sample means of continuous and discrete variables

Fig. 6-9. Departure from work as employer to different states (Main exercise):
Predicted hazard rate *conditional on not having left work as employer before 1994* for males-females



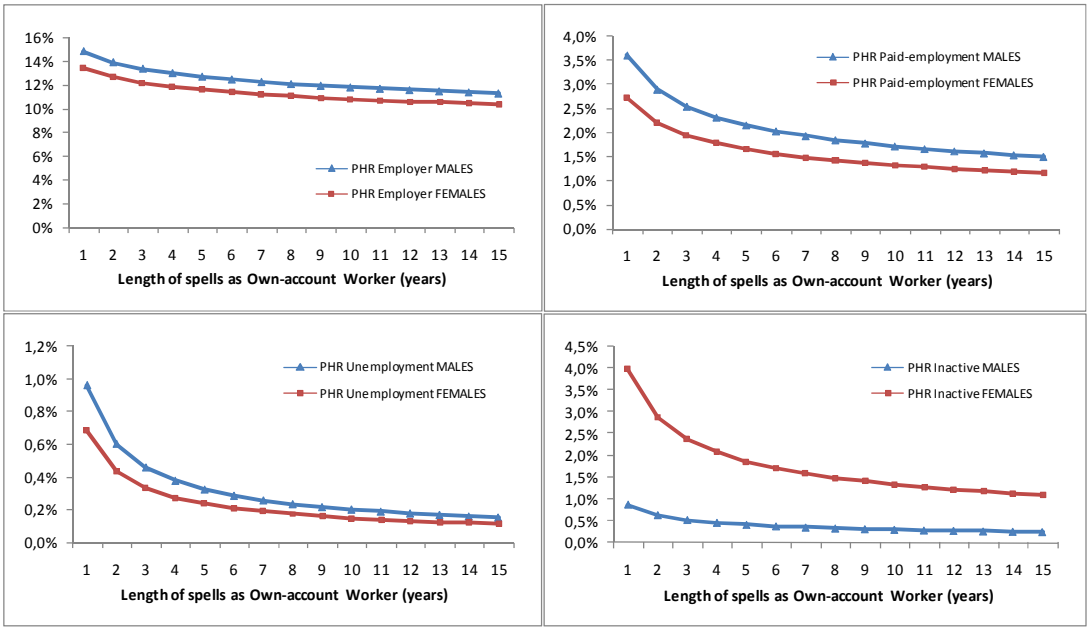
Notes:
(i) Simulation is based on the estimates of Table A1
(ii) Simulation for sample means of continuous and discrete variables

Fig. 10. Departure from own-account work (Main exercise):
Predicted hazard rate *conditional on not having left work as employer before 1994* for males-females



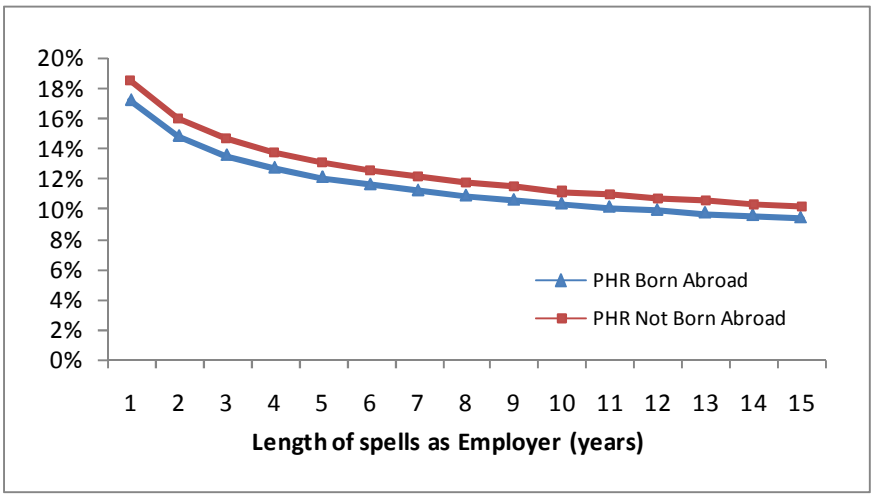
Notes:
(i) Simulation is based on the estimates of Table A7
(ii) Simulation for sample means of continuous and discrete variables

Fig. 11-14. Departure from own-account work to different states (Main exercise):
Predicted hazard rate *conditional on not having left work as employer before 1994* for males-females



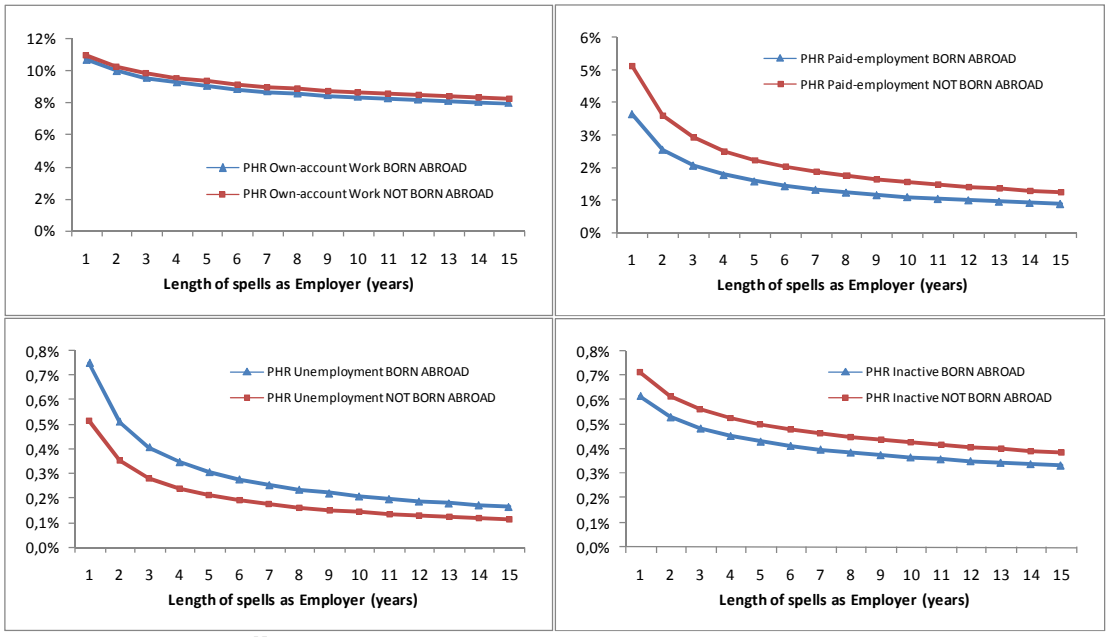
Notes:
(i) Simulation is based on the estimates of Table A7
(ii) Simulation for sample means of continuous and discrete variables

Fig. 15. Departure from work as employer (Complementary exercise):
Predicted hazard rate *conditional on not having left work as employer before 1994*
for those born and not born abroad



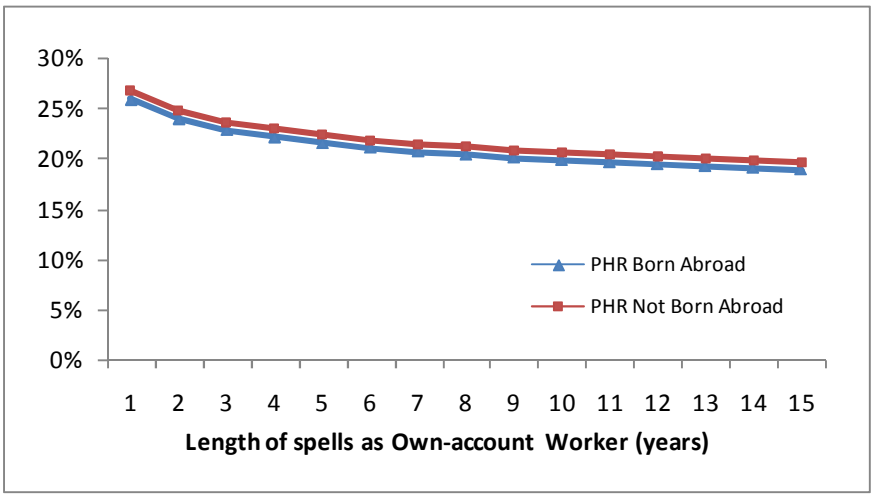
Notes:
(i) Simulation is based on the estimates of Table A4
(ii) Simulation for sample means of continuous and discrete variables

Fig. 16-19. Departure from work as employer to different states (Complementary exercise):
Predicted hazard rate *conditional on not having left work as employer before 1994*
for those born and not born abroad



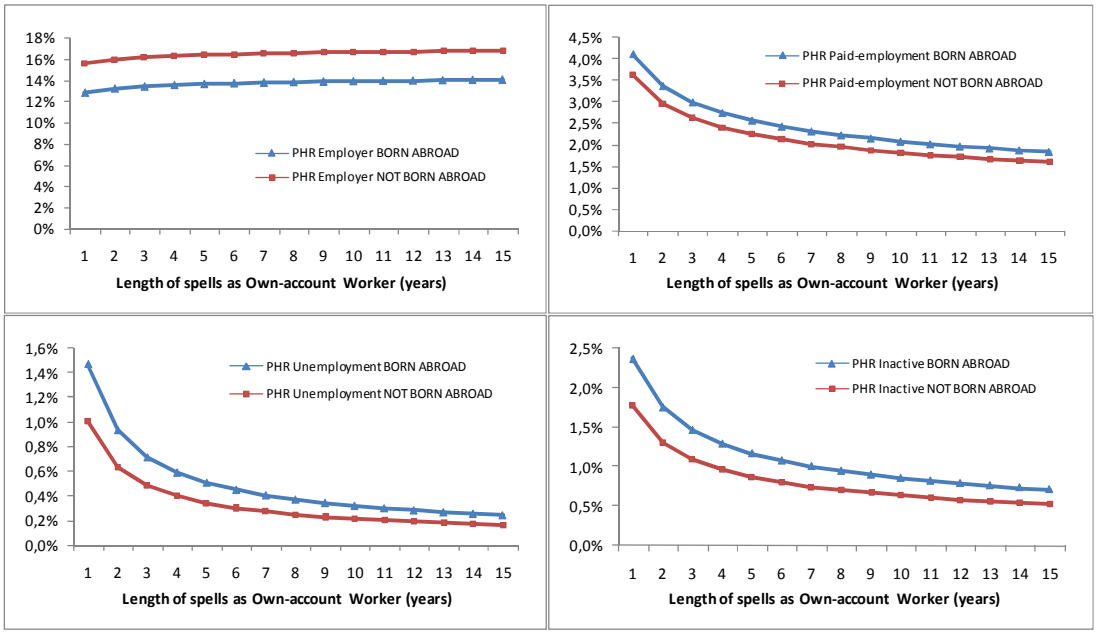
Notes:
(i) Simulation is based on the estimates of Table A4
(ii) Simulation for sample means of continuous and discrete variables

Fig. 20. Departure from own-account work (Complementary exercise):
Predicted hazard rate *conditional on not having left own-account work before 1994*
for those born and not born abroad



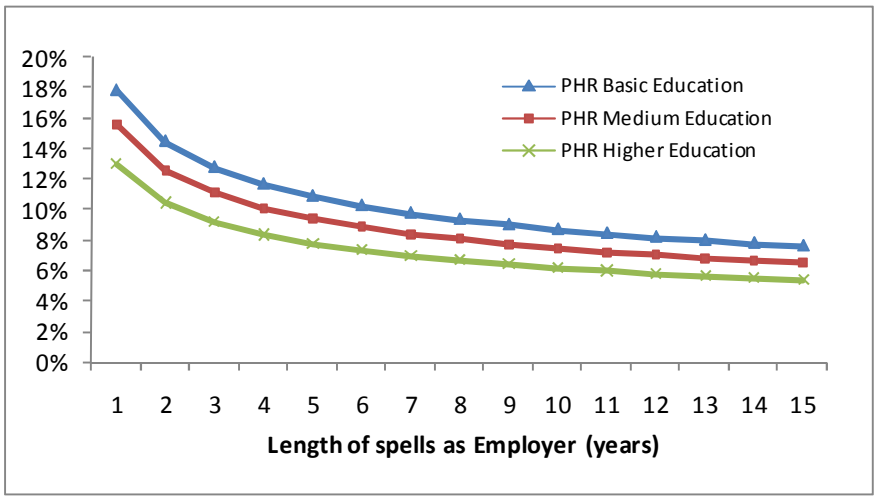
Notes:
(i) Simulation is based on the estimates of Table A10
(ii) Simulation for sample means of continuous and discrete variables

Fig. 21-24. Departure from own-account work to different states (Complementary exercise):
Predicted hazard rate *conditional on not having left own-account work before 1994*
for those born and not born abroad



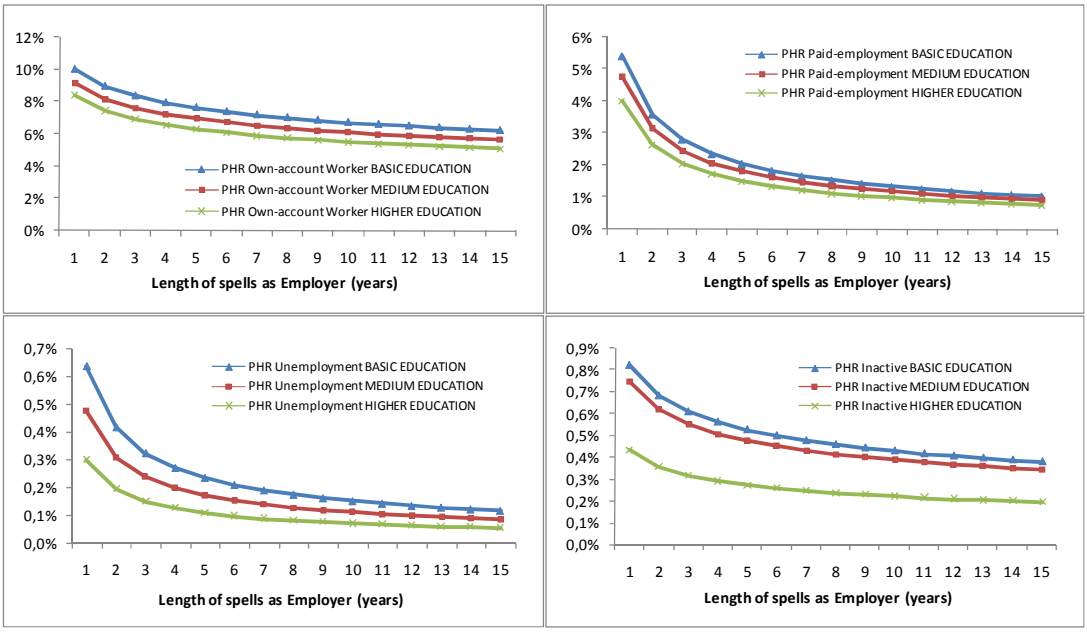
Notes:
(i) Simulation is based on the estimates of Table A10
(ii) Simulation for sample means of continuous and discrete variables

Fig. 25. Departure from work as employer (Main exercise):
Predicted hazard rate *conditional on not having left work as employer before 1994*
for different stages on education



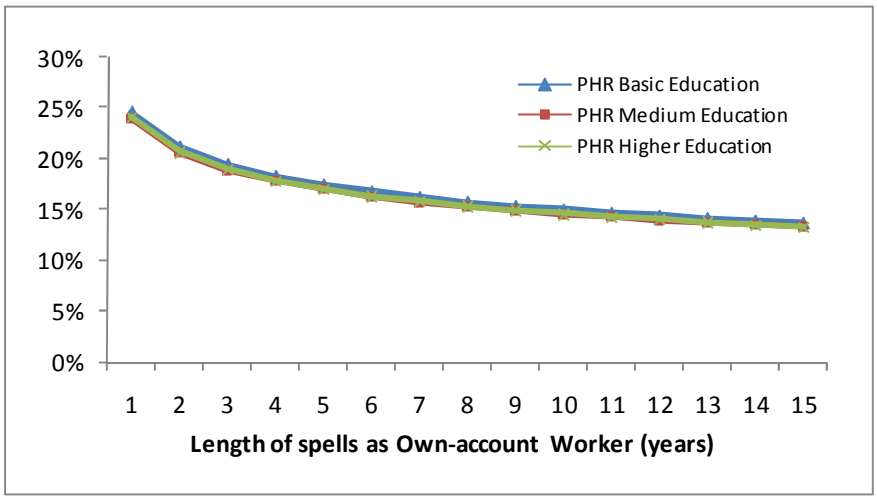
Notes:
(i) Simulation is based on the estimates of Table A1
(ii) Simulation for sample means of continuous and discrete variables

Fig. 26-29. Departure from work as employer to different states (Main exercise):
Predicted hazard rate *conditional on not having left work as employer before 1994*
for different stages on education



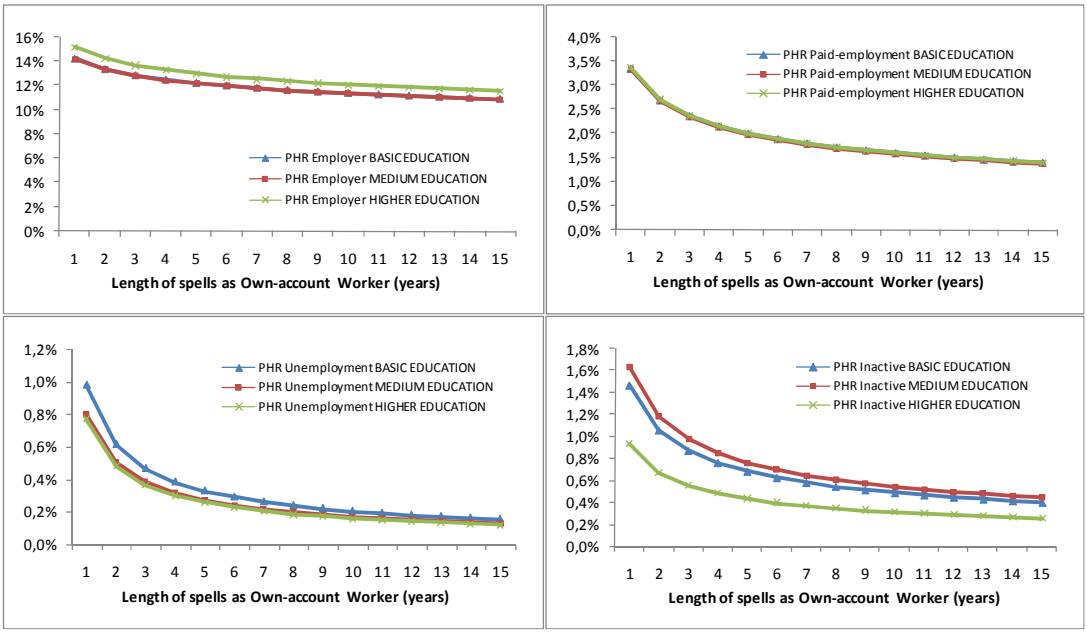
Notes:
(i) Simulation is based on the estimates of Table A1
(ii) Simulation for sample means of continuous and discrete variables

Fig. 30. Departure from own-account work (Main exercise):
Predicted hazard rate *conditional on not having left own-account work before 1994*
for different stages on education



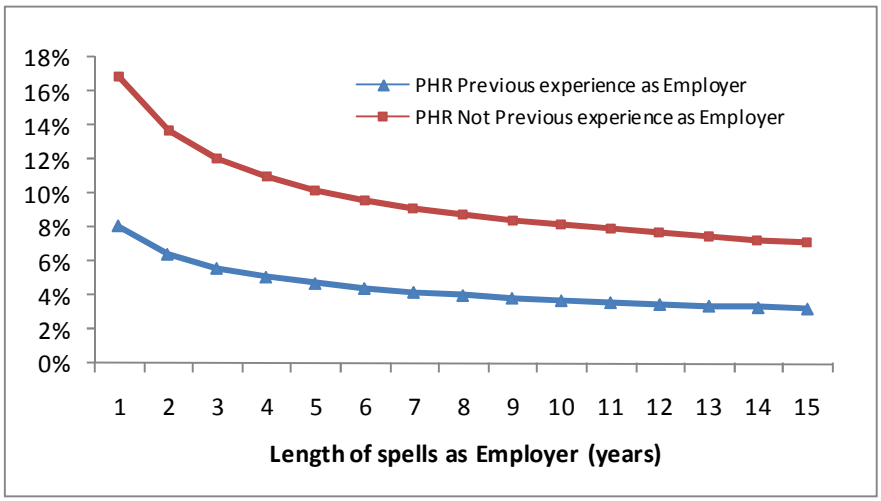
Notes:
(i) Simulation is based on the estimates of Table A7
(ii) Simulation for sample means of continuous and discrete variables

Fig. 31-34. Departure from own-account work to different states (Main exercise):
Predicted hazard rate *conditional on not having left own-account work before 1994*
for different stages on education



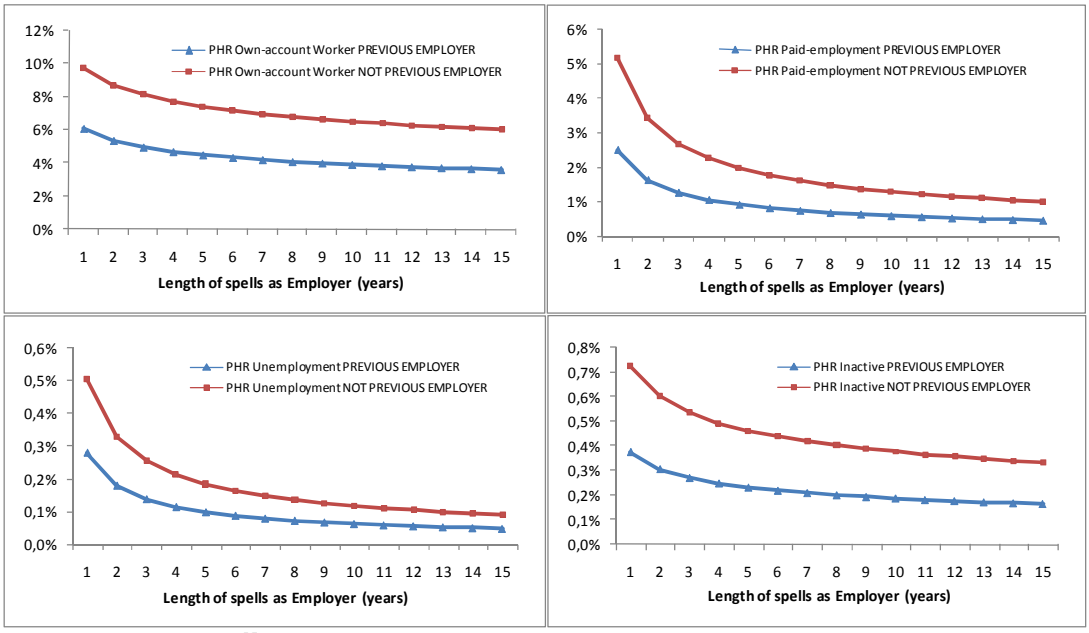
Notes:
(i) Simulation is based on the estimates of Table A7
(ii) Simulation for sample means of continuous and discrete variables

Fig. 35. Departure from work as employer (Main exercise):
Predicted hazard rate *conditional on not having left work as employer before 1994*
for those with and without previous experience as employer



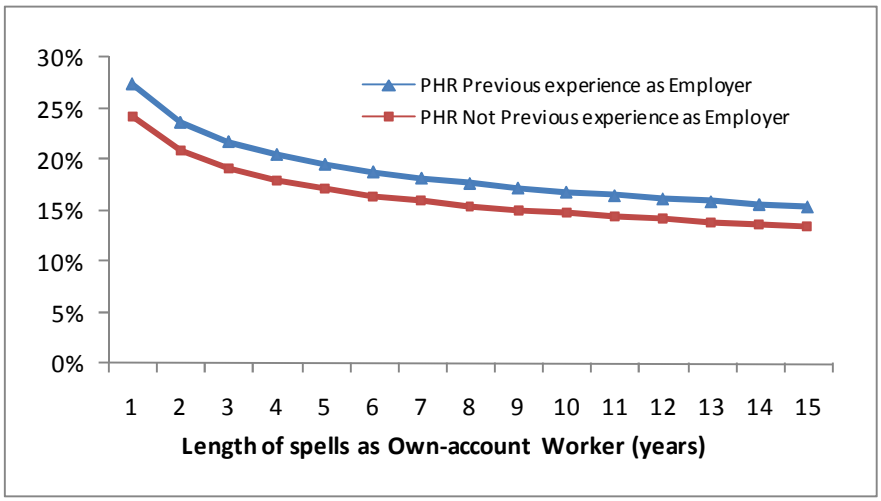
Notes:
(i) Simulation is based on the estimates of Table A1
(ii) Simulation for sample means of continuous and discrete variables

Fig. 36-39. Departure from work as employer to different states (Main exercise):
Predicted hazard rate *conditional on not having left work as employer before 1994*
for those with and without previous experience as employer



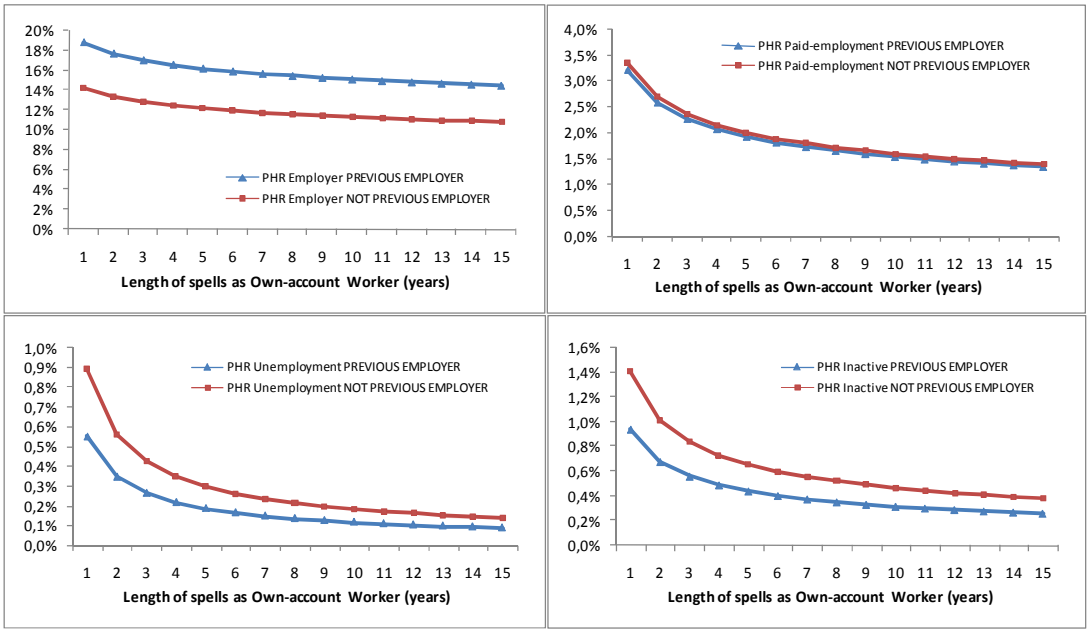
Notes:
(i) Simulation is based on the estimates of Table A1
(ii) Simulation for sample means of continuous and discrete variables

Fig. 40. Departure from own-account work (Main exercise):
Predicted hazard rate *conditional on not having left own-account work before 1994*
for those with and without previous experience as employer



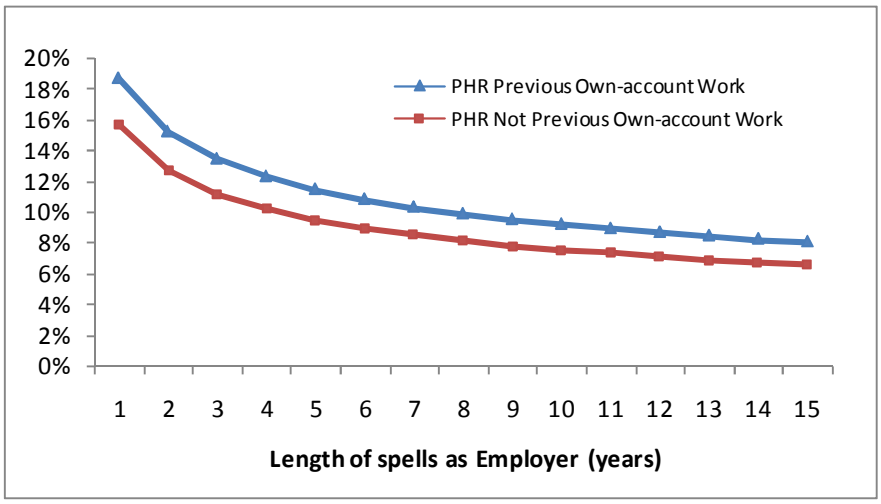
Notes:
(i) Simulation is based on the estimates of Table A7
(ii) Simulation for sample means of continuous and discrete variables

Fig. 41-44. Departure from own-account work to different states (Main exercise):
Predicted hazard rate *conditional on not having left own-account work before 1994*
for those with and without previous experience as employer



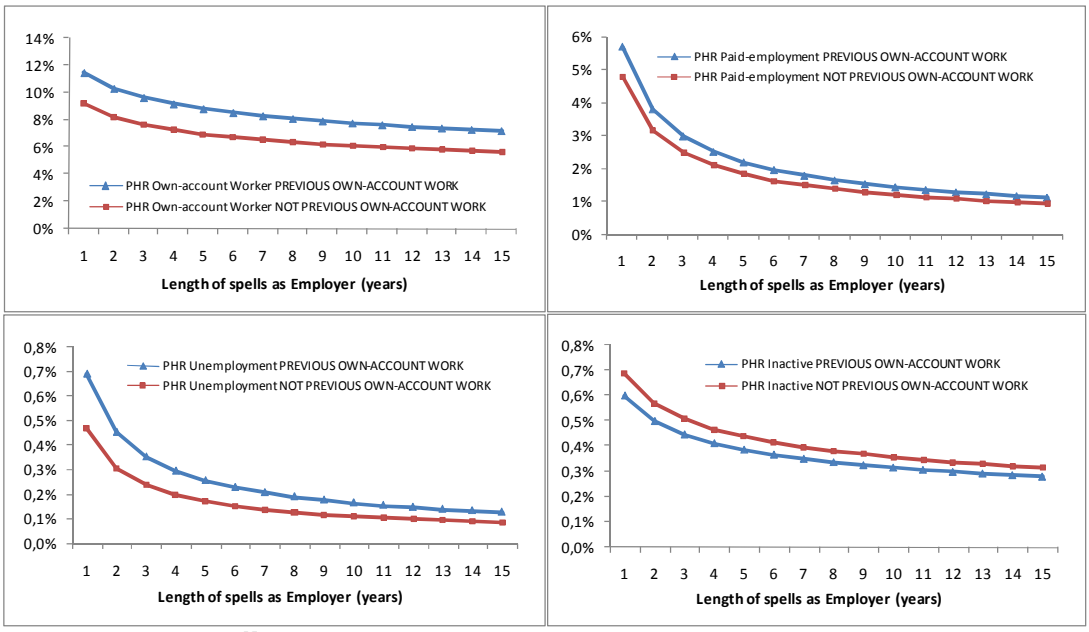
Notes:
(i) Simulation is based on the estimates of Table A7
(ii) Simulation for sample means of continuous and discrete variables

Fig. 45. Departure from work as employer (Main exercise):
Predicted hazard rate *conditional on not having left work as employer before 1994*
for those with and without previous experience as own-account worker



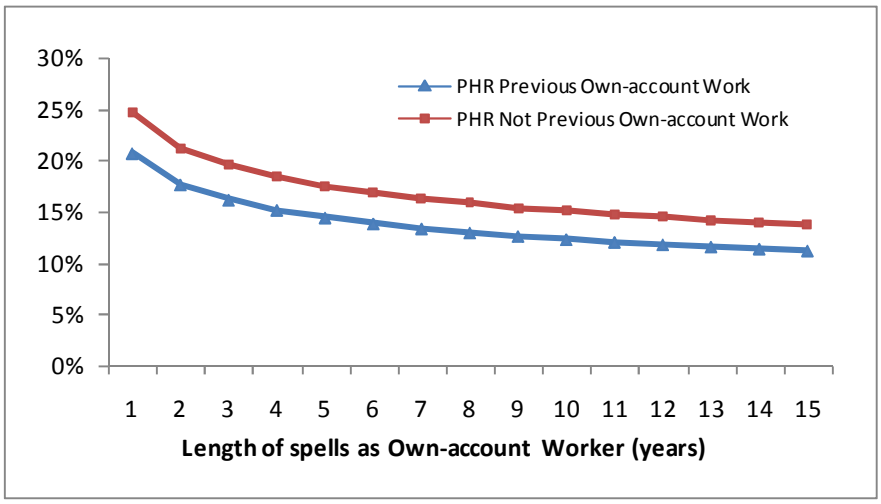
Notes:
(i) Simulation is based on the estimates of Table A1
(ii) Simulation for sample means of continuous and discrete variables

Fig. 46-49. Departure from work as employer to different states (Main exercise):
Predicted hazard rate *conditional on not having left work as employer before 1994*
for those with and without previous experience as own-account worker



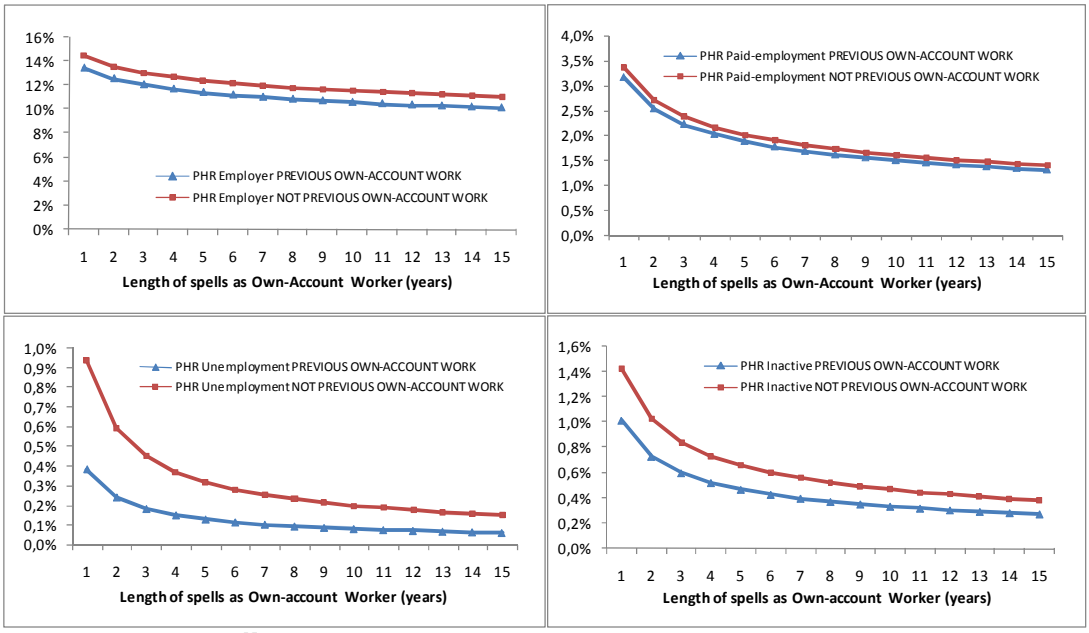
Notes:
(i) Simulation is based on the estimates of Table A1
(ii) Simulation for sample means of continuous and discrete variables

Fig. 50. Departure from own-account work (Main exercise):
Predicted hazard rate *conditional on not having left own-account work before 1994*
for those with and without previous experience as own-account worker



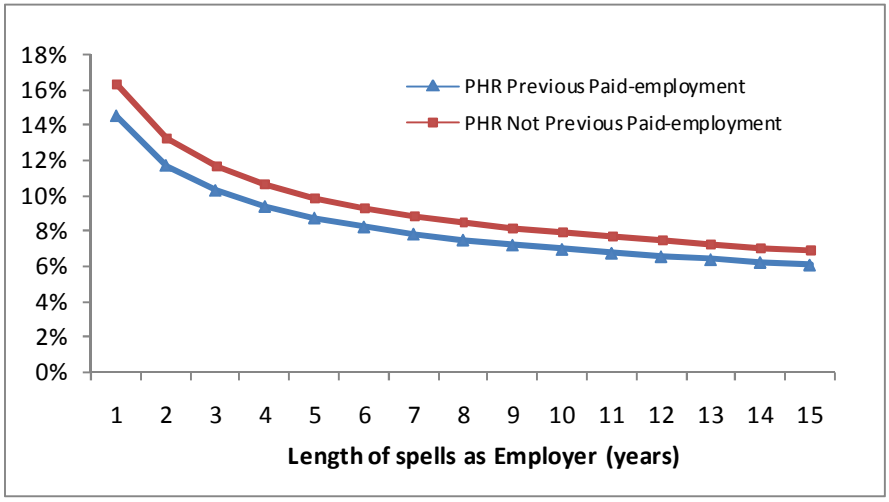
Notes:
(i) Simulation is based on the estimates of Table A7
(ii) Simulation for sample means of continuous and discrete variables

Fig. 51-54. Departure from own-account work to different states (Main exercise):
Predicted hazard rate *conditional on not having left own-account work before 1994*
for those with and without previous experience as own-account worker



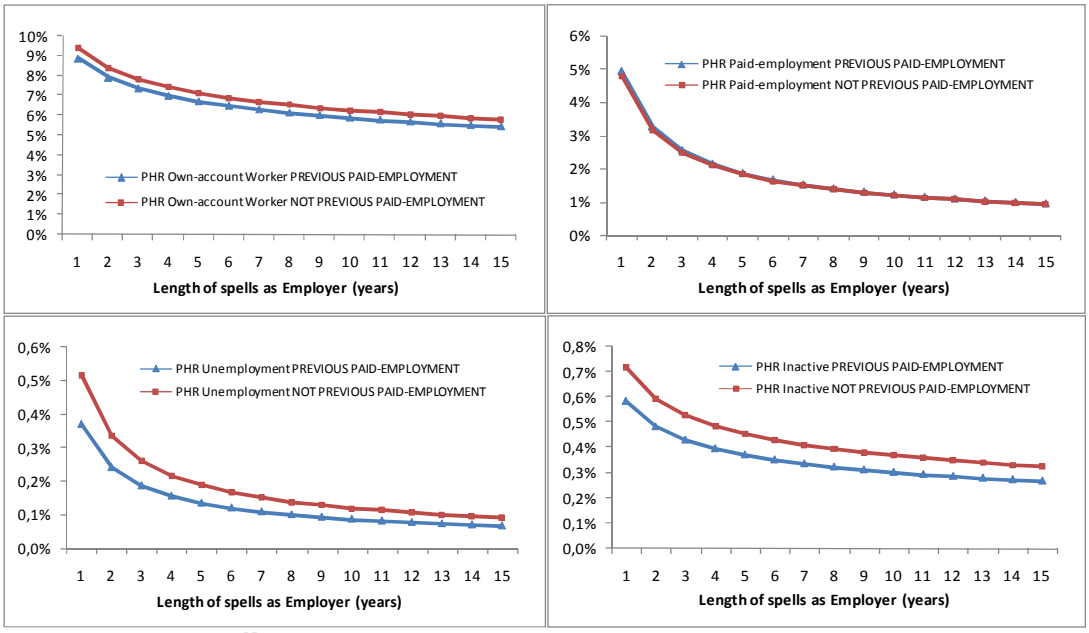
Notes:
(i) Simulation is based on the estimates of Table A7
(ii) Simulation for sample means of continuous and discrete variables

Fig. 55. Departure from work as employer (Main exercise):
Predicted hazard rate *conditional on not having left work as employer before 1994*
for those with and without previous experience as paid-employed



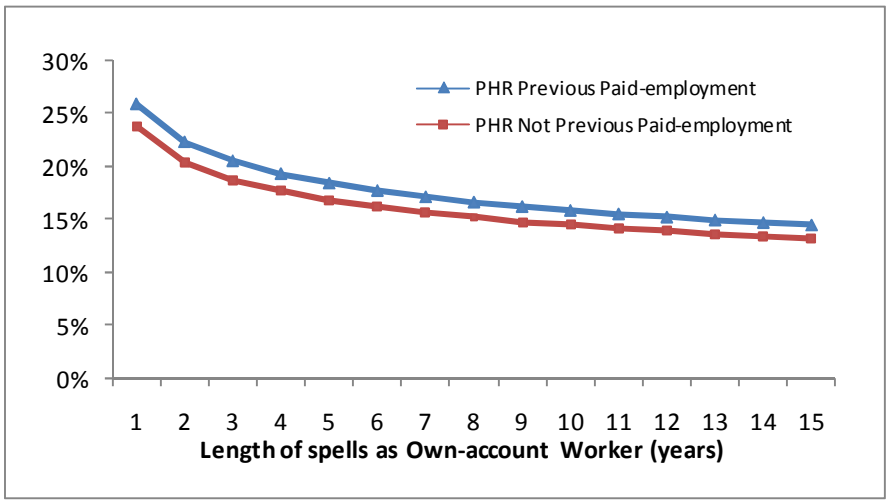
Notes:
(i) Simulation is based on the estimates of Table A1
(ii) Simulation for sample means of continuous and discrete variables

Fig. 56-59. Departure from work as employer to different states (Main exercise):
Predicted hazard rate *conditional on not having left work as employer before 1994*
for those with and without previous experience as paid-employed



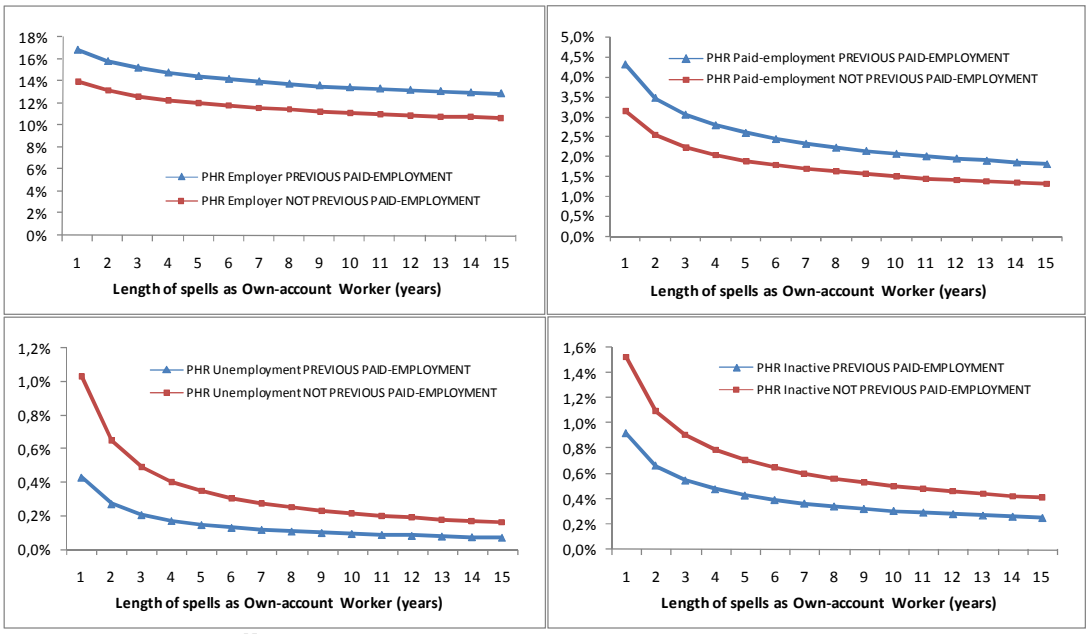
Notes:
(i) Simulation is based on the estimates of Table A1
(ii) Simulation for sample means of continuous and discrete variables

Fig. 60. Departure from own-account work (Main exercise):
Predicted hazard rate *conditional on not having left own-account work before 1994*
for those with and without previous experience as paid-employed



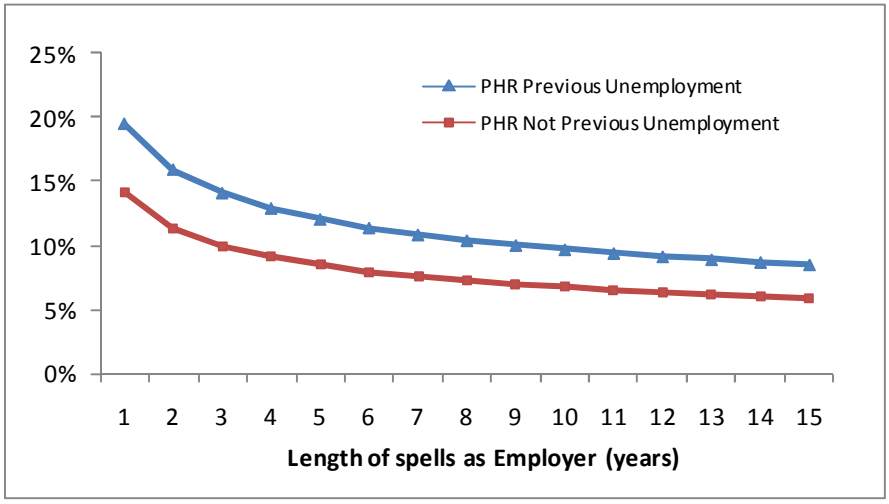
Notes:
(i) Simulation is based on the estimates of Table A7
(ii) Simulation for sample means of continuous and discrete variables

Fig. 61-64. Departure from own-account work to different states (Main exercise):
Predicted hazard rate *conditional on not having left own-account work before 1994*
for those with and without previous experience as paid-employed



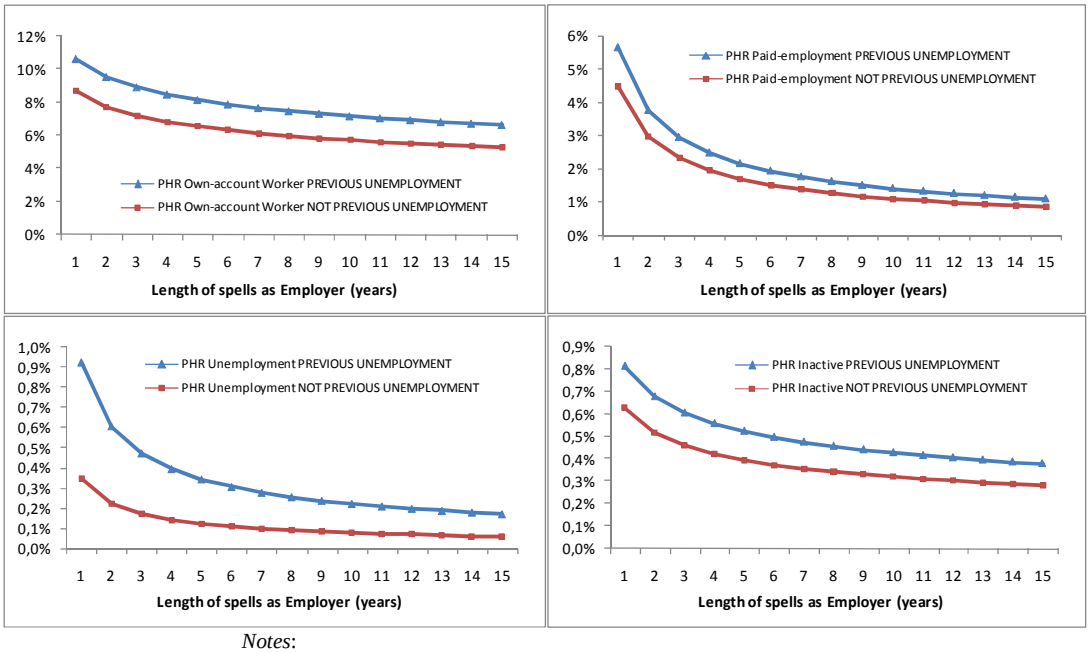
Notes:
(i) Simulation is based on the estimates of Table A7
(ii) Simulation for sample means of continuous and discrete variables

Fig. 65. Departure from work as employer (Main exercise):
Predicted hazard rate *conditional on not having left work as employer before 1994*
for those with and without previous experience as unemployed



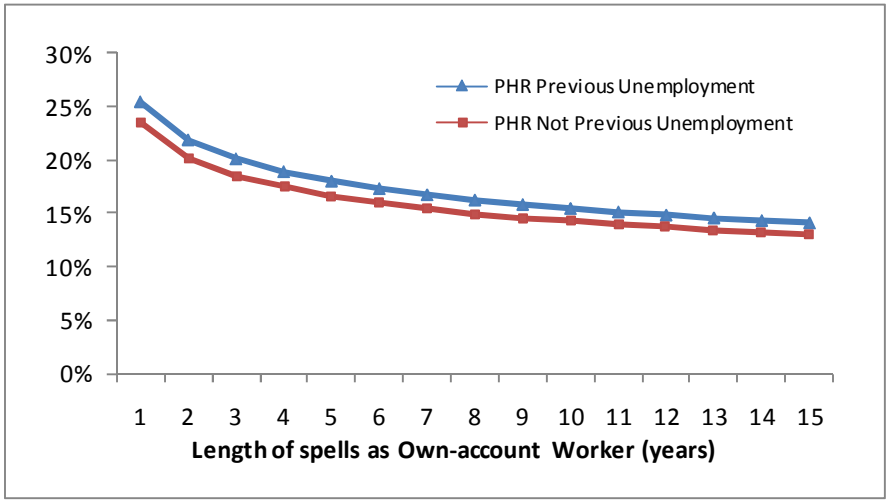
Notes:
(i) Simulation is based on the estimates of Table A1
(ii) Simulation for sample means of continuous and discrete variables

Fig. 66-69. Departure from work as employer to different states (Main exercise):
Predicted hazard rate *conditional on not having left work as employer before 1994*
for those with and without previous experience as unemployed



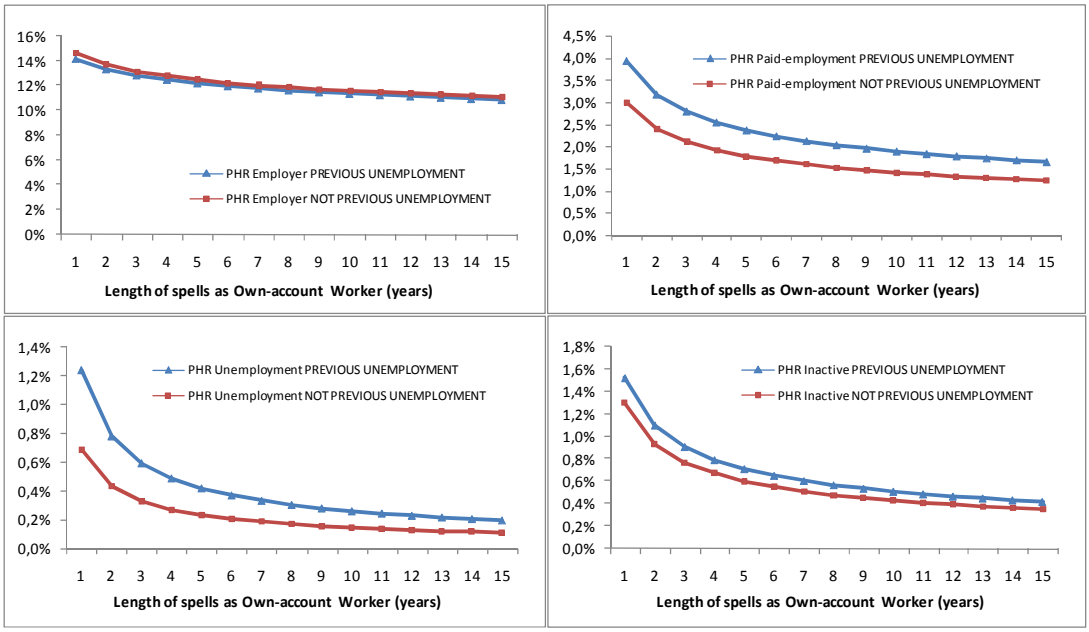
Notes:
(i) Simulation is based on the estimates of Table A1
(ii) Simulation for sample means of continuous and discrete variables

Fig. 70. Departure from own-account work (Main exercise):
Predicted Hazard rate *conditional on not having left own-account work before 1994*
for those with and without previous experience as unemployed



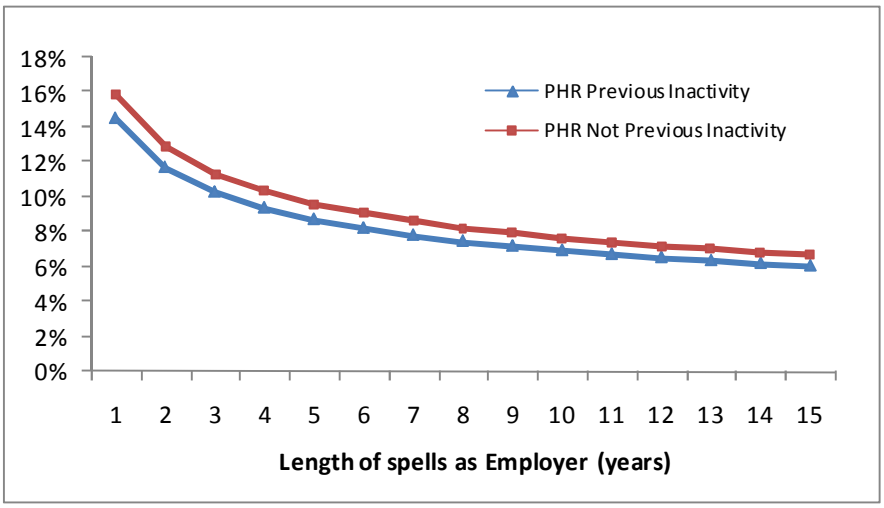
Notes:
(i) Simulation is based on the estimates of Table A7
(ii) Simulation for sample means of continuous and discrete variables

Fig. 71-74. Departure from own-account work to different states (Main exercise):
Predicted Hazard rate *conditional on not having left own-account work before 1994*
for those with and without previous experience as unemployed



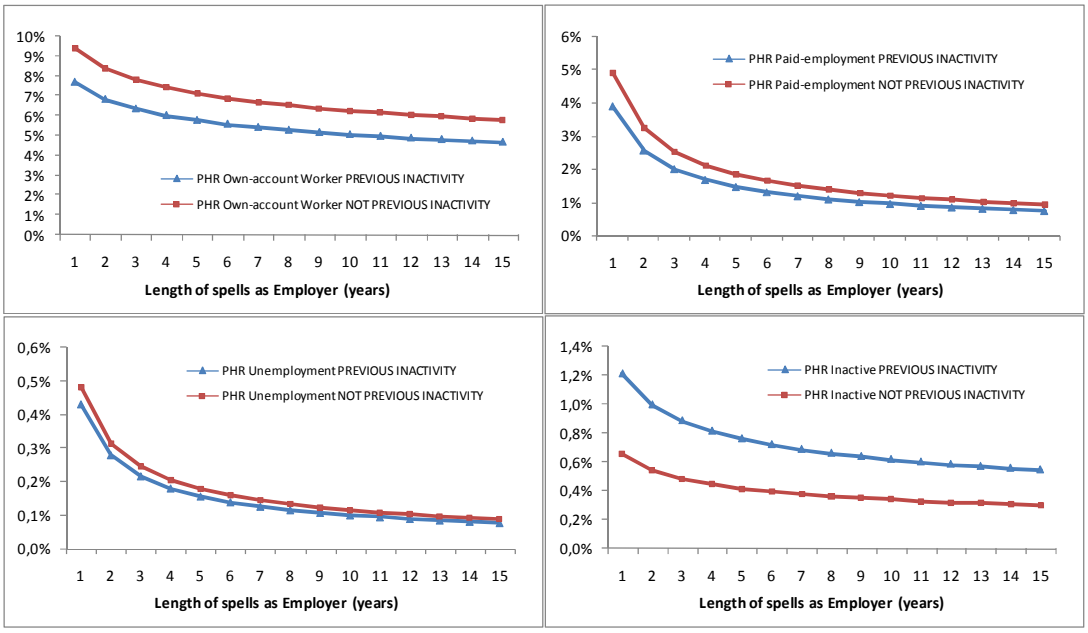
Notes:
(i) Simulation is based on the estimates of Table A7
(ii) Simulation for sample means of continuous and discrete variables

Fig. 75. Departure from work as employer (Main exercise):
Predicted Hazard rate *conditional on not having left work as employer before 1994*
for those with and without previous experience as inactive



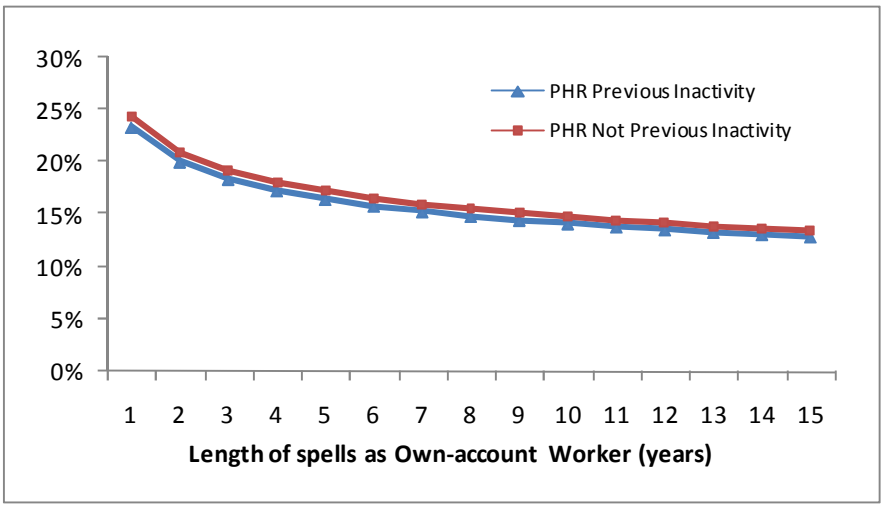
Notes:
(i) Simulation is based on the estimates of Table A1
(ii) Simulation for sample means of continuous and discrete variables

Fig. 76-79. Departure from work as employer to different states (Main exercise):
Predicted Hazard rate *conditional on not having left work as employer before 1994*
for those with and without previous experience as inactive



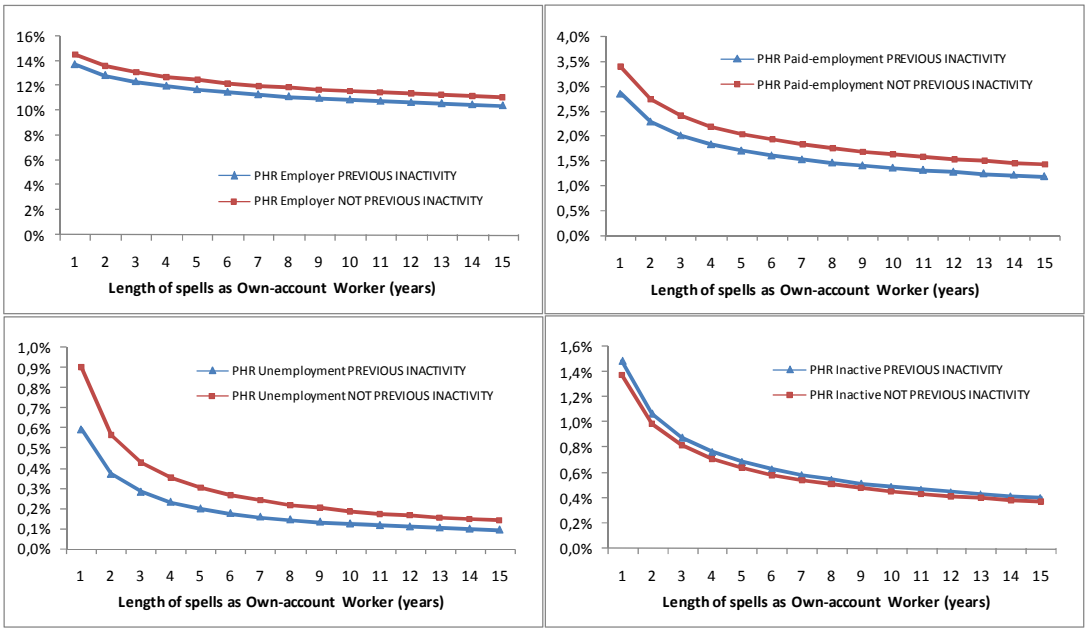
Notes:
(i) Simulation is based on the estimates of Table A1
(ii) Simulation for sample means of continuous and discrete variables

Fig. 80. Departure from own-account work (Main exercise):
Predicted Hazard rate *conditional on not having left own-account work before 1994*
for those with and without previous experience as inactive



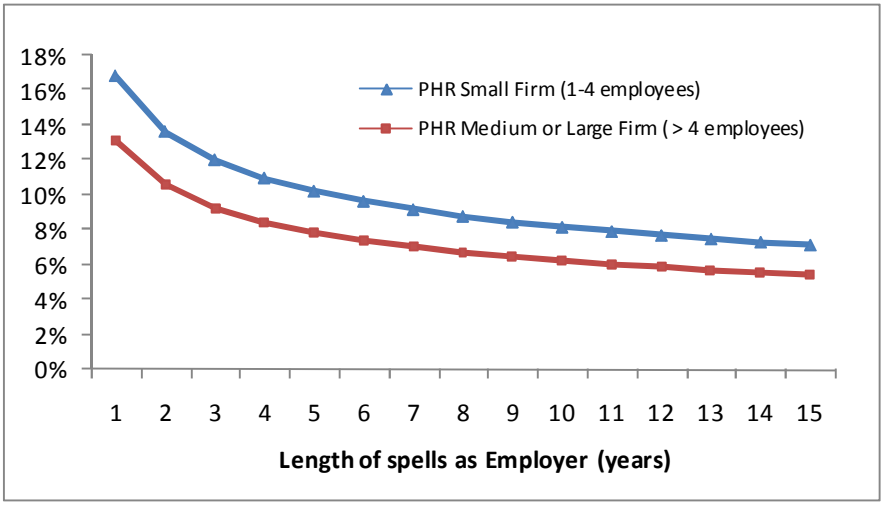
Notes:
(i) Simulation is based on the estimates of Table A7
(ii) Simulation for sample means of continuous and discrete variables

Fig. 81-84. Departure from own-account work to different states (Main exercise):
Predicted hazard rate *conditional on not having left own-account work before 1994*
for those with and without previous experience as inactive



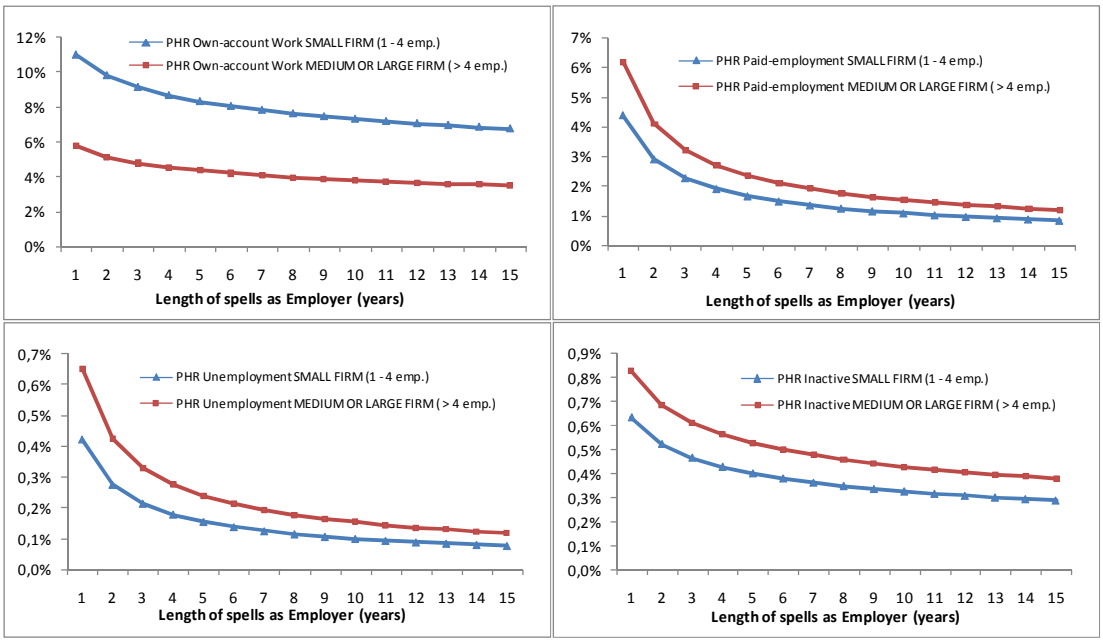
Notes:
(i) Simulation is based on the estimates of Table A7
(ii) Simulation for sample means of continuous and discrete variables

Fig. 85. Departure from work as employer (Complementary exercise):
Predicted hazard rate *conditional on not having left self-employment before 1994*
for different number of employees



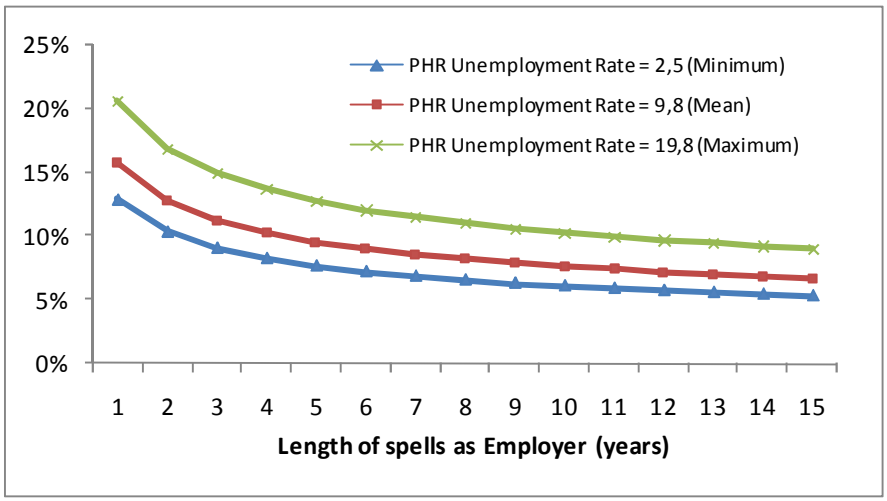
Notes:
(i) Simulation is based on the estimates of Table A4
(ii) Simulation for sample means of continuous and discrete variables

Fig. 86-89. Departure from work as employer to different states (Complementary exercise):
Predicted hazard rate *conditional on not having left work as employer before 1994*
for different number of employees



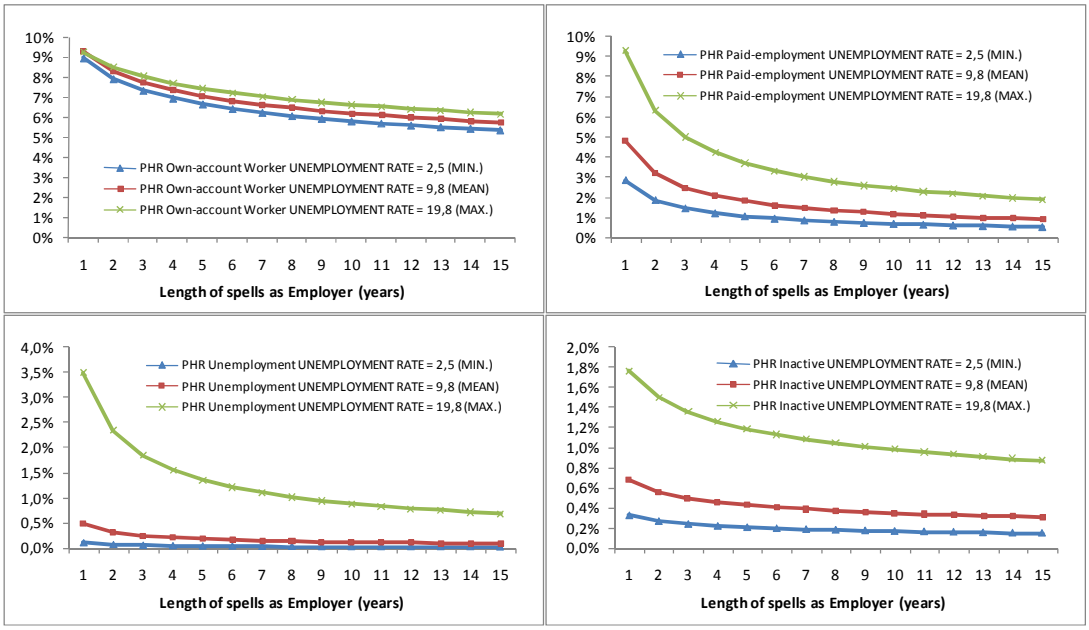
Notes:
(i) Simulation is based on the estimates of Table A4
(ii) Simulation for sample means of continuous and discrete variables

Fig. 90. Departure from work as employer (Main exercise):
Predicted hazard rate *conditional on not having left work as employer before 1994*
for different values of the unemployment rate



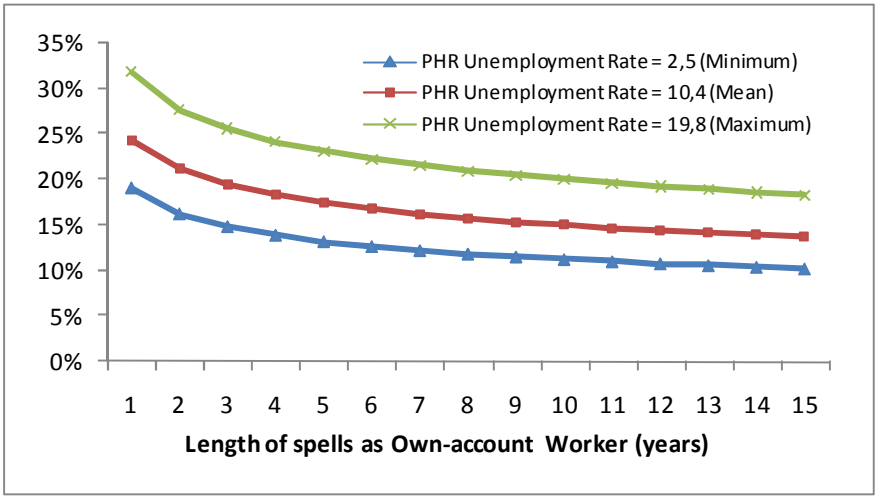
Notes:
(i) Simulation is based on the estimates of Table A1
(ii) Simulation for sample means of continuous and discrete variables

Fig. 91-94. Departure from work as employer to different states (Main exercise):
Predicted hazard rate *conditional on not having left work as employer before 1994*
for different values of the unemployment rate



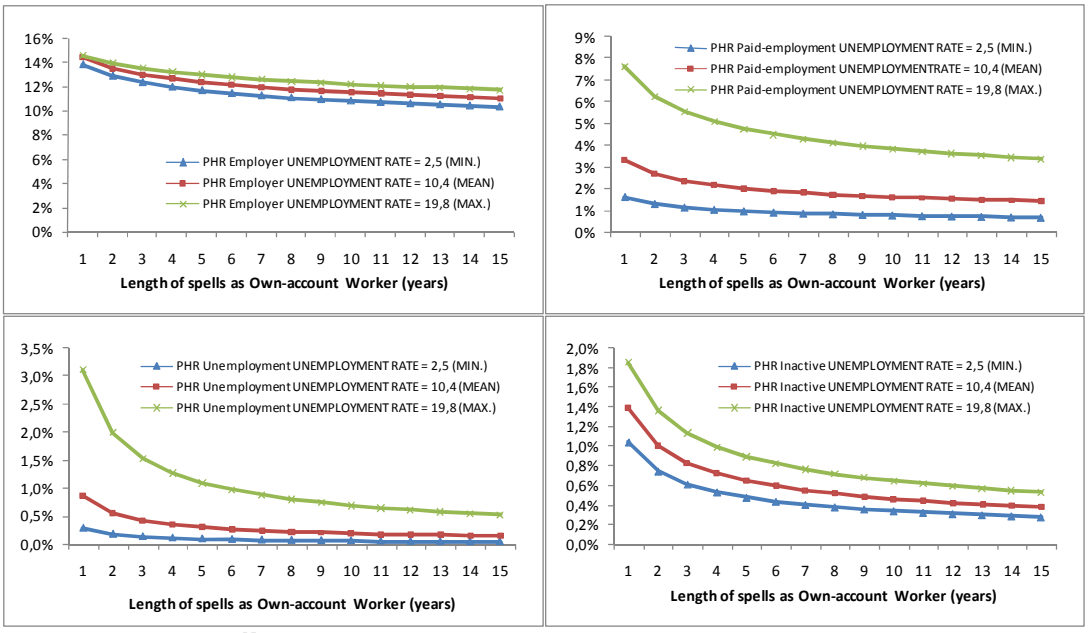
Notes:
(i) Simulation is based on the estimates of Table A1
(ii) Simulation for sample means of continuous and discrete variables

Fig. 95. Departure from own-account work (Main exercise):
Predicted hazard rate *conditional on not having left own-account work before 1994*
for different values of the unemployment rate



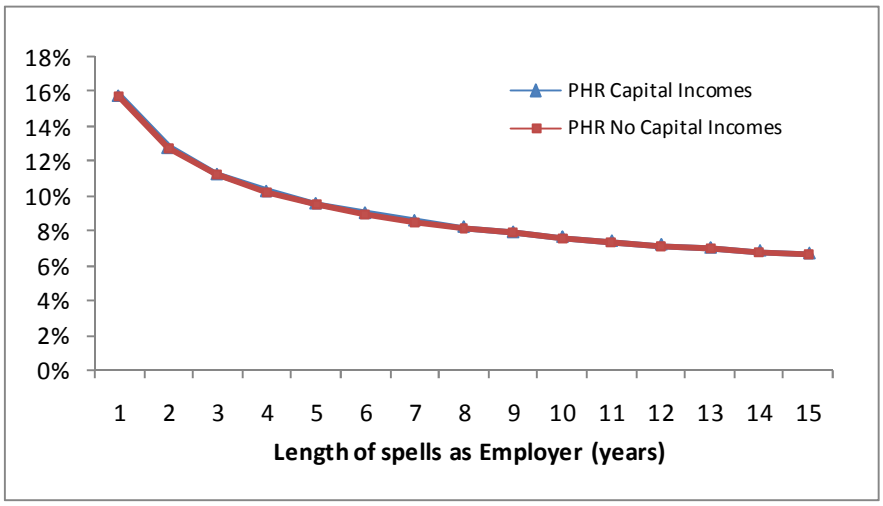
Notes:
(i) Simulation is based on the estimates of Table A7
(ii) Simulation for sample means of continuous and discrete variables

Fig. 96-99. Departure from own-account work to different states (Main exercise):
Predicted hazard rate *conditional on not having left own-account work before 1994*
for different values of the unemployment rate



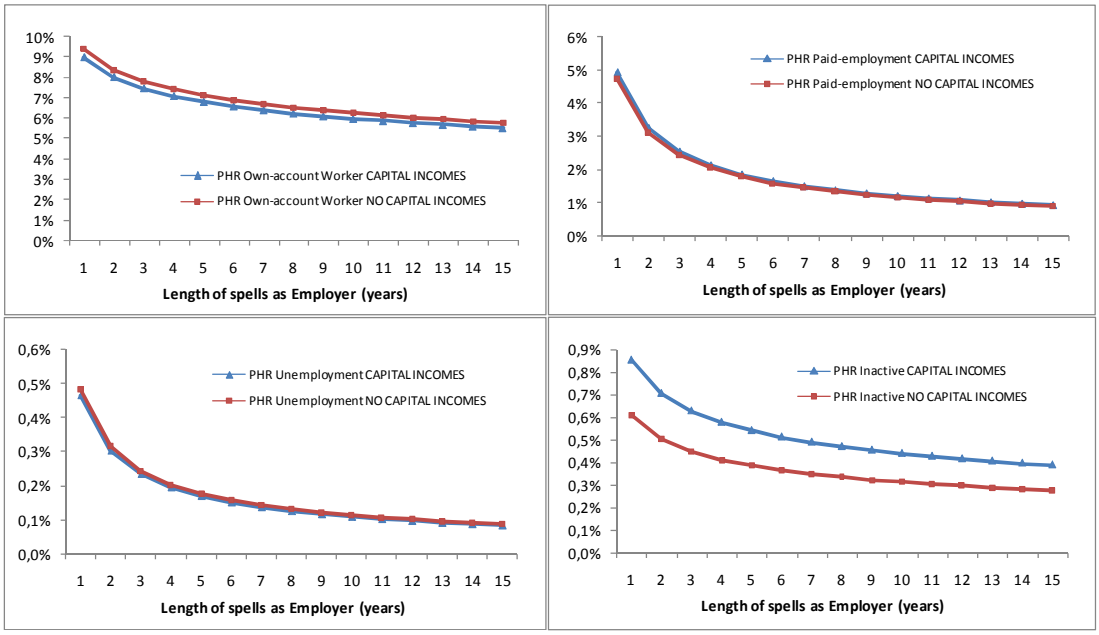
Notes:
(i) Simulation is based on the estimates of Table A7
(ii) Simulation for sample means of continuous and discrete variables

Fig. 100. Departure from work as employer (Main exercise):
Predicted hazard rate *conditional on not having left work as employer before 1994*
for those receiving and not receiving capital and property incomes, and private transfers



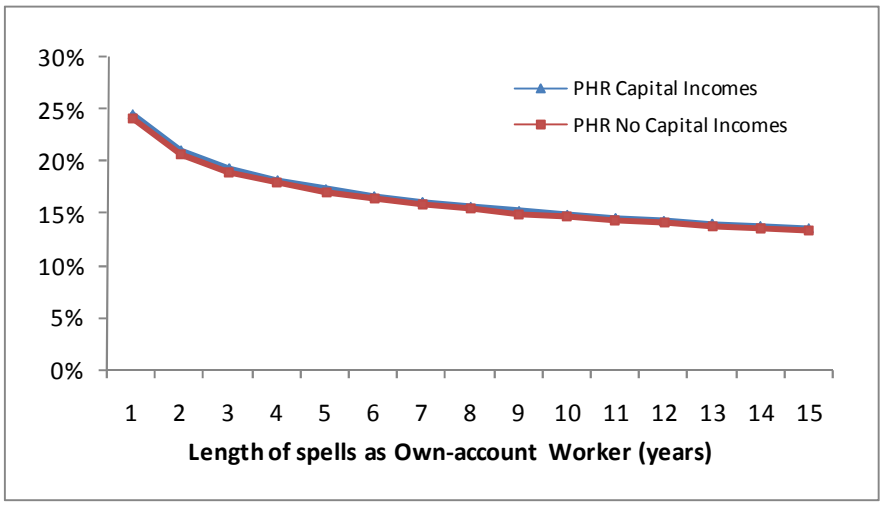
Notes:
(i) Simulation is based on the estimates of Table A1
(ii) Simulation for sample means of continuous and discrete variables

Fig. 101-104. Departure from work as employer to different states (Main exercise):
Predicted hazard rate *conditional on not having left work as employer before 1994*
for those receiving and not receiving capital and property incomes, and private transfers



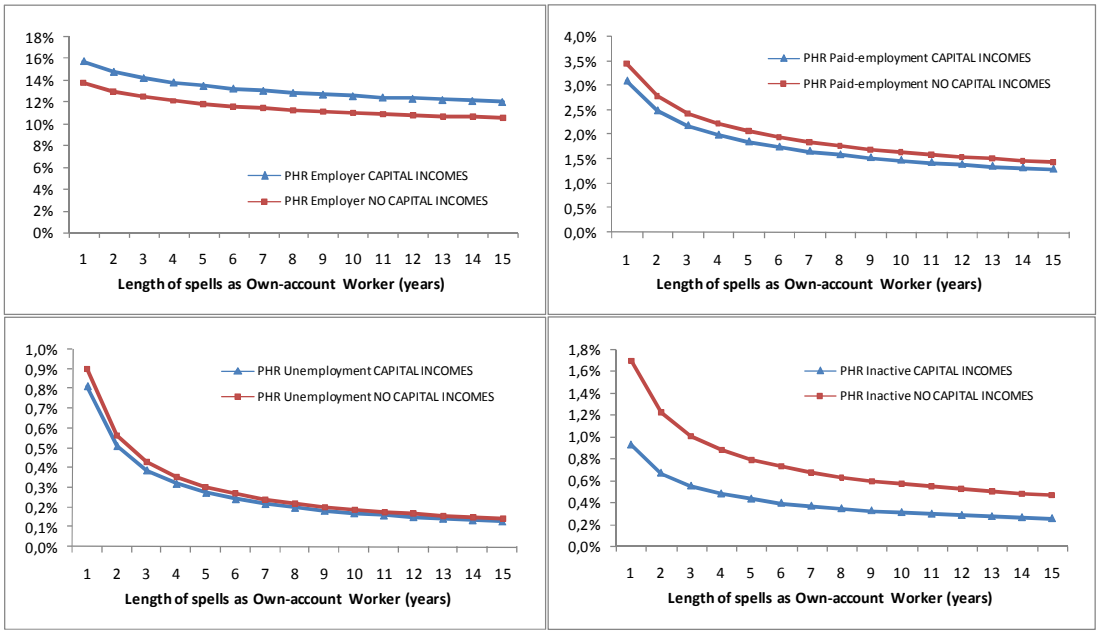
Notes:
(i) Simulation is based on the estimates of Table A1
(ii) Simulation for sample means of continuous and discrete variables

Fig. 105. Departure from own-account work (Main exercise):
Predicted hazard rate *conditional on not having left own-account work before 1994*
for those receiving and not receiving capital and property incomes, and private transfers



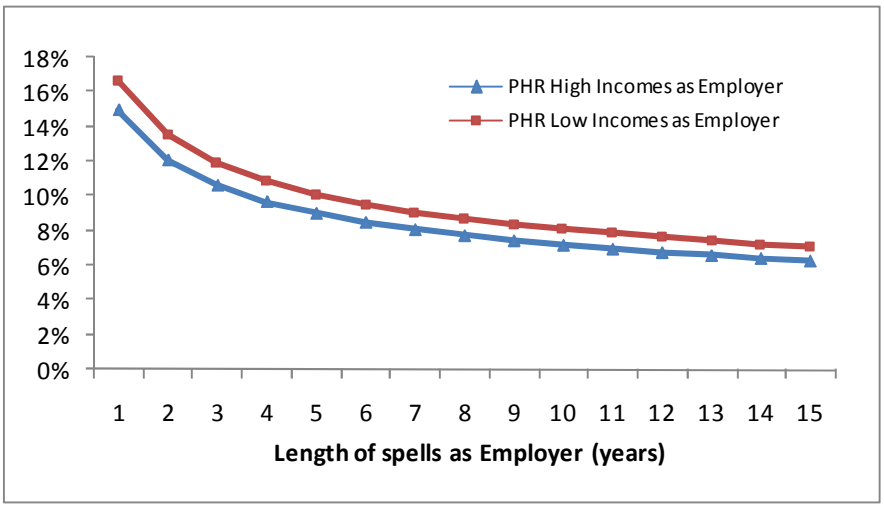
Notes:
(i) Simulation is based on the estimates of Table A7
(ii) Simulation for sample means of continuous and discrete variables

Fig. 106-109. Departure from own-account work to different states (Main exercise):
Predicted hazard rate *conditional on not having left own-account work before 1994*
for those receiving and not receiving capital and property incomes, and private transfers



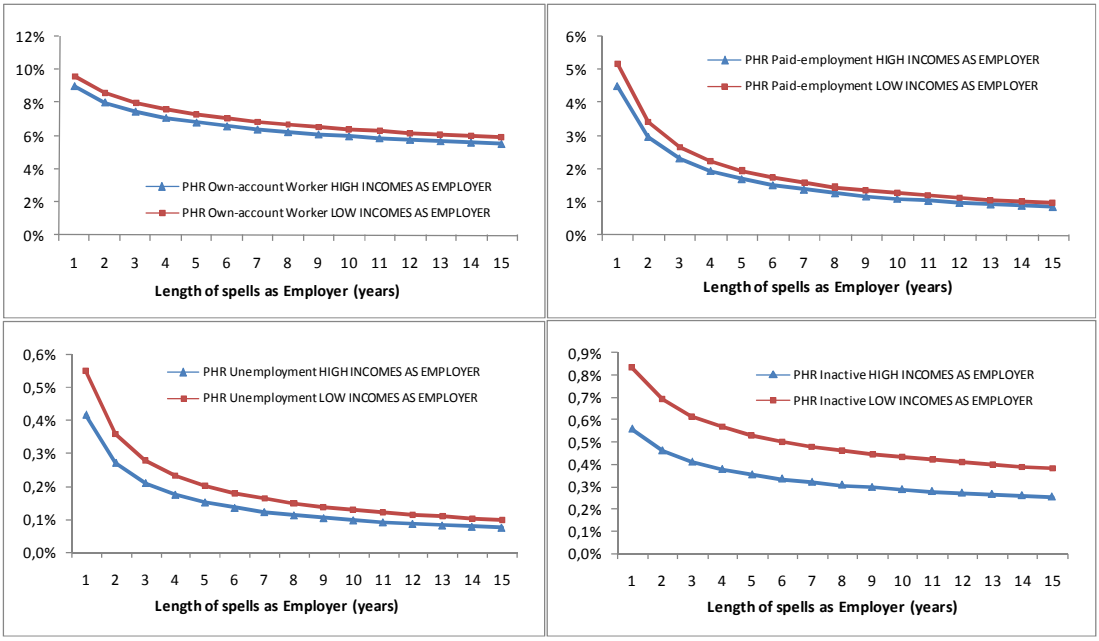
Notes:
(i) Simulation is based on the estimates of Table A7
(ii) Simulation for sample means of continuous and discrete variables

Fig. 110. Departure from work as employer (Main exercise):
Predicted hazard rate *conditional on not having left work as employer before 1994*
for different levels of incomes as employer



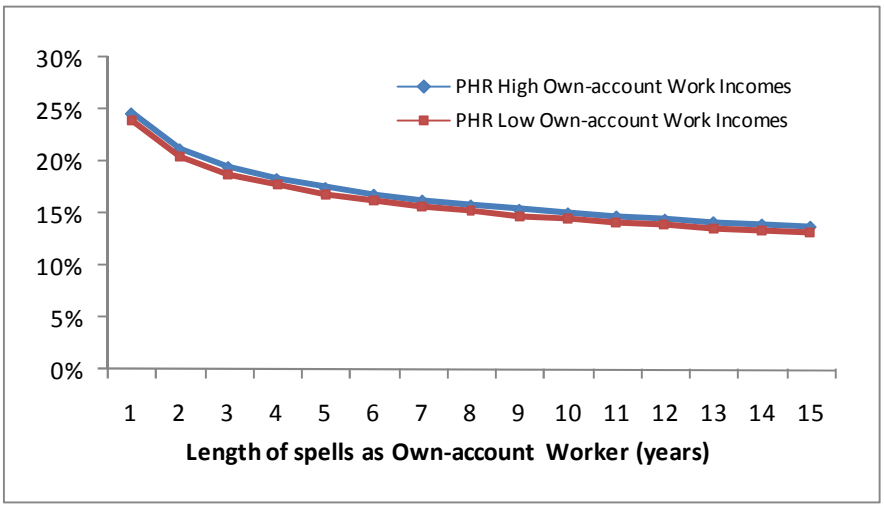
Notes:
(i) Simulation is based on the estimates of Table A1
(ii) Simulation for sample means of continuous and discrete variables
(iii) Low and High incomes are €5,000 under and over the mean, respectively

Fig. 111-114. Departure from work as employer to different states (Main exercise):
Predicted hazard rate *conditional on not having left work as employer before 1994*
for different levels of incomes as employer



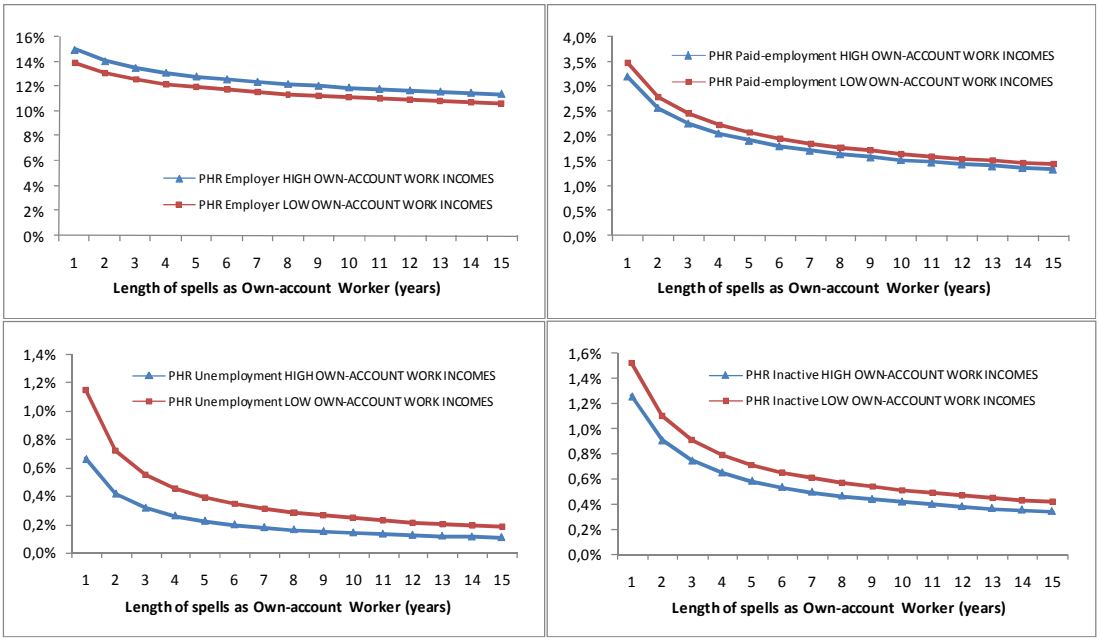
Notes:
(i) Simulation is based on the estimates of Table A1
(ii) Simulation for sample means of continuous and discrete variables
(iii) Low and High incomes are €5,000 under and over the mean, respectively

Fig. 115. Departure from own-account work (Main exercise):
Predicted hazard rate *conditional on not having left own-account work before 1994*
for different levels of own-account work incomes



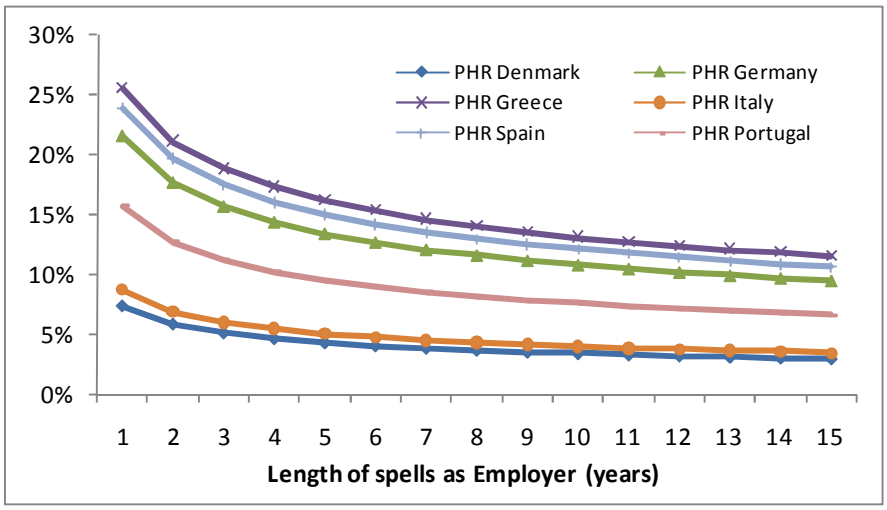
Notes:
(i) Simulation is based on the estimates of Table A7
(ii) Simulation for sample means of continuous and discrete variables
(iii) Low and High incomes are €5,000 under and over the mean, respectively

Fig. 116-119. Departure from own-account work to different states (Main exercise):
Predicted hazard rate *conditional on not having left own-account work before 1994*
for different levels of own-account work incomes



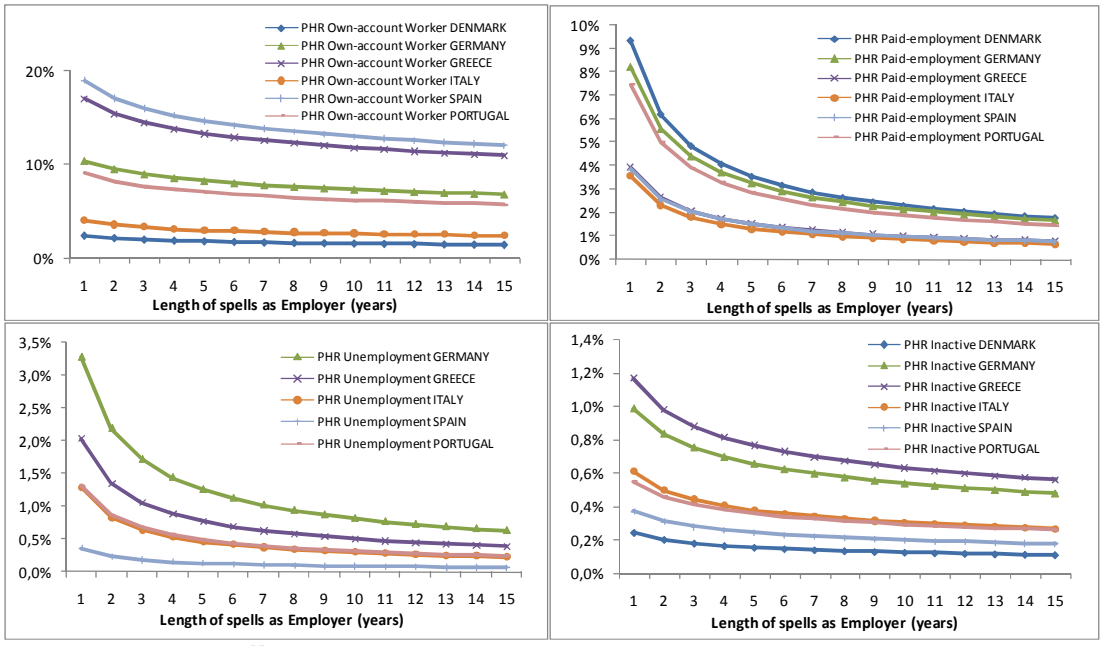
Notes:
(i) Simulation is based on the estimates of Table A7
(ii) Simulation for sample means of continuous and discrete variables
(iii) Low and High incomes are €5,000 under and over the mean, respectively

Fig. 120. Departure from work as employer (Main exercise):
Predicted hazard rate *conditional on not having left work as employer before 1994*
for different countries



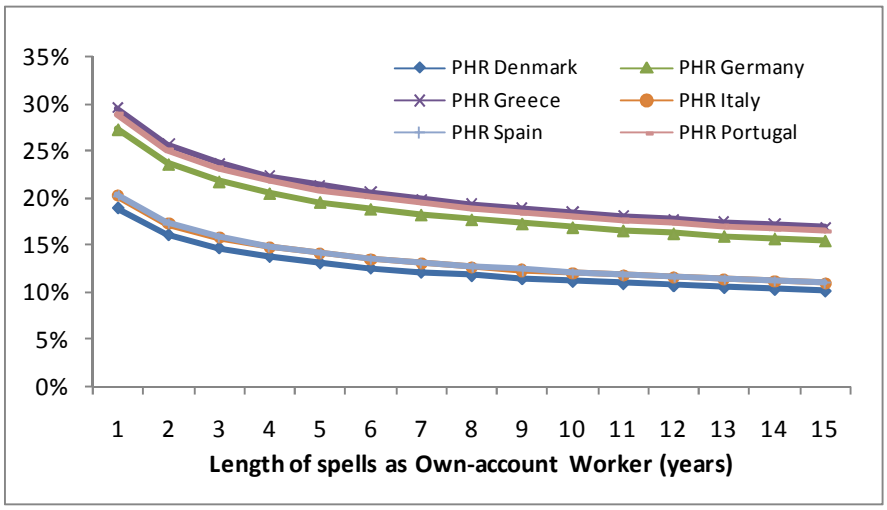
Notes:
(i) Simulation is based on the estimates of Table A1
(ii) Simulation for sample means of continuous and discrete variables

Fig. 121-124. Departure from work as employer to different states (Main exercise):
Predicted hazard rate *conditional on not having left work as employer before 1994*
for different countries



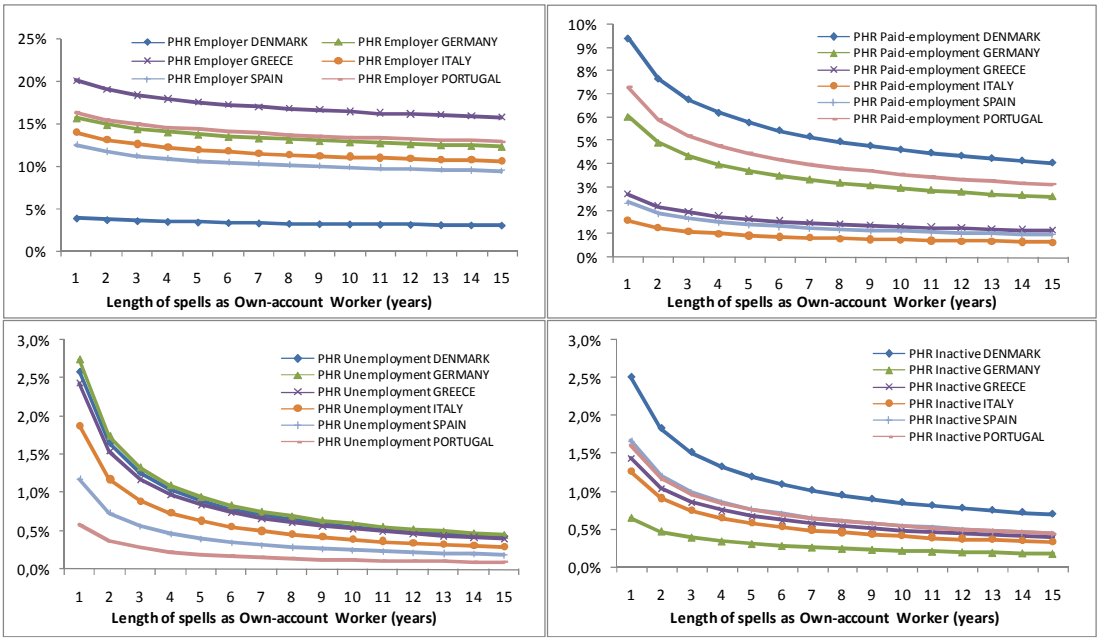
Notes:
(i) Simulation is based on the estimates of Table A1
(ii) Simulation for sample means of continuous and discrete variables

Fig. 125. Departure from own-account work (Main exercise):
Predicted hazard rate *conditional on not having left own-account work before 1994*
for different countries



Notes:
(i) Simulation is based on the estimates of Table A7
(ii) Simulation for sample means of continuous and discrete variables

Fig. 126-129. Departure from own-account work to different states (Main exercise):
Predicted hazard rate *conditional on not having left own-account work before 1994*
for different countries



Notes:
(i) Simulation is based on the estimates of Table A7
(ii) Simulation for sample means of continuous and discrete variables

Appendix B: Data description

Variable definitions referring to exercises developed with the European Community Household Panel (ECHP) are reported below.

Explanatory variables

Demographic characteristics:

Male	Dummy equals 1 for males.
Born abroad	Dummy equals 1 for born abroad individuals.
Age	Age reported by the individual, ranging from 21 to 59.
Cohabiting	Dummy equals 1 for cohabiting individuals and 0 otherwise.
Number of children under 14	Number of children aged under than 14 living within the household.
Relative(s) working as employer(s)	Dummy equals to 1 if there are any in the household.
Relative(s) working as own-acc. worker(s)	Dummy equals to 1 if there are any in the household.

Education:

No education or primary education	Dummy equals 1 for illiterate, no schooling individuals, or individuals with primary schooling as highest education level achieved, and 0 otherwise.
Secondary education	Dummy equals 1 for individuals with secondary schooling as highest education level achieved and 0 otherwise.
University studies	Dummy equals 1 for individuals with university studies and 0 otherwise.
Relatives with university studies	Dummy equals to 1 if there are any in the household.

Self-employment work characteristics:

Hours of work	Hours of work per week.

Firm's characteristics:

Construction sector	Dummy equals 1 for individuals whose codes of main activity of the local unit of the business is F (construction), by the "Nomenclature of Economic Activities" (NACE-93).
Industrial sector	Dummy equals 1 for individuals whose codes of main activity of the local unit of the business are C (mining and quarrying), D (manufactures) and E (electricity, gas and water supply), by the "Nomenclature of Economic Activities" (NACE-93).
Wholesale, hotels, restaurants & transport	Dummy equals 1 for individuals whose codes of main activity of the local unit of the business are G (wholesale and retail trade; repair of motor vehicles, motorcycles and personal/household goods), H (hotels and restaurants) and I (transport, storage and communication), by the "Nomenclature of Economic Activities" (NACE-93).
Financial services	Dummy equals 1 for individuals whose codes of main activity of the local unit of the business are J (Financial intermediation) and K (real estate, renting and business activities), by the "Nomenclature of Economic Activities" (NACE-93).

Other services	Dummy equals 1 for individuals whose codes of main activity of the local unit of the business are L (public administration and defense; compulsory social security), M (education), N (health and social work) and O-Q (other community, social and personal service activities; private households with employed persons; extra-territorial organizations and bodies), by the "Nomenclature of Economic Activities" (NACE-93).
Small firm (1-4 employees)	Dummy equals 1 for individuals working in small firms.
Medium or large firm (> 4 employees)	Dummy equals 1 for individuals working in medium or large firms.
Observed previous experience:	
Previous spell(s) as employer	Dummy equals 1 for individuals with observed previous spell(s) as employer.
Previous spell(s) as own-account worker	Dummy equals 1 for individuals with observed previous spell(s) as own-account worker.
Previous spell(s) as paid-employee	Dummy equals 1 for individuals with observed previous spell(s) as paid-employee.
Previous spell(s) as unemployed	Dummy equals 1 for individuals with observed previous spell(s) as unemployed.
Previous spell(s) as inactive	Dummy equals 1 for individuals with observed previous spell(s) as inactive.
Incomes:	
Inherit, gift or lottery winnings	Dummy equals 1 for households where anyone inherits any property capital, or receive a gift or lottery winnings, worth €2,000 or more during period *t-1*, and 0 otherwise.
Dwelling owner	Dummy equals 1 for households owning the dwelling in period *t-1*, and 0 otherwise.
Capital and property incomes (1 lag)	Capital and property incomes, and private transfers received during period *t-2*, converted to average euros of 1996, being corrected by Purchasing Power Parity (across countries) and Harmonised Consumer Price Index (across time).
Incomes as own-account worker (1 lag)	Incomes earned as self-employed during period *t-2*, converted to average euros of 1996, being corrected by Purchasing Power Parity (across countries) and Harmonised Consumer Price Index (across time).
Incomes as employer (1 lag)	Incomes earned as employer during period *t-2*, converted to average euros of 1996, being corrected by Purchasing Power Parity (across countries) and Harmonised Consumer Price Index (across time).
Business cycle:	
Annual unemployment rate	Standardized annual unemployment rate (source: OCDE).
Duration dependence:	
Ln (Duration as Employer)	Natural logarithm of the number of years as employer.
Ln (Own-account work duration)	Natural logarithm of the number of years as own-account worker.

Country dummies	*Dummies* equal 1 for individuals living in the named country, and 0 otherwise.

Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden and the United Kingdom.

Table B1. Descriptive statistics of the departure from work as employer (Main exercise)

Final destination		Censored	Own-Account Worker	Paid Employment	Unemployment	Inactive
Number of spells		3504	1120	325	135	153
Demographic characteristics						
	Females	25.1 %	26 %	23.7 %	34.1 %	64.1 %
	Average age	38.9 years	37.9 years	34.9 years	35.7 years	38.6 years
	Age 21-30 years	21.2 %	22.1 %	34.8 %	35.6 %	28.1 %
	Age 31-40 years	38.7 %	41.1 %	41.8 %	35.6 %	28.8 %
	Age 41-50 years	26.7 %	26.1 %	16 %	20.7 %	23.5 %
	Age 51-59 years	13.4 %	10.8 %	7.4 %	8.1 %	19.6 %
	No education / Very basic education	36.4 %	42.1 %	41.5 %	46.7 %	43.1 %
	Primary schooling / Secondary schooling	37.9 %	34.6 %	36.6 %	39.3 %	41.2 %
	University studies	25.7 %	23.4 %	21.8 %	14.1 %	15.7 %
	Relatives with university studies	23.6 %	21.9 %	20 %	17 %	17 %
	Cohabiting	77.5 %	77.3 %	70.2 %	67.4 %	81.7 %
	Number of children under 14	0.71 child.	0.75 child.	0.68 child.	0.63 child.	0.5 child.
	Relative(s) working as employer(s)	18.9 %	14.2 %	13.2 %	17 %	22.2 %
	Relative(s) working as own-account worker(s)	5.1 %	5.1 %	4 %	4.4 %	7.8 %
Firm's characteristics						
	Construction sector	15.6 %	16.2 %	17.5 %	13.3 %	6.5 %
	Industrial sector	15.4 %	14.2 %	19.1 %	15.6 %	13.1 %
	Financial services	15.7 %	14.7 %	14.5 %	8.1 %	13.1 %
	Wholesale, hotels, restaurants & transport	40.5 %	43.8 %	33.2 %	53.3 %	49 %
	Other services	12.9 %	11.1 %	15.7 %	9.6 %	18.3 %
	Small firm (1-4 employees)	71.4 %	85.3 %	66.8 %	71.1 %	73.9 %
	Medium firm (5-49 employees)	20.5 %	9.3 %	22.8 %	18.5 %	15.7 %
	Large or very large firm (>49 employees)	8 %	5.4 %	10.5 %	10.4 %	10.5 %
Experience as employer						
	Average hours of work per week	51.6 hours	51.4 hours	50 hours	49 hours	49.1 hours
	Average duration as employer (in years)	7.3 years	6.6 years	4.2 years	4.3 years	5.3 years
	Duration: 1 year	9.5 %	12.7 %	19.4 %	20 %	15 %
	Duration: 2 or 3 years	20.5 %	21.9 %	37.8 %	43 %	34 %
	Duration: 4 - 6 years	22.3 %	20.8 %	19.7 %	15.6 %	20.9 %
	Duration: 7 - 10 years	21.2 %	21.3 %	16 %	8.1 %	13.7 %
	Duration: more than 10 years	26.5 %	23.4 %	7.1 %	13.3 %	16.3 %
Previous labour market situation						
	Previous spell(s) as employer	12.2 %	6.9 %	6.5 %	7.4 %	5.9 %
	Previous spell(s) as own-account worker	5.9 %	7.2 %	6.5 %	8.9 %	4.6 %
	Previous spell(s) as paid-employed	31.7 %	23.9 %	35.1 %	24.4 %	20.3 %
	Previous spell(s) as unemployed	35.3 %	38 %	47.1 %	64.4 %	45.1 %
	Previous spell(s) as inactive	11.6 %	7.1 %	11.4 %	14.1 %	23.5 %
Incomes						
	Dwelling owner	76.5 %	77.1 %	67.4 %	69.6 %	71.2 %
	Receiving capital and property incomes.	35.9 %	35.2 %	33.2 %	27.4 %	32 %
	Average annual capital and property incomes	€1,083	€564	€541	€236	€502
	Average annual capital and property incomes (those who receive)	€3,018	€1,604	€1,628	€861	€1,567
	Average annual incomes as employer	€13,940	€11,094	€8,578	€6,926	€6,484
Country						
	Austria	3.6 %	2.2 %	1.8 %	1.5 %	2 %
	Belgium	5.4 %	3.5 %	4 %	3.7 %	3.9 %
	Denmark	2.5 %	0.5 %	3.4 %	*No obs.*	0.7 %
	Finland	5 %	6.4 %	3.4 %	4.4 %	2.6 %
	France	*No observations*				
	Germany	9.5 %	7.2 %	12.9 %	10.4 %	9.2 %
	Greece	15.6 %	27 %	12 %	20.7 %	22.2 %
	Ireland	6.7 %	6.7 %	4.6 %	1.5 %	6.5 %
	Italy	26.1 %	11.4 %	23.4 %	37 %	30.7 %
	Luxembourg	*No observations*				
	Netherlands	0.5 %	0.3 %	1.2 %	No obs.	0.7 %
	Portugal	12.3 %	12.4 %	16.9 %	5.9 %	9.2 %
	Spain	12.9 %	22.3 %	16.3 %	14.8 %	12.4 %
	Sweden	*No observations*				
	United Kingdom	*No observations*				

Table B2. Descriptive statistics of the departure from work as employer (Complementary exercise)

Final destination	**Censored**	**Own-Account Worker**	**Paid Employment**	**Unemployment**	**Inactive**
Number of spells	1982	1025	275	120	138
Demographic characteristics					
Females	24.2 %	26 %	24.4 %	34.2 %	67.4 %
Born abroad	4.2 %	3.5 %	2.5 %	5 %	4.3 %
Average age	38.8 years	37.8 years	34.7 years	35.1 years	38.3 years
Age 21-30 years	21 %	22.3 %	36.4 %	37.5 %	29.7 %
Age 31-40 years	40.1 %	41.4 %	40 %	38.3 %	28.3 %
Age 41-50 years	26 %	25.9 %	17.1 %	16.7 %	23.2 %
Age 51-59 years	13 %	10.4 %	6.5 %	7.5 %	18.8 %
No education / Very basic education	39.6 %	44.8 %	46.9 %	50 %	46.4 %
Primary schooling / Secondary schooling	37.5 %	33.4 %	31.3 %	38.3 %	38.4 %
University studies	22.9 %	21.9 %	21.8 %	11.7 %	15.2 %
Relatives with university studies	22.6 %	21.5 %	18.9 %	15.8 %	17.4 %
Cohabiting	78.5 %	77.1 %	68.4 %	63.3 %	81.9 %
Number of children under 14	0.75 child.	0.78 child.	0.69 child.	0.65 child.	0.5 child.
Relative(s) working as employer(s)	21.4 %	15.1 %	13.5 %	17.5 %	23.9 %
Relative(s) working as own-account worker(s)	4.5 %	5.4 %	4.7 %	4.2 %	8.7 %
Firm's characteristics					
Construction sector	14.7 %	16.4 %	18.5 %	12.5 %	5.1 %
Industrial sector	16.9 %	14.7 %	19.3 %	17.5 %	12.3 %
Financial services	15.1 %	13.4 %	13.8 %	7.5 %	12.3 %
Wholesale, hotels, restaurants & transport	42.2 %	44.6 %	32.4 %	51.7 %	51.4 %
Other services	11.1 %	10.9 %	16 %	10.8 %	18.8 %
Small firm (1-4 employees)	70.5 %	86.5 %	67.3 %	72.5 %	75.4 %
Medium firm (5-49 employees)	22.1 %	9.1 %	22.2 %	18.3 %	15.9 %
Large or very large firm (>49 employees)	7.4 %	4.4 %	10.5 %	9.2 %	8.7 %
Experience as employer					
Average hours of work per week	52.2 hours	51 hours	49.1 hours	48.2 hours	48.7 hours
Average duration as employer (in years)	7.8 years	6.9 years	4.5 years	4.6 years	5.6 years
Duration: 1 year	7.8 %	12.4 %	20.7 %	21.7 %	14.5 %
Duration: 2 or 3 years	18.7 %	18.6 %	32.7 %	39.2 %	30.4 %
Duration: 4 - 6 years	20.4 %	20.6 %	20 %	15 %	22.5 %
Duration: 7 - 10 years	21.5 %	23 %	18.5 %	9.2 %	14.5 %
Duration: more than 10 years	31.6 %	25.4 %	8 %	15 %	18.1 %
Previous labour market situation					
Previous spell(s) as employer	8.5 %	5.3 %	5.5 %	5.8 %	4.3 %
Previous spell(s) as own-account worker	4.4 %	6.9 %	6.2 %	10 %	5.1 %
Previous spell(s) as paid-employed	26.7 %	24 %	36.4 %	22.5 %	18.1 %
Previous spell(s) as unemployed	32.1 %	38.3 %	50.2 %	66.7 %	47.1 %
Previous spell(s) as inactive	7.4 %	6.9 %	12 %	15 %	23.9 %
Incomes					
Inherit, gift or lottery winnings	2.8 %	2.3 %	1.5 %	2.5 %	2.2 %
Dwelling owner	79.6 %	80.3 %	70.9 %	73.3 %	73.2 %
Receiving capital and property incomes.	32.2 %	32.6 %	27.3 %	21.7 %	29.7 %
Average annual capital and property incomes	€1,118	€586	€430	€210	€538
Average annual capital and property incomes (those who receive)	€3,467	€1,799	€1,578	€967	€1,812
Average annual incomes as employer	€13,634	€10,638	€6,733	€5,867	€5,769
Country					
Austria	4.3 %	2.4 %	1.8 %	1.7 %	2.2 %
Belgium	6.5 %	3.6 %	4.7 %	4.2 %	4.3 %
Denmark	3.1 %	0.6 %	4 %	*No obs.*	0.7 %
Finland	5.7 %	7 %	4 %	5 %	2.9 %
France	*No observations*				
Germany	*No observations*				
Greece	16.6 %	28.9 %	13.8 %	23.3 %	24.6 %
Ireland	7.1 %	7.1 %	5.5 %	1.7 %	7.2 %
Italy	28.7 %	12.4 %	27.3 %	40.8 %	34.1 %
Luxembourg	*No observations*				
Netherlands	*No observations*				
Portugal	15.8 %	13.6 %	19.6 %	6.7 %	10.1 %
Spain	12.1 %	24.4 %	19.3 %	16.7 %	13.8 %
Sweden	*No observations*				
United Kingdom	*No observations*				

Table B3. Descriptive statistics of the departure from own-account work (Main exercise)

Final destination		**Censored**	**Employer**	**Paid Employment**	**Unemployment**	**Inactive**
Number of spells		2582	1361	339	142	189
Demographic characteristics						
	Females	30.7 %	26.3 %	25.1 %	27.5 %	70.9 %
	Average age	39.6 years	38 years	35.6 years	36.2 years	40.8 years
	Age 21-30 years	20.1 %	22.6 %	33.9 %	36.6 %	19 %
	Age 31-40 years	36.1 %	40 %	36.9 %	31 %	33.3 %
	Age 41-50 years	27.8 %	27.8 %	20.6 %	23.2 %	23.3 %
	Age 51-59 years	16 %	9.7 %	8.6 %	9.2 %	24.3 %
	No education / Very basic education	44.7 %	41.6 %	47.2 %	50.7 %	56.1 %
	Primary schooling / Secondary schooling	33.4 %	34.9 %	32.2 %	31.7 %	33.3 %
	University studies	21.9 %	23.5 %	20.6 %	17.6 %	10.6 %
	Relatives with university studies	22.1 %	21.7 %	18.9 %	17.6 %	19 %
	Cohabiting	75.1 %	78 %	73.7 %	64.8 %	85.7 %
	Number of children under 14	0.63 child.	0.76 child.	0.74 child.	0.68 child.	0.59 child.
	Relative(s) working as employer(s)	5.7 %	5 %	5.6 %	7 %	11.6 %
	Relative(s) working as own-account worker(s)	14.7 %	17.7 %	15.3 %	17.6 %	11.1 %
Firm's characteristics						
	Construction sector	13 %	15 %	19.5 %	11.3 %	4.2 %
	Industrial sector	10.6 %	14.6 %	9.4 %	12.7 %	10.1 %
	Financial services	15.4 %	15.7 %	16.2 %	7.7 %	6.3 %
	Wholesale, hotels, restaurants & transport	46.7 %	43.3 %	44 %	59.2 %	64 %
	Other services	14.3 %	11.5 %	10.9 %	9.2 %	15.3 %
Experience within own-account work						
	Average hours of work per week	50.3 hours	51.2 hours	49.2 hours	49.7 hours	48.3 hours
	Average duration as own-acc. worker (in years)	6.8 years	6.4 years	4.4 years	4.1 years	5.3 years
	Duration: 1 year	10.9 %	14.8 %	18 %	30.3 %	21.2 %
	Duration: 2 or 3 years	23.5 %	22.6 %	35.4 %	31.7 %	23.8 %
	Duration: 4 - 6 years	22.7 %	20.1 %	24.8 %	16.9 %	25.4 %
	Duration: 7 - 10 years	19.3 %	20.9 %	13.6 %	11.3 %	14.8 %
	Duration: more than 10 years	23.5 %	21.6 %	8.3 %	9.9 %	14.8 %
Previous labour market situation						
	Previous spell(s) as employer	6.5 %	6.8 %	5 %	3.5 %	2.6 %
	Previous spell(s) as own-account worker	9.8 %	8.4 %	8.3 %	4.9 %	7.4 %
	Previous spell(s) as paid-employed	26.6 %	22.6 %	31.6 %	13.4 %	12.7 %
	Previous spell(s) as unemployed	43.1 %	38.4 %	52.8 %	65.5 %	45.5 %
	Previous spell(s) as inactive	13.3 %	8.1 %	11.2 %	11.3 %	20.6 %
Incomes						
	Dwelling owner	73.8 %	79.3 %	64 %	64.1 %	79.4 %
	Receiving capital and property incomes.	36 %	35.5 %	30.7 %	28.9 %	16.9 %
	Average annual capital and property incomes	€527	€487	€333	€359	€396
	Average annual capital and property incomes (those who receive)	€1,464	€1,373	€1,086	€1,243	€2,340
	Average annual incomes as own-acc. worker	€9,944	€10,661	€7,096	€4,339	€5,320
Country						
	Austria	2.5 %	2.6 %	2.4 %	*No obs.*	2.1 %
	Belgium	4 %	3.2 %	1.5 %	2.1 %	1.6 %
	Denmark	1.9 %	0.5 %	3.5 %	1.4 %	3.7 %
	Finland	6.8 %	8.8 %	7.4 %	10.6 %	4.2 %
	France	*No observations*				
	Germany	5.8 %	5.8 %	7.7 %	3.5 %	1.6 %
	Greece	18.6 %	28.4 %	16.2 %	23.9 %	24.9 %
	Ireland	6.2 %	7.1 %	5.3 %	6.3 %	5.8 %
	Italy	12.2 %	12.1 %	7.4 %	14.8 %	12.2 %
	Luxembourg	*No observations*				
	Netherlands	6.5 %	0.1 %	4.7 %	0.7 %	1.1 %
	Portugal	11 %	12.2 %	17.7 %	2.1 %	14.3 %
	Spain	24.6 %	19.1 %	26.3 %	34.5 %	28.6 %
	Sweden	*No observations*				
	United Kingdom	*No observations*				

Table B4. Descriptive statistics of the departure from own-account work (Complementary exercise)

Final destination	**Censored**	**Employer**	**Paid Employment**	**Unemployment**	**Inactive**
Number of spells	1386	1272	296	135	182
Demographic characteristics					
Females	29.7 %	25.7 %	24.3 %	28.1 %	72 %
Born abroad	4.9 %	3.5 %	6.1 %	6.7 %	5.5 %
Average age	40.2 years	38 years	35.1 years	36.2 years	40.5 years
Age 21-30 years	18.1 %	22.8 %	36.5 %	37 %	19.2 %
Age 31-40 years	35.6 %	40.2 %	36.1 %	29.6 %	34.1 %
Age 41-50 years	29.6 %	27.1 %	19.3 %	24.4 %	23.6 %
Age 51-59 years	16.7 %	9.9 %	8.1 %	8.9 %	23.1 %
No education / Very basic education	48 %	43.7 %	49.3 %	51.9 %	56 %
Primary schooling / Secondary schooling	33 %	34 %	31.4 %	31.1 %	33.5 %
University studies	19 %	22.3 %	19.3 %	17 %	10.4 %
Relatives with university studies	21.4 %	21.4 %	18.9 %	18.5 %	18.7 %
Cohabiting	76.4 %	78.1 %	72.6 %	65.2 %	85.7 %
Number of children under 14	0.68 child.	0.77 child.	0.74 child.	0.69 child.	0.62 child.
Relative(s) working as employer(s)	5.3 %	5.1 %	5.7 %	7.4 %	12.1 %
Relative(s) working as own-account worker(s)	16.1 %	18.4 %	17.6 %	17.8 %	11.5 %
Firm's characteristics					
Construction sector	12 %	15.2 %	21.6 %	11.1 %	4.4 %
Industrial sector	10 %	15 %	9.5 %	13.3 %	10.4 %
Financial services	10.7 %	14.7 %	14.2 %	7.4 %	6 %
Wholesale, hotels, restaurants & transport	55.6 %	43.9 %	44.3 %	59.3 %	64.3 %
Other services	11.8 %	11.2 %	10.5 %	8.9 %	14.8 %
Experience within own-account work					
Average hours of work per week	51.1 hours	51 hours	48.8 hours	49.3 hours	48 hours
Average duration as own-acc. worker (in years)	7.2 years	6.7 years	4.4 years	4.2 years	5.3 years
Duration: 1 year	10.4 %	14.3 %	19.6 %	30.4 %	21.4 %
Duration: 2 or 3 years	19.3 %	20.8 %	32.8 %	30.4 %	24.2 %
Duration: 4 - 6 years	22.4 %	19.7 %	25.3 %	17.8 %	23.6 %
Duration: 7 - 10 years	21.2 %	22.2 %	13.9 %	11.1 %	15.4 %
Duration: more than 10 years	26.8 %	23 %	8.4 %	10.4 %	15.4 %
Previous labour market situation					
Previous spell(s) as employer	4.4 %	6.5 %	5.1 %	3 %	2.2 %
Previous spell(s) as own-account worker	9.1 %	8.1 %	6.8 %	4.4 %	7.1 %
Previous spell(s) as paid-employed	19.7 %	22.3 %	30.1 %	12.6 %	12.1 %
Previous spell(s) as unemployed	40.8 %	38.7 %	57.1 %	64.4 %	45.1 %
Previous spell(s) as inactive	10.1 %	7.9 %	11.5 %	11.1 %	20.9 %
Incomes					
Inherit, gift or lottery winnings	2.3 %	2.6 %	1.4 %	3 %	0.5 %
Dwelling owner	77 %	81.3 %	67.6 %	66.7 %	80.2 %
Receiving capital and property incomes.	35.4 %	32.9 %	30.4 %	28.1 %	16.5 %
Average annual capital and property incomes	€431	€487	€288	€358	€404
Average annual capital and property incomes (those who receive)	€1,220	€1,478	€947	€1,270	€2,453
Average annual incomes as own-acc. worker	€9,603	€10,300	€6,280	€3,972	€5,006
Country					
Austria	3.3 %	2.8 %	2.7 %	*No obs.*	2.2 %
Belgium	4 %	3.5 %	1.7 %	2.2 %	1.6 %
Denmark	2.5 %	0.6 %	4.1 %	1.5 %	3.8 %
Finland	8 %	9.4 %	8.4 %	11.1 %	4.4 %
France	*No observations*				
Germany	*No observations*				
Greece	22.4 %	30.3 %	18.2 %	25.2 %	25.8 %
Ireland	6.4 %	7.3 %	6.1 %	6.7 %	6 %
Italy	12.8 %	12.9 %	8.4 %	14.8 %	12.1 %
Luxembourg	*No observations*				
Netherlands	*No observations*				
Portugal	13.9 %	13 %	20.3 %	2.2 %	14.3 %
Spain	26.7 %	20.4 %	30.1 %	36.3 %	29.7 %
Sweden	*No observations*				
United Kingdom	*No observations*				

Part V
Concluding Remarks

Chapter 10. Conclusions and Future Lines of Research

This dissertation provides an exhaustive empirical analysis of the decision to become an entrepreneur and success in self-employment across the EU-15. We start by analyzing the decision to become self-employed with and without employees from unemployment and paid-employment using discrete choice models. Furthermore, this work studies the decision of becoming self-employed with employees from own-account self-employment, which can be seen as the result of business growth and success. On the other hand, discrete hazard rate models are used to measure self-employment stability. Finally, two complementary duration analyses are performed where we distinguish those own-account workers from employers as starting status. In addition, and before presenting the empirical works forming the core of this dissertation, this thesis tries to clarify a conceptual framework for the existing definitions and taxonomies of the entrepreneurship concept, and is complemented by an analysis and evaluation of some of the existing databases to study this topic.

Based on the analysis of the transitions into self-employment, we obtain new evidence supporting the existence of several factors affecting each considered transition with different intensity, both in terms of starting and arrival states. As an illustration, we observe how the effect of liquidity constraints is much higher for transitions to employer than for transitions to own-account self-employment. On the other hand, our estimation results also show how the estimated probabilities of switching are strongly dependent on these states. Thus, the probabilities of switching to employer are seen to be irrespective of starting status, while the probability of transition for unemployed people to own-account self-employment is much higher (eight times higher) than the ones for the paid-employed. This result supports the idea that own-account self-employment is seen as an alternative to unemployment.

Turning our attention to the self-employment stability (i.e. duration), and in line with previous studies, the hazard is seen to decrease with duration whatever the exit route, which can be interpreted in terms of “learning”. Survival is also seen to depend strongly on the results of the entrepreneurial activity. When our analysis devoted to survival as own-account worker is compared to the survival as an employer, our estimations also show interesting results. These results point to the existence of higher probabilities of exit from own-account worker to employer –sign of success- compared to other destinations –wage-employment, unemployment or inactivity-. Therefore, the prediction regarding the possible negative effects of the labour market regulation on transitions from own-account work to employer does not seem to be accurate. On the other hand, when an employer has to face dismissal, he opts for switching to own-account worker rather than other destinations –paid-employment, unemployment or inactivity-. These results suggest an absence of significant effects of adjustment costs –dismissal costs- for employers.

One of the most interesting results obtained within this dissertation perhaps refers to the importance of human capital endowments regarding all dynamics related to self-employment. Thus, we observe how all informal acquisition processes of this capital (i.e. previous experience in the labour market or intergenerational transfers) present stronger effects than those attached to formal education –which also present an important impact-. Therefore, if the objective is to

foster long-term successful self-employment, the prescription should be not only to facilitate entry by means of subsidies or guaranties but also to favour the acquisition of the necessary entrepreneurial human capital, in order to get those better skilled individuals to become entrepreneurs –in line with that stressed by the "allocation of talent view"-.

However, still regarding human capital effects, the analysis carried out still leave some questions unanswered. Thus, our analysis of transitions reveals that those unemployed entering self-employment are, in particular, the better skilled (i.e. individuals with higher endowments of human capital and lower length of previous unemployment spells). Hence, these results do not support the adverse selection hypothesis. On the other hand, previous unemployment experiences strongly increase the risk of exiting self-employment to this state again. Therefore, it becomes necessary to obtain further evidence in order to compare how effective employment services and small-business assistance programmes are at getting the unemployed back to work. Just by working in this direction, we might cease distorting the occupational choice by encouraging unskilled individuals to enter self-employment.

Furthermore, we would like to stress the effects of both individual and aggregated shocks (i.e. business earnings, and macroeconomic performance) on self-employment survival and growth –this last *proxied* by own-account workers' hiring decisions-. Indeed, this work highlights the impact that self-employed incomes have on stability and growth. On the other hand, when controlling for the effect of business conditions, our results are fully consistent with the "prosperity-pull" view, irrespective of the kind of analysis.

All these questions raise the need to consider the pertinence and precision of the existing European entrepreneurial promotion policy not just as regards objectives or aims, but also in terms of policy instruments.

Just to conclude and outside the scope of this work, but unquestionably interesting for future research will be the search for the underlying factors related with the different probabilities of both entering, survival and growing across countries. Initially, we are tempted to consider these fixed effects as a consequence of the existent differences between institutional frameworks across countries. However, the analysis devoted to the Spanish case advises us to cautiously consider any interpretation. Thus, given that Spanish regions have the same legislative framework, the presence of regional specific effects might be due to the existence of other specific factors –i.e. effects concerning to the business economic environment across regions-. Consequently, those countries-specific effects detected within the European analysis might emerge as the sum of quite diverse effects, which can differently affect these decisions both in terms of intensity and direction of the causal relationship. In sum, there is no doubt that a better understanding of these particular effects would contribute in the design of a better strategy in order to achieve Lisbon's goals.