

Moving on From Nascent Entrepreneurship: Measuring Cross-National Differences in the Transition to New Business Ownership

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Abstract

Nascent entrepreneurship (NE) and new business ownership (NBO) are subsequent stages in the entrepreneurial process. We illustrate how information from the largest internationally harmonized data base on entrepreneurship, the Global Entrepreneurship Monitor (GEM) project, can be used to approximate the entrepreneurial process. We make a methodological contribution by computing the ratio of NBO to NE in a way that it reflects the transition from nascent to new business ownership and provides cross-nationally comparable information on the efficiency of the entrepreneurial process for 48 countries. We report evidence for the validity of the transition ratio by benchmarking it against transition rates obtained from longitudinal studies and by correlating it with commonly used entrepreneurship indicators and macro-level economic indices. The transition ratio enables future cross-national research on the entrepreneurial process by providing a reliable and valid indicator for one key transition in this process.

Keywords: entrepreneurial process, nascent entrepreneurship, transition ratio, birth rate, Global Entrepreneurship Monitor (GEM), Panel Study of Entrepreneurial Dynamics (PSED)

JEL Classifications L26 – Entrepreneurship, M13 - New Firms; Startups; O57 - Comparative Studies of Countries

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1. Introduction

New businesses do not come into being instantaneously but entrepreneurs create them through a series of actions (Baron, 2007; Delmar and Shane, 2004; Gartner, 1985). Although the notion of the entrepreneurial process is well-accepted at the individual and firm-level (*ibid*), it has not gained much attention at the national level. In a significant theoretical contribution Baker, Gedajlovic and Lubatkin (2005) highlight that our understanding of the factors influencing entrepreneurial dynamics and the process of business creation at the national level is still limited. This is despite the fact that considerable cross-national variation seems to exist. For instance, in some countries apparently all attempts to start a business result in an operating business being created, while in other countries only a minority of start-up attempts gets converted (Arenius and Ehrstedt, 2008; Parker and Belghitar, 2006; Reynolds and Curtin, 2011a). One reason for the lack of robust nation-level empirical research on the entrepreneurial process is arguably the lack of appropriate data on the entrepreneurial process. Cross-nationally comparable longitudinal data are only available for a small set of mostly highly developed countries (Reynolds and Curtin, 2011). This is where the present research makes two contributions.

First, we make a theoretical contribution to the conceptualization of the entrepreneurial process at the national level by synthesizing two different perspectives – the opportunity perspective (e.g. Baker et al., 2005) and an action-regulation perspective (e.g., Frese, 2009; Gollwitzer, 1990). Both perspectives suggest that a key transition in the entrepreneurial process is that from nascent to new business ownership, i.e. the transition from taking steps to starting a business to actually creating an operational firm. They further

highlight that nascent and new business ownership are two qualitatively distinct phenomena. Second, we make a methodological contribution by illustrating how information from the largest international harmonized data base on entrepreneurship covering over 80 countries, the Global Entrepreneurship Monitor (GEM) project, can be used to approximate this key transition in the entrepreneurial process from nascent to new business ownership. We suggest a specific way to calculate a “transition ratio” based on the cross-nationally harmonized data that GEM provides. We further provide information on the reliability and validity of the “transition ratio” across a wide range of countries.

Our aim is to enable future cross-national research on the entrepreneurial process, which is limited to date. For such research our study offers a reliable and valid indicator for one key transition in the entrepreneurial process – the transition ratio, which provides a reference point to compare across countries how ‘efficient’ the start-up process is. Such research will ultimately enable policy makers to create effective framework conditions that support nascent entrepreneurs to convert their efforts into operational businesses – thereby enhancing the productivity of start-up efforts and making nascent entrepreneurship a more satisfactory experience for individual nascent entrepreneurs as they only reap the benefits of their efforts once an operational business is created.

Next we discuss the entrepreneurial process, and then review commonly used indicators of entrepreneurial activity – in doing so we highlight how they are unable to address the entrepreneurial process. We then introduce the methodology for the calculation of the transition ratio, and evidence on its reliability and validity. We close with the discussion.

2. The entrepreneurial process

Entrepreneurship is the process of discovery, evaluation and exploitation of opportunities (Baron, 2007; Shane and Venkataraman, 2000). This process unfolds over time.

While discovery and evaluation can be seen as mental activities internal to the individual entrepreneur, the exploitation phase starts when entrepreneurs take action to gather and recombine the resources necessary to pursue an opportunity (Baron, 2007; Davidsson, 2006). Most nation-level research to date has arguably concentrated on identifying institutional and cultural factors that impact the occupational choice to become an entrepreneur. This research typically regards this occupational choice to be akin to discovering entrepreneurial opportunities deemed worth exploiting through the creation of a venture (e.g., Aidis, Estrin, and Mickiewicz, 2012; Brixy, Sternberg, and Stüber, 2012). However, we know from longitudinal studies that follow nascent entrepreneurs - i.e. individuals who take steps to create a venture such as looking for equipment or a location, organizing a start-up team, preparing a business plan, or beginning to save money (Carter, Gartner, and Reynolds, 1996) - that as much as half of these efforts do not result in the creation of an operational enterprise. In addition, there is considerable variation across nations in how successfully entrepreneurs master this transition (e.g. Reynolds and Curtin, 2011a). The entrepreneurial process perspective informs us as to why this might be the case.

The *opportunity* view of the entrepreneurial process emphasizes nascent entrepreneurship as a learning phase in which the discovered opportunity is more closely evaluated through action. Such evaluation can ultimately result in a negative outcome, and consequently the venture creation process is abandoned. The entrepreneurial discovery process starts with the conception of a venture idea that can change and become more and more elaborate over time (Davidsson, 2003: 340). This process is hardly linear, predictable, or inevitable (Dimov, 2011), but rather highly uncertain – it is often far less clear whether a situation perceived as an opportunity can indeed be developed into an operational venture. One way to reduce uncertainty is to start to act and engage in the business creation process, e.g., by writing a business plan, purchasing equipment, discussing the idea with potential customers or financial institutions (Dimov, 2010). These activities contribute to the

development of the opportunity and thus ultimately towards the creation of an operational business or result in abandoning this process. On the macro-level, countries' institutional settings can differ widely in how supportive they are of different types of businesses and the structure of opportunity costs they offer. Thus, the creation of a business around a certain opportunity may make sense in one institutional setting, but abandoning the process may be the better choice for the nascent entrepreneur in another setting (Baker et al., 2005).

The *action-regulation* view on the entrepreneurial process emphasizes entrepreneurship as a goal-directed behavior by individuals towards the creation of a venture (Frese, 2009). As with any goal, goal pursuit might not be successful for a variety of reasons, e.g. individuals might not have sufficient commitment to a certain goal, have not planned adequately how to achieve this goal or might face external circumstances that they cannot overcome or control (e.g. Ajzen, 1991, Frese, 2009; Gollwitzer, 1990). Nascent entrepreneurship in this perspective signals that an individual has made a decision to engage in entrepreneurship and now starts to implement this decision. At the same time the action-regulation perspective recognizes that starting to engage in actions towards goal pursuit (nascent entrepreneurship) is not the same as achieving that goal (creating an operational business). This critical transition from goal pursuit to implementation may be hindered or facilitated by various national institutions (Baker et al., 2005). For instance, strong cultural preferences for planning and national differences in the ease of accessing financial and other resources may increase the likelihood of transitioning from the nascent to the operational business phase.

3. Commonly used nation-level indicators of entrepreneurship and past research

Cross-national, comparative entrepreneurship research receives growing attention; partly due the increased availability of cross-nationally harmonized data on entrepreneurship

(Davidsson, 2006). Arguably, the largest of such data sets is created by the Global Entrepreneurship Monitor (GEM) project, which among other things conducts yearly population-representative surveys in up to 80 countries and thereby allows tracking entrepreneurial activity across countries and time.

The most frequently used indicators to describe a country's entrepreneurial activity are the level of Nascent Entrepreneurship (NE), the level of New Business Owner-Managers (NBOM) and the Total Early-stage Entrepreneurial Activity rate (or TEA rate) (Amorós, Bosma, and Levie, 2011; Bergmann, Mueller, and Schrette, 2009; Bosma, Coduras, Litovsky, and Seaman, 2012). TEA is a composite of two measures: 1) the national rate of nascent entrepreneurs (NE), encompassing all those individuals in the adult population who take first steps towards setting up a business, but who have not yet paid wages or salaries for more than 3 months, and 2) the national rate of new business owner-managers (NBOM), representing those who own or co-own a business that returns income to its owner(s) and is less than 3 ½ years old (Reynolds et al., 2005). The time point of business creation has been defined in multiple ways (Diochon, Menzies, and Gasse, 2007). We adopt the view that businesses are operational when they generate a positive cash flow (Reynolds et al., 2005) and thus the operational definition used in the GEM project: A business has been created when it pays its owners wages, profits, or payments in kind for more than 3 months. Businesses existing for more than 3 ½ years are referred to as established businesses and the entrepreneurs as established business owner-managers in the delineation of GEM. Throughout the process, people can disengage and not become (or stay) business owners.

Past research has frequently used the TEA measure, which combines nascent and new business ownership, as a proxy for entrepreneurship (Bowen and De Clercq, 2008; Levie and Autio, 2008; 2011; van Stel, Carree, and Thurik, 2005) while other studies focus on nascent entrepreneurs or new business owner-managers only (e.g. Aidis, Estrin, and Mickiewicz,

2012; Wennekers, van Stel, Thurik, and Reynolds, 2005). Studies contrasting influences on nascent and new business ownership using the same sample of countries are relatively scarce, but point to different determinants of nascent vs. new business ownership. Reynolds and Curtin (2011a: 328) show that cultural values, country legal origin, female and male participation in the labor force, and education relate differently to rates of nascent and new business owners in a sample of 75 countries. Using a sample of 27 countries Uhlaner and Thurik (2007) also find education, national wealth and cultural values to be differently related to nascent vs. new business ownership. These differences lead to different proportions of new business owner-managers compared to nascent entrepreneurs across countries (Arenius and Ehrstedt, 2008).

While it is important to understand the determinants of entrepreneurial activity rates such as NE, NBOM and TEA, there are also large differences in the proportion of NE to NBOM per country and substantial country differences in the transition rate from nascent to new business ownership (Arenius and Ehrstedt, 2008; Reynolds and Curtin, 2011a). These differences suggest that we still not fully understand the entrepreneurial process and its determinants. If we only look at the rates and not at the relationship between different rates we might miss an important piece of information. However, we only know of one existing study that investigates influences on the transition rate from nascent to new business ownership. Arenius and Ehrenstedt (2008) test effects of cultural values (individualism, power distance, masculinity), age, education and gender, but find no significant associations with the ratio of NBOM to nascent NE. However, their analysis is only based on data from one year and they acknowledge that they have only scratched the surface with their paper and that for "a more accurate study, longer time periods over several years should be used" (Arenius and Ehrstedt, 2008: 148). Additionally, their analysis is based on a relatively simple measure, the quotient of NBOM to NE. We argue that a recalculation of NBOM is also needed to deal with

survivorship bias, because NBOM includes people who have started their business more than three years ago.

In general, any measure of the NBOM/NE ratio will be influenced by two general factors:

- 1) The *average transition rate* from NEs to NBOMs. The more nascent entrepreneurs succeed in starting an operating business, the higher is the likelihood of identifying NBOMs compared to NEs, thus, the higher is the transition rate.
- 2) The *average length* of the NE-process. The longer the NE process, the more NE will exist relative to NBOMs, the lower will be the transition rate.

It can be argued that all other influences can be subsumed under these two broad factors. For example, there might be a cultural influence on the “willingness to be identified as a nascent entrepreneur” (Davidsson and Reynolds, 2009: 276). Greater willingness to be identified would influence the average length of the NE-process.

The average length of the NE process relates specifically to how nascent entrepreneurs are defined within the GEM methodology – with a relatively vague delineation of both, the types of activities and the time frame of nascent entrepreneurial activity. First, it remains open what kind of activity has been conducted to help start a new business. Second, there is no time limit as to how long people can stay nascent entrepreneurs. By contrast, the identification of new business owner-managers involves a reasonably clear delimitation of the type of activity investigated (i.e. owner of a company they help manage) and the minimum (more than 3 months earning wages, profits or payments in kind from the business) and maximum time-period (i.e. the first time they is maximally 3 ½ years ago).

Davidsson and Reynolds (2009) illustrate these issues in a comparison of the characteristics of NEs in the U.S. and Australia. While NEs are overall quite similar in the two countries, there are differences concerning the location and the legal status of the

business. Australian NEs are more likely than U.S. NEs to have determined the location and the legal status of their business, suggesting that in the two countries people have conducted different activities when being identified as NE. This may also influence the length of the start-up process. Thus, we do not know how long a person already is in the process of starting a new business and how long it will remain a nascent entrepreneur once he or she is identified as being in the start-up process. This is important to consider since the duration of being a NE determines the probability of being selected as a NE by cross-sectional surveys of entrepreneurial activity such as GEM (Davidsson, 2008: 54).

Imagine as a simple example two countries of the same size where all nascent entrepreneurs manage to establish an operational business, i.e. become new business owner managers. However, for whatever reasons, people in country A need on average 12 months to get started while people in country B need 24 months. In this case, country B will have a nascent entrepreneur rate twice as high as country A, although the final number of new businesses is identical in both countries. Figure 1 illustrates another example. In the first country, the average gestation process of new businesses is long and few NEs develop operational businesses. Thus, the likelihood of identifying NEs in comparison to NBOM is high. Accordingly, the transition rate (NBOM/NE ratio) is low. In the country below, the average gestation process of new businesses is short and most NEs develop into operational businesses. Thus, the likelihood of identifying NEs in comparison to NBOM is low. Accordingly, the NBOM/NE ratio is high.

Include Figure 1 about here

We deal with the methodological challenges in computing the NBOM/NE ratio more fully in the following section.

4. The transition ratio as new measure

4.1 Data source

Our proposed new measure of start-up dynamics – the “transition ratio” - is based on data from the adult population survey (APS) of the Global Entrepreneurship Monitor (GEM) project. We compute the ratio using data from all countries that participated in GEM in the years 2001 to 2008. GEM collects representative random samples of the adult population between 18 and 64 years of age with a minimum sample size of approx. 2000 persons per country¹.

4.2 Calculating the transition ratio

We propose a transition ratio that is based on the rate of nascent entrepreneurs and a recalculated new business owner-manager rate. For a detailed explanation of the definition and measurement of nascent entrepreneurs and new business owner-managers in the GEM project see (Bosma et al., 2012; Bosma and Levie, 2010; Reynolds et al., 2005). In brief, the rate of *nascent entrepreneurs* is the proportion of the adult population who take steps towards setting up a business which they will (co-)own. These steps may include, e.g., looking for equipment or a location, beginning to save money. In addition, nascent entrepreneurs either have not yet received any personal income (wages, salaries or in kind) from their business or have received such income but for less than 3 months. The *rate of new business owner-managers* is the percentage of the adult population who actively manage a business they (co-)own that has generated some income for the owners for at least 3 months and a maximum of 42 months. After 42 months (3½ years) a business is considered established. The appendix shows the actual survey questions used in the GEM project.

¹ The minimum sample size per country and year is 2000 respondents. However, the entrepreneurial activity indicators are only calculated for people in the age range of 18 to 64 years which reduces the number of eligible cases for some countries (the lowest number of respondents per country was 1628).

We calculate a new rate of new business owner-managers (NBOM) as part of our proposed measure. The reason for this is as follows: The commonly used new business owner-manager rate includes all people who currently own and manage a business that is up to 3½ years old, i.e. who have first received wages, profits, or payments in kind in one of the three years previous to the time of data collection.² However, we are only interested in people who have recently made the transition from nascent entrepreneurship to an operating business. For this, 3½ years are too long. In addition, there is a good chance that some NBOM give up their business within the first 3½ years³.

Therefore, we use the original individual level GEM survey data to calculate an adapted new business owner-manager rate, which only includes people who own and manage a business that is up to 1½ years old.⁴ We call this rate NBOM1. As the reference period is only 1.5 years compared to up to 3.5 years, this rate only includes people who have recently made the transition to an operating business.⁵ Our newly proposed measure of entrepreneurial dynamics – the *transition ratio* - is calculated by dividing NBOM1 by the commonly used nascent entrepreneur rate from the previous survey year. In other words, we lag time periods: the NBOM1 rate from one year is being compared to the NE rate from the previous GEM data collection period/year. This helps us to accommodate Reynolds' and Curtin's (2011) concern that the NBOM/NE ratio based on cross-section GEM data from the same year cannot

² The half year is added to the three years timespan because data collection in the GEM project usually takes place in summer. Thus, if somebody says e.g. in summer 2010 that the first year he received wages, profits, or payments in kind was 2007, the business can be up to 3 ½ years old.

³ That is, the commonly used new business owner-manager rate is likely to be influenced by a survivor bias. It does not capture all people who have started a new business in the last 3½ years, but only those whose business is still active and who are still involved in this business when being surveyed. A business owner-manager who has already abandoned the business that s/he started less than 3½ years ago will not be captured by this measure. Thus, the commonly used NBOM measure depends to some extent on the survival rate of new businesses in the early years of their existence (Wennekers, van Stel, Thurik, and Reynolds, 2005: 297). If the survival rate is high, then the NBOM rate and consequently the NBOM/NE ratio are high (Reynolds and Curtin, 2011b).

⁴ As explained above, it is not possible to calculate a rate for new businesses that are exactly one year old because GEM only asks for the first year of wages, profits, or payments in kind and data collection in the GEM project takes place at midyear.

⁵ It should be noted, that although the adapted rate of new business owner managers ratio1 is superior from a theoretical point of view, it correlates highly to the commonly used measure of new business owner managers (Pearson correlation: 0.98).

appropriately reflect subsequent stages of the entrepreneurial process. As explained above, we do not know how long the nascent entrepreneurship phase lasts in different countries. The time lag of one year between the measurement of the NE rate and that of the NBOM1 rate has been chosen because it is a commonly used time span. For instance, panel studies based on the PSED methodology also use this time span to investigate the development of nascent entrepreneurs. These longitudinal studies find that a substantial part of nascent entrepreneurs already gave up after 1 year (Reynolds and Curtin, 2011a). Thus the 1-year lag between NBOM1 and NE rate seems a reasonable lag to achieve our aim of providing a cross-national reference point to compare the efficiency or productivity of nascent entrepreneurs' efforts across countries.

We calculate this transition ratio on the basis of all available GEM data for the years 2001 to 2008. Doing so, we get a sample of 201 transition ratios from seven different time periods. We can only calculate a transition ratio if a country has at least participated in two subsequent years between 2001 and 2008. Table 1 shows the values of the transition ratio for all available countries and years. We now turn to the reliability and validity of the new transition ratio measure.

Include Table 1 about here

4.3 Reliability of the transition ratio

Reliability usually refers to the degree of consistency across multiple measures of a variable. As we are dealing with country entrepreneurship activity rates, there is always only one value available for every year. We calculate the test-retest reliability between all possible pairs of subsequent transition ratios for every country, which results in a retest-reliability coefficient

of .49. It is common practice in the GEM project to combine data from two or more years to get more reliable estimates of entrepreneurship prevalence rates (Acs, Desai, and Klapper, 2008; Bergmann and Sternberg, 2007; Kwon and Arenius, 2010). We follow this practice and take the average of the transition ratio values of two subsequent periods respectively. The resulting retest correlation is .55. Thus, more reliable measures of the transition ratio can be obtained by combining data from multiple years. In the following analysis we use the average value of all seven periods.

The retest reliability of our measure cannot be expected to be as high as retest reliabilities reported for instance in psychometric testing, because we are comparing values which were each measured one year apart. There is more general evidence that entrepreneurship activity as measured, e.g., through new and established business owner rates is relatively stable over time (Kelley, Bosma, and Amorós, 2011; Stephan and Uhlaner, 2010). Still, even if entrepreneurship activity rates are relatively stable, at least some change is likely to occur due to a changing economic situation or policy changes (Bergmann and Sternberg, 2007). Thus, rather than reflecting unreliability, the retest correlation might to some degree also reflect true change in external conditions (DeVellis, 1991). To substantiate this point we conduct further tests.

A visual inspection of Table 1 reveals that there is indeed a certain variability of the transition ratio over time. We conduct further analyses to examine what factors may determine variations in the transition ratio. It seems reasonable to expect that there are two main sources of variation 1) substantive factors and 2) methodology related issues. Substantive factors refer to changes in the economic situation such as changes in demand or the quality of business framework conditions. For instance, it seems reasonable to expect that nascent entrepreneurs will be more successful in creating an operational business if demand increases and the regulatory framework is supportive. Thus, changes in the transition rate

might result from changes in GDP per capita growth and changes in the number of days required to start a new business. We measure the former by the standard deviation of GDP per capita growth (taken from the World Bank database) and the latter through the standard deviation in the number of days it takes to launch a business (taken from the World Bank Doing Business database) over the 2001 to 2008 time period. The variation in the transition ratio might also increase when the time span for which transition ratios are available is longer⁶ (e.g. Argentina vs. Australia in Table 1). This is, because meanwhile changes in demand or framework conditions may have occurred. We measure this as the number of years between the last and the first transition ratio available for a country.

Other factors that might influence the variability of the transition ratio over time have to do with the reliability of measurement. For instance, we might expect that smaller population samples interviewed by GEM might increase the variation in the transition ratio as it is based on less reliable data. Finally, the reliability of the transition ratio might also be influenced by the level of nascent entrepreneurial activity in a country. This is because the rate of nascent entrepreneurship acts as denominator in our transition ratio and small changes in nascent entrepreneurship lead to greater changes in the transition ratio for countries with a low compared to a high level of nascent entrepreneurship.

To test whether the variation in the transition ratio is mainly due to substantive vs. measurement reliability issues, we use these five predictor variables and regress them on the standardized mean deviation of the transition ratio. The standardized mean deviation of the transition ratio is calculated as the mean deviation of the transition ratio from the average value across years, divided by the average value to standardize it. This measure is superior to a simple standard deviation, because it is independent of the number of observations. This is an important property of the measure as, depending on the country, we have between one to

⁶Due to the cost of data collection, data are not available for all countries for all time periods.

seven values of the transition ratio (Table 1). Calculating a simple standard deviation of the transition ratio would lead to biased results for countries with few observations.

Table 2 shows the result of the regression analysis with the standardized mean deviation of the transition ratio as dependent variable. We find a significant positive relationship for the variation in the number of days to start a new business, and for the time span between the first and the last transition ratio in our sample. That is, we see more variability in the transition ratio, the more change there is in the quality of framework conditions and the longer the time span over which transition ratios are aggregated. We do not find a significant relationship concerning the last substantive influences, the variation in the GDP per capita growth ratio. Concerning measurement issues, we find a significant negative influence of the mean number of micro-level observations. Thus, as can be expected, the reliability of the transition ratio decreases with a decrease in the number of GEM observations. There is no significant influence of the mean nascent rate. Overall, there is indication for substantive as well as measurement-related influences on the variability, i.e. reliability of the transition ratio. Notably, the variability of the transition ratio is most strongly related to changes in the regulatory environment thereby providing first evidence for the validity of the transition ratio. We now turn to examine further evidence for its validity.

Include Table 2 about here

4.4 *Validation of the transition ratio*

We first investigate the discriminant validity of the transition ratio vis-à-vis common measures of the level of start-up activity. We then present further correlations with macro-

economic variables and finally investigate its criterion validity by comparing it to birth rates from longitudinal studies.

We see the transition ratio as providing complementary and distinct information compared to other commonly used measures of entrepreneurial activity, and thus expect small to modest correlations between the two. Table 3 shows the correlations between the newly calculated transition ratio and the standard GEM start-up rates for nascent entrepreneurship, new business ownership and the commonly used Total Early-Stage Entrepreneurial Activity (TEA). While there is a strong correlation among the standard GEM start-up rates, their correlation with the transition ratio is only moderate or non-existent, providing support for the discriminant validity of the new measure (Campbell and Fiske, 1959). The modest correlation between the transition ratio and the rate of new business owner managers is not surprising as the transition ratio is calculated based on a transformed version of this rate in the numerator. Thus, the transition ratio captures a different phenomenon than standard GEM measures and can, thus, complement existing GEM measures of entrepreneurial activity.

Regarding correlations with further macro-economic indicators, we find no significant relationship between the transition ratio and GDP per capita or GDP per capita growth (Table 3). There is, however, a significant negative association of the transition ratio with a country's unemployment rate. This is consistent with the view that higher unemployment triggers more "low quality" entrepreneurship, i.e. individuals who not quite have the necessary entrepreneurial skills are taking steps to start a business, but find it difficult to convert these efforts into operational businesses.

Include Table 3 about here

To provide further evidence that the transition ratio can indeed be interpreted as such we benchmark the average transition ratio values from the Global Entrepreneurship Monitor (GEM) against the business birth rates from existing longitudinal studies that track samples of nascent entrepreneurs over time. The set of longitudinal studies we refer to are the U.S. Panel Study of Entrepreneurial Emergence (PSED) I and II and other PSED-type studies (see Parker and Belghitar (2006) for an overview and Table 3). It is important to note that the procedure of identifying nascent entrepreneurs is almost the same in GEM and PSED and PSED-type studies which allows a direct comparison of the results.

Table 4 lists all the studies based on the PSED methodology that identify nascent entrepreneurs and follow them over time. We extend the analysis of Parker and Belghitar (2006) and add results for six countries. On the basis of these studies it is possible to calculate a "birth rate" of new businesses. This birth rate shows the percentage of all nascent entrepreneurs that have developed an operating new business one year after the initial screening interview. There are two results for the U.S. from the PSED I and the PSED II study. The birth rate is considerably lower in the PSED II study which is a result of a much stricter definition of what constitutes a new business. In PSED II, only those start-ups were counted as new businesses where monthly cash flow covering all expenses and owner's salaries had occurred in 6 or more of the past 12 months. In PSED I, the respondent's judgment that an operational new firm was established was already accepted as adequate (Reynolds and Curtin, 2008: 224). The birth rate definition given for PSED I is much closer to that of the other PSED-type and the GEM studies. Thus we use the birth rate based on this definition in the following analysis.

It is important to note that calculating a business "birth rate" based on a longitudinal study of nascent entrepreneurs is also methodologically challenging. For example, the Latvian PSED identified 400 nascent entrepreneurs in the initial screening. However, of these only

261 could be interviewed one year after the initial interview, which questions the reliability of the birth rate. Furthermore, Latvia went through a severe recession which began in 2008, one year after the initial PSED data collection (Dombrovsky, Paalzow, and Rastrigina, 2011). We therefore consider the Latvian PSED an outlier and refrain from using the Latvian PSED value for our analysis.

Include Table 4 about here

Figure 2 compares the birth rate from PSED-type studies with our transition ratio calculated based on the GEM project. It can be seen that there is a strong, significant relation between the two variables (Pearson's correlation: .80, if we include Latvia the correlation reduces, predictably, to .66).

Include Figure 2 about here

To sum up, the main result of our analysis is that there is a close correlation between our recalculated transition ratio based on cross-sectional, partly time-lagged GEM data and the corresponding birth rate of new businesses as measured in representative, longitudinal, PSED-type studies.

5. Discussion

Entrepreneurship is best viewed as a process rather than a singular event. Both opportunity and action-regulation perspectives on entrepreneurship highlight this point. However, research on the entrepreneurial process at the national level is scarce (e.g. Baker et al., 2005). One reason is arguably the lack of cross-nationally harmonized empirical data capturing properties

of the entrepreneurial process (as opposed to capturing the level of entrepreneurial activity). This study introduces a methodology to calculate the *transition ratio* as one indicator representing a key dynamic in the entrepreneurial process – the transition from nascent to new business ownership – based on the largest internationally harmonized database on entrepreneurship, the Global Entrepreneurship Monitor (GEM). We provide evidence for the reliability and validity of the transition ratio. We hope to stimulate future macro research on institutional and cultural determinants of the entrepreneurial process. For such research, the transition ratio provides a reference point to compare the ‘efficiency’ of the start-up process across countries.

We make a methodological contribution to international, comparative entrepreneurship research by introducing and validating the *transition ratio* from nascent to new business ownership as an indicator capturing a critical dynamic in the early stage entrepreneurial process based on GEM. Our transition ratio corresponds closely with “true” firm birth rates estimated by longitudinal studies of the start-up process, providing evidence for the ratios validity. We also find evidence for its test-retest reliability. Furthermore, we shed light on the factors contributing to the variation of the transition ratio over time. Changes in the institutional environment (ease of starting a business) emerge as the strongest predictor of variability in the transition ratio – providing further evidence for its validity and implying that policy makers wishing to enhance the efficiency of start-up efforts are well advised to examine business regulation. The low to modest correlations of the transition ratio with other commonly used indicators of the level of entrepreneurial activity highlight that the transition ratio captures indeed an additional, distinct aspect of business creation dynamics and provide additional evidence for the validity of the transition ratio. Moreover, the transition ratio showed an expected correlation with unemployment – high unemployment arguably leads individuals with less adequate skills to pursue entrepreneurship, who find it more difficult to

convert their start-up efforts (nascent entrepreneurship) into operational businesses. The transition ratio shows no correlations with national wealth or GDP growth.

Our study contributes to a better understanding of the entrepreneurial process in a cross-national perspective, whilst its methodological suggestions also contribute to a better understanding of the GEM data base. It extends past research by looking beyond indicators of the level of entrepreneurial activity in a country and contributes to the evolving entrepreneurial process perspective in comparative entrepreneurship research (e.g. Baker et al., 2005). We reviewed how the entrepreneurial process perspective – both the opportunity and action-regulation view – highlights the different quality of the nascent and new business ownership as different stages of the entrepreneurial process. We also reviewed empirical evidence showing that nascent entrepreneurship and new business ownership capture different phenomena – they have different predictors and correlates and there are substantial cross-national differences in the ratio between new business owner-managers and nascent entrepreneurs (e.g., Reynolds and Curtin, 2011a; Uhlaner and Thurik, 2007).

In light of these arguments and findings, the aggregation of nascent and new business owner rates into the Total Entrepreneurial Activity (TEA) rate – as widely used in past research – seems problematic. In particular, comparing TEA across countries can be misleading – as two countries with the same TEA might have very different rates of nascent vs. new business owners. In consequence, a politician copying policies to stimulate entrepreneurship from a country with a high TEA rate due to a high nascent (but low new business owner-manager) rate might increase the level of unsustainable business creation efforts rather than the level of resulting operational businesses. We see the transition ratio measure as an important complementary measure to TEA. In contrast to TEA, which captures nascent and new business ownership simultaneously in the same year, the transition ratio is sequential. It uses data on nascent entrepreneurship from one year and data on new business

ownership from the subsequent year. Where TEA is an aggregate of nascent and new business ownership, the transition ratio is a proportion of the two.

The implication for future research is to examine preferably three indicators simultaneously – i.e. the rate of nascent entrepreneurs, the rate of new business owner-managers as well as the transition ratio – to develop a better understanding of this important early stage of the entrepreneurial process. Similarly, policy makers seeking information on the level of entrepreneurial activity in their country should be advised to look at all three rates (nascent, new business-owner-managers and transition ratio)⁷. Whilst, it is important to understand what drives nascent entrepreneurship, it is equally important to learn how policy makers can support nascent entrepreneurs in a way that the efforts of those entrepreneurs are not ‘wasted’ but rather translate into successful new business creation. From a policy point of view, human effort invested in unsuccessful start-ups may be more efficiently allocated to other, more productive economic tasks. From the point of view of the individual nascent entrepreneur, one can only guess that trying to start a business and not being successful in launching it must be exhausting and frustrating. We believe that the transition ratio provides an important piece of information in this regard. To this end, future research should explore the determinants of the transition rate.

5.1 Further implications for future research and limitations

The precision of the transition ratio would be increased, if we were able to determine for how long nascent entrepreneurs are already nascent entrepreneurs. GEM captures nascent entrepreneurship by asking individuals about start-up related activities conducted within the past 12 months. However, nascent entrepreneurs might be active for longer (Reynolds and Curtin, 2011b) and there might be cross-national differences in the types of activities they conduct as nascent entrepreneurs (Davidsson and Reynolds, 2009). Thus, future (GEM)

⁷ TEA might be useful in giving a first overall approximation of the level of entrepreneurial activity.

research should include questions asking about the length of the nascent entrepreneurship phase and the kind of gestation activities conducted to improve the nascent entrepreneurship measure.

Our proposed transition ratio of new business owners to nascent entrepreneurs is based on cross-sectional data. By benchmarking our measure with "true" values from longitudinal studies we provide evidence of its validity. However, we cannot provide longitudinal, empirical evidence for every country in our sample. Clearly, the most reliable way to analyze the transition from nascent entrepreneurship to new business ownership is to identify a large, representative sample of nascent entrepreneurs and to keep track of their progress using a longitudinal research design (Reynolds and Curtin, 2011b). Nevertheless, such an approach is challenging and costly – and as seen in the case of Latvia also not without problems. It is unlikely that as many countries as investigated in this contribution will be able to implement such a longitudinal research project in the near future.

Future studies could explore whether different qualities of entrepreneurship might have different transition ratios.

5.2 Conclusion

We believe that the proposed transition ratio helps to overcome the lack of internationally comparable large-scale longitudinal data bases on business creation. Based on the evidence for its reliability and validity, we believe the transition ratio provides an important cross-nationally comparable reference point to evaluate the efficiency or productivity of start-up efforts, and can enable future cross-nationally comparative research on the entrepreneurial process. Nevertheless, this contribution is a first step and we encourage future research to refine our approach and to analyze determinants of the transition from nascent entrepreneurship to new business ownership.

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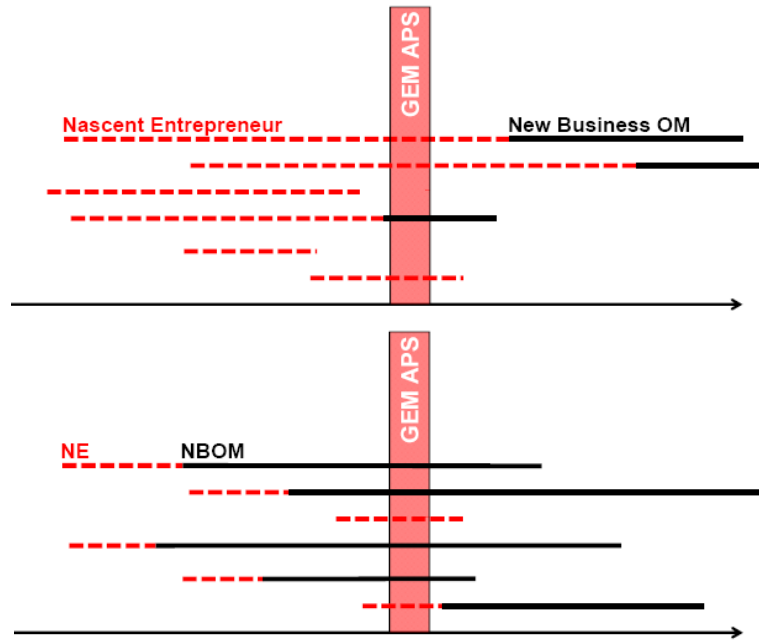
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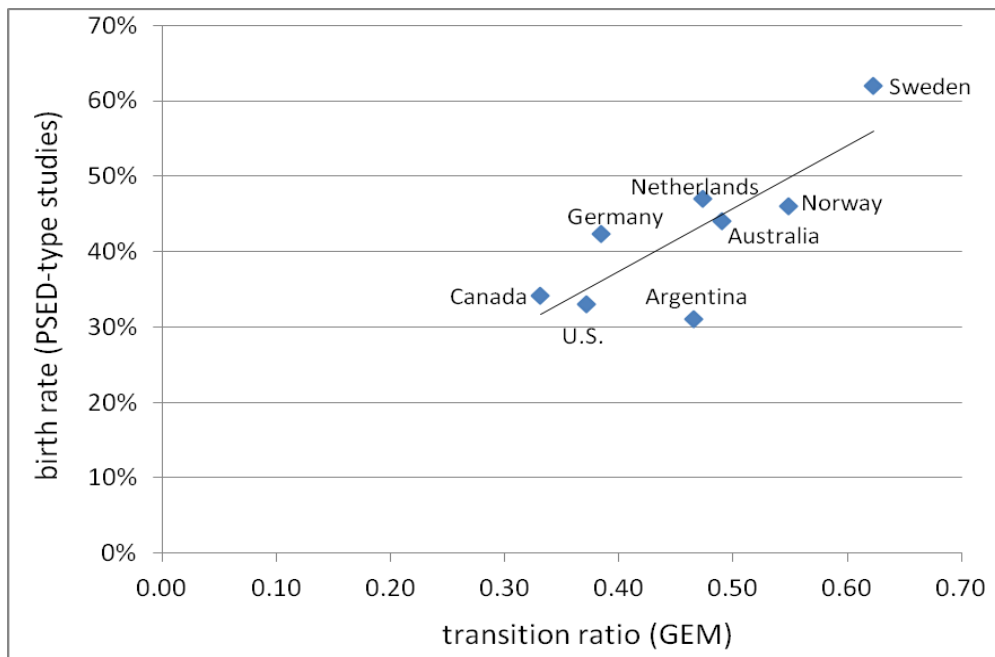
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Figure 1
Examples of countries with a low (top) and a high (bottom) new business owner manager to nascent entrepreneur (NBOM/NE) ratio



Note. GEM APS – Global Entrepreneurship Monitor, Adult Population Survey

Figure 2
Comparison of transition ratio (GEM) and birth rates from PSED-type studies



Source: own calculation based on Global Entrepreneurship Monitor 2001-2008 and other data

Table 1
Transition ratio by country and year

country	2002/ 2001	2003/ 2002	2004/ 2003	2005/ 2004	2006/ 2005	2007/ 2006	2008/ 2007	Ave- rage	No. of ratios	Mean dev.
Argentina	0.45	0.61	0.20	0.22	0.46	0.64	0.67	0.47	7	0.15
Australia	0.36	0.70	0.52	0.33	0.56			0.49	5	0.12
Belgium	0.29	0.33	0.18	0.00	0.18	0.14	0.08	0.17	7	0.08
Brazil	0.63	0.88	0.88	1.11	1.48	1.61	1.27	1.12	7	0.28
Canada	0.27	0.35	0.34	0.38	0.31			0.33	5	0.03
Chile		0.38			0.39	0.72	0.45	0.48	4	0.12
China		0.74			1.70	1.10		1.18	3	0.35
Colombia						0.88	0.83	0.86	2	0.03
Croatia		0.29	0.45	0.59	0.28	0.11	0.30	0.34	6	0.12
Denmark	0.58	0.44	0.56	0.43	0.68	0.70	0.43	0.54	7	0.10
Dominican Rep.							0.62	0.62	1	
Finland	0.47	0.10	0.29	0.43	0.44	0.41	0.38	0.36	7	0.09
France	0.27	0.25	0.66	0.03	0.00	0.06	0.41	0.24	7	0.18
Germany	0.25	0.29	0.39	0.64	0.33			0.38	5	0.11
Greece			0.45	0.00	0.11	0.11	0.51	0.23	5	0.20
Hong Kong		0.44	0.44					0.44	2	0.00
Hungary	0.30			0.18	1.46	0.39	0.38	0.54	5	0.37
Iceland		0.44	0.50	0.00	0.15	0.22	0.16	0.25	6	0.15
India	0.49					0.08	0.14	0.24	3	0.17
Ireland	0.36	0.41	0.41	0.54	0.28	0.51	0.52	0.43	7	0.08
Israel	1.89						0.56	1.23	2	0.66
Italy	0.28	0.21	0.51	0.49	0.27	0.34	0.35	0.35	7	0.09
Jamaica					0.49			0.49	1	
Japan	0.46	0.63	0.36	1.42	0.62	0.49	0.56	0.65	7	0.22
Korea	0.93							0.93	1	
Latvia					0.45	0.32	0.71	0.49	3	0.14
Mexico	0.11				0.15			0.13	2	0.02
Netherlands	0.47	0.50	0.76	0.25	0.36	0.44	0.50	0.47	7	0.10
New Zealand	0.29	0.31	0.53	0.67				0.45	4	0.15
Norway	0.79	0.42	0.49	0.89	0.47	0.29	0.51	0.55	7	0.17
Peru						0.21	0.18	0.19	2	0.02
Poland	0.11							0.11	1	
Romania							0.10	0.10	1	
Russia						0.17	0.81	0.49	2	0.32
Serbia							0.35	0.35	1	
Singapore	0.35	0.33	0.70	0.73	0.33			0.49	5	0.18
Slovenia		0.12	0.08	0.47	0.28	0.38	0.42	0.29	6	0.13
South Africa	0.36	0.28	0.32	0.23	0.24			0.29	5	0.04
Spain	0.40	0.49	0.33	1.12	1.41	0.98	0.73	0.78	7	0.33
Sweden	0.63	0.79	0.48	0.71	0.46	0.66		0.62	6	0.10
Switzerland		0.35						0.35	1	
Thailand					0.67	2.75		1.71	2	1.04
Turkey						0.90	0.60	0.75	2	0.15
Uganda			0.83					0.83	1	
United Arab Em.						1.12		1.12	1	
United Kingdom	0.53	0.85	0.55	0.47	0.45	0.47	0.46	0.54	7	0.09
United States	0.33	0.45	0.36	0.53	0.24	0.26	0.41	0.37	7	0.08

country	2002/ 2001	2003/ 2002	2004/ 2003	2005/ 2004	2006/ 2005	2007/ 2006	2008/ 2007	Ave- rage	No. of ratios	Mean dev.
Uruguay						0.24	0.28	0.26	2	0.02
Total	0.47	0.44	0.47	0.49	0.51	0.57	0.47	0.49		

Note: ratio1 2002/2001 refers to the transition ratio where the NBOM1 value is from 2002 and the NE value from 2001, etc.

Table 2
Determinants of variation of the transition ratio

	B	Beta	t	p-value.
SD days required to start a business (World Bank), 2003-2008	.011	.434	2.946	.006
SD GDP/capita growth (ln), 2002-2008	-.008	-.024	-.149	.882
Number of years between first and last transition ratio value	.033	.291	1.842	.075
Mean number of GEM micro-level observations (ln), 2002-2008	-.130	-.362	-2.356	.025
Nascent rate, 2002-2007	-1.213	-.236	-1.539	.134
(Constant)	1.191		2.656	.012
N		37		
R-Square		.369		
Adjusted R-Square		.271		
F-Value		3.749		.009

Dependent variable: Standardized mean deviation of the transition ratio, 2002-2008. SD – standard deviation

Table 3
Correlations between transition ratio, different start-up rates and GDP

	ratio1	Nascent	Young	TEA	GDP per cap.	GDP per cap. growth
Nascent	-.01					
Young	.53***	.74***				
TEA	.28*	.93***	.93***			
GDP per cap.	-.10	-.40***	-.47***	-.48***		
GDP per cap. growth	.11	.16	.23	.22	-.56***	
Unemployment Rate	-.26*	-.04	-.15	-.08	-.40***	.11

Notes: correlation is based on average values 2002-2008, N = 48

*. Correlation is significant at the 0.10 level (2-tailed).

**. Correlation is significant at the 0.05 level (2-tailed).

***. Correlation is significant at the 0.01 level (2-tailed).

Table 4
PSED-type studies and their results concerning birth rates

Country	Transition ratio: NBOM (1.5 year) / NE 2001-2008 (GEM)	birth rate (1 year) (PSED-type studies)	Remark	source
Argentina	0.47	31%		(de Rearte and Liseras, 2004)
Australia	0.49	44%		(Davidsson, Steffens, Gordon, Garonne, and Senyard, 2009)
Canada	0.33	33%		(Diochon et al., 2007)
Germany	0.38	42%		(Brixy, Hundt, and Sternberg, 2010)
Latvia	0.49	27%		(Dombrovsky, Baltrusaityte-Axelson, Rastrigina, Sauka, and Welter, 2009)
Netherlands	0.47	47%		(Van Gelderen, Bosma, and Thurik, 2001)
Norway	0.55	46%		(Alsos and Ljunggren, 1998)
Sweden	0.62	62%	18 months between screening and wave I	(Davidsson and Honig, 2003)
U.S.	0.37	33%	PSED I	(Parker and Belghitar, 2006)
U.S.	0.37	12%	PSED II	(Reynolds and Curtin, 2008)

APPENDIX I

Exact wording of screening items in the GEM adult population survey (taken from GEM 2006 APS questionnaire)

In the Global Entrepreneurship Monitor, the process of identifying **nascent entrepreneurs**, i.e. individuals in the process of starting a business, is as follows: There are two basic screening questions: "You are, alone or with others, currently trying to start a new business, including any self-employment or selling any goods or services to others" and "You are, alone or with others, currently trying to start a new business or a new venture for your employer - an effort that is part of your normal work". If people answer 'yes' to one of the questions they are asked: "Over the past twelve months have you done anything to help start a new business, such as looking for equipment or a location, organizing a start-up team, working on a business plan, beginning to save money, or any other activity that would help launch a business?" and " Will you personally own all, part, or none of this business?". People who have done anything over the past twelve months to help start a business and who are owner or part-owner of this business are considered as nascent entrepreneurs (NE). The rate of nascent entrepreneurs is the number of nascent entrepreneurs relative to the population 18 to 64 years old.

People are considered as **new business owner-managers** when they say that they are "alone or with others, currently the owner of a company ... (they) help manage, self-employed, or selling any goods or services to others" and that "they own all or part of this business". They then have to answer what the first year was the founders of the business received "wages, profits, or payments in kind from this business". If this is less than 3½ years ago, the person is considered a new business owner-manager. The rate of new business owner-managers is the number of new business owner-managers relative to the population 18 to 64 years old.

Identification of nascent entrepreneurs

1a) You are, alone or with others, currently trying to start a new business, including any self-employment or selling any goods or services to others (Yes/No/Don't know/Refused)

1b) You are, alone or with others, currently trying to start a new business or a new venture for your employer-- an effort that is part of your normal work (Yes/No/Don't know/Refused)

2a) Over the past twelve months have you done anything to help start a new business, such as looking for equipment or a location, organizing a start-up team, working on a business plan, beginning to save money, or any other activity that would help launch a business?
(Yes/No/Don't know/Refused)

2b) Will you personally own all, part, or none of this business? (All/Part/None/ Don't know/Refused)

2d) Has the new business paid any salaries, wages, or payments in kind, including your own, for more than three months? (Yes/No/Don't know/Refused)

Identification of new business owner-managers

1c) You are, alone or with others, currently the owner of a company you help manage, self-employed, or selling any goods or services to others (Yes/No/Don't know/Refused)

3a) You said you were the owner and manager of a company. Do you personally own all, part, or none of this business? (All/Part/None/Does not apply/Don't know/Refused)

3c) What was the first year the owners received wages, profits, or payments in kind?
(#_____/No payments yet/Don't know/Refused)

See also <http://www.gemconsortium.org/about.aspx?page=variables>