Designing for a living? : income determinants among firm founders in the Dutch design sector

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Arthur Vankan, Koen Frenken and Carolina Castaldi

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Designing for a living?

Income determinants among firm founders in the Dutch design sector

Arthur Vankan [a], Koen Frenken [b], Carolina Castaldi [b]

[a] Dialogic Innovation and Interaction
Utrecht, The Netherlands

[b] School of Innovation Sciences
Eindhoven University of Technology
Eindhoven, The Netherlands

Corresponding author: Carolina Castaldi, School of Innovation Sciences, Eindhoven University of Technology, PO Box 513, NL-5600MB, Eindhoven, The Netherlands, c.castaldi@tue.nl

Abstract: Many studies have analysed the role of the creative class and cultural industries in fostering regional development. The focus on regional development neglects the individual differences in success among members in the creative class and among firms within cultural industries. We study firm founders in three design sectors (industrial design, graphic design and web design) and analyse the determinants of their personal income. Next to individual factors affecting income differences among designers, we look at the relational and spatial contexts in which designers operate. Hence, we can also assess whether spatial clustering and organisational networking are beneficial for designers. The main result, based on 200 telephonic questionnaires, holds that income is determined mainly by business experience and the use of advanced ICTs, while education and spatial clustering have no impact. We argue that policies in the design sector should be oriented towards helping young designers to gain experience as well as towards life-long learning in the use of ICTs.

Keywords: creative class, cultural industries, design, spin-off, localisation economies, ICT

1. Introduction

During the last decade, few concepts have had a larger impact on academia and policy than Florida's (2002) notion of the creative class. His definition of the creative class refers to a particular sub-set of professions including people in science, engineering, design, education, arts, music and entertainment. These people matter for the process of urban and regional development because of their high levels of mobility and preference for certain amenities. More specifically, Florida has claimed that the creative class is attracted by cities with amenities that fit with their values, aesthetics, lifestyles and consumption patterns, including tolerance, culture, architecture, and housing suitable to work from home. It can be argued that businesses that source the services of the creative class typically locate where the creative class is living (rather than the creative class moving to cities where these businesses are located). Hence, given the locational preferences of creative class members, cities should invest in the amenities that attract the creative class as to attract, in an indirect manner, new businesses as well.

Since Florida (2002) introduced the notion of the creative class, the academic debate has focused on the question whether the presence of the creative class provides a better prediction for urban and regional economic growth than more traditional measures such as human capital. A recent review by Marrocu and Paci (2012), which also includes a new EU study, concludes that most studies are supportive of Florida's thesis. With hindsight, this focus may not be too surprising, since Florida's thesis, though novel in its explanatory form, still reasons from the prevailing policy paradigm that urban policy should be aimed to attract new business. Alternatively, from a more general perspective of urban welfare, one may ask how policy can support living and working of the creative class itself. We focus in our study on self-employed members of the

creative class, and in particular in the design sector, as these typically struggle to earn sufficient income, despite the high average income for the creative class more generally (Florida, 2002).

We believe that a shift in focus from the creative class and its impact on economic growth to the members of the creative class and their individual lives is welcomed. Indeed, a problematic aspect of Florida's thesis is the unit of analysis. The notion of class presupposes that heterogeneous individuals can be meaningfully aggregated and that such aggregates can be meaningfully associated with macro variables like urban economic growth and productivity. Obviously, aggregations are informative in probing macro-economic relations and testing macro-economic theories, yet the underlying class notion is less useful in an urban policy context where problems and opportunities are associated with particular individuals.

The objective of our study is to understand the individual-level determinants of the personal income of the creative class. We will focus on firm founders in three design sectors: industrial, graphic and web design. Next to individual factors affecting income differences among designers, we also look at the relational and spatial context in which designers operate. Hence, we can assess whether spatial clustering and organisational networking are beneficial for designers as often claimed in the economic geography literature (Porter, 1990; Giuliani, 2007). From our analysis, based on 200 telephonic questionnaires, we derive some conclusions for policies at the urban and national levels.

We will proceed as follows. First, we provide a short description of design as a creative activity and as an economic sector growing in importance (section 2). We then turn to our theoretical framework where we develop hypotheses regarding the determinants of income among self-employed designers in The Netherlands (section 3). We then turn to data, which were collected

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through a telephone survey among 200 industrial, graphic and web designers in 2011 (section 4). Next, we turn to the statistical analysis of income differentials among designers (section 5), and we end with a discussion and conclusion in the light of policy (section 6).

2. The design sector

2.1 Main characteristics

Design as a separate profession has only existed for about a century. Traditionally, different kinds of design activities, including engineering and product design, were part of corporate processes but were not acknowledged as distinct functions. For instance, industrial design started to claim a separate role within manufacturing companies only in the 1930s in the US and much later in Europe (Walsh, 1996). The emergence of the profession of designer went hand in hand to a process of externalisation, where manufacturing firms recognised the need of design for their activities but chose to outsource design-related processes to external consultants. This trend is reflected in the current occupation of designers: only a minority of designers work in in-house teams at companies, while the vast majority works as free-lance consultants or in specialised design firms (Vanchan and Macpherson, 2008).[1]

Several mechanisms can explain the institutionalisation of design as a service sector. From the point of view of the focal firm, these may include the shortage of internal talent (Yasuda, 2005), the possibility that designers offer new types of services that firms do not want to replicate in-house, and the fact that external specialists can sometimes operate and deliver faster

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[1] Design Council (2011) reports that about one third of UK designers works in in-house teams.

(MacPherson, 1997). Also, many manufacturers, especially durable goods producers, face cyclical demand and their need for design consultancy is concentrated in time. From the point of view of the designer, talented designers rarely seek permanent jobs with manufacturing companies (Kalafsky, 2006). This fits with the idea that being 'stuck' in one place hampers the possibility to fully nurture and express creativity. Finally, external consultants might be better able to act as intermediaries between producers and users (Walsh, 1996).

Another feature of design sectors is that it is typically dominated by very small firms. Many designers are self-employed and would only grow to have a couple of other designers working for them. About 80 percent of UK design firms employ less than 10 people (Design Council, 2011) and a similar percentage applies to the Dutch case (our data, see Section 4). Several reasons may explain this distribution. First, while it is relatively easy to start-up as design firm, the activity of designing does not enjoy clear-cut economies of scale insofar as designs tend to be unique. Furthermore, many designer firms remain small because of the importance of geographical proximity in the designer-client relation. Effective interaction between the two parties requires the exchange of highly tacit knowledge, whose transfer is facilitated by frequent and face-to-face communication. Moreover, firms are strongly associated with the name of the founder and the company reputation almost equates the founder's reputation (Sunley et al., 2008). This poses a barrier to growth in so far as the founder's skills cannot be replicated. Also, the moulding of new recruits to a company style and vision in line with the founder's reputation is challenging because of the natural tendency of designers to cherish their own differences and profile themselves as unique. The same attitude makes it tricky to manage large groups of creative talents under the roof of one large organisation, as large organisations typically need to rely on increasingly formalised routines with less space for individualities.

2.2 How designers work

The design sector shares with other cultural industries a reliance on creativity as the key input in production (Scott, 2006). At the same time, the output of the design sector typically needs to have both expressive and functional value (Sunley et al., 2008). Designs incorporate a tangible component (the actual visualisation, either a physical object or a graphics or other) and an intangible one, which is conceptual and artistic. Designers have been defined as mediators between ideas and practice, translating boundless creative inputs into actual realisations constrained by practical requirements (Dodgson et al., 2005). Often, it is the clients that pose the practical constraints, while the designers would strive at expressing their full creativity. Yet, ultimately, the very success of a design relies on compromising and persuading one another.

Designers mostly rely on a 'symbolic knowledge base' (Asheim and Coenen, 2005; Asheim et al., 2007), whose creation and understanding requires familiarity with unwritten codes of aesthetic and cultural values. Florida (2002) argues that the feeling for these tacit codes is nurtured by being located in those urban centres where all other creative people work and live. Nevertheless, some designers might also need to grasp a great deal of technical and scientific knowledge to understand clients' needs. In general, the ability to translate clients' requirements has also much to do with tacit knowledge (Rusten and Bryson, 2007). It is learned from accumulating experience more than from formal education. It gets strengthened by working for different types of clients and in diverse contexts (Sunley et al., 2008).

Design firms possess distinctive features that also allow them to classify them as knowledge intensive business services (KIBS). Design firms serve business clients instead of final

consumers. They are project-based firms that can only survive by continuously winning new contracts. A designer manager interviewed by Sunley et al. (2008) illustratively said: "My designers are business consultants, they just happen to solve problems with graphics, rather than a report or something like that" (*op.cit.* p. 684). Similarly to other KIBS activities, the relation of design firms to their clients is crucial. Moreover, there are several specific reasons for designers to engage in relation-specific investments. First, understanding clients' needs, especially for complex products and in early stages of the design process, requires frequent face-to-face meetings. In industrial design it is especially essential to spend time at the production site, to get information about technical details and assess what is practically feasible (Sunley et al., 2008). Secondly, by building long-term relationships designers increase their chances of repeat contracts and enjoy significant relational rents (De Clercq and Sapienza, 2001). Designers are professionals and the value of their expert services is difficult to asses beforehand. Clients often base their decisions on the reputation that a designer has accumulated over time but also on their own experience or the experience of related firms with that designer (Sunley et al., 2008). Of course, long-term relations may render design firms stale and this might lead to underperformance of the design firm and even to employee dissatisfaction. In turn this can act as a trigger for frustrated employees to start their own spin-off, something that reinforces the typical small scale of most design firms.

2.3 Design and innovation

The role of novel designs in shaping technological trajectories has been discussed extensively within innovation studies (Murmann and Frenken, 2006). Abernathy and Utterback (1978) have

discussed how early phases of the product life cycle are about competing designs, until a dominant design emerges and innovation becomes mostly process innovation. Henderson and Clark (1990) also focus on technological innovation and stress how improvements can come from redesigning the components or the overall architecture of a product, with important implications for the strategic management of innovation at the firm level.

As for the role of designers in the innovation of their manufacturing clients, their contribution spans different phases of the innovation process and relates both to incremental and radical innovation (Walsh, 1986). In early product development designers are involved in conceptualizing, idea testing and prototyping, while later activities include matching products to user requirements and associating them to new tastes or life-style images as part of their marketing. Depending on the sector of use, design might have more an impact on ease and efficiency of manufacture or rather focus on user friendliness and product appearance (Gemser and Leenders, 2001).

Innovation of design firms not only includes the new designs created for their clients, but it is also about the service innovation that designers develop. Sunley et al. (2008) refute the idea, implicit in Florida's thesis, that innovation in the creative sector is essentially serendipitous. Thanks to the continuous supply of stimuli in the environments where creative firms locate, innovations are thought to emerge spontaneously. Instead, Sunley et al. (2008) claim that sources for innovation are not so much the generic external environment, but rather the specific client-firm relations and the design firm itself. Design firms deliberately invest in learning, even though their innovation efforts might look quite different from the ones of manufacturing firms. In project-based firms, knowledge and experience is collected from being exposed to diversified projects in a bottom-up approach. The challenge for these firms is to extract common lessons that

can be codified and re-used in new contexts. The textbook example of IDEO (Hargadon and Sutton, 1997) shows that design firms can have formalised routines for innovation that sustain creativity. It remains true that larger firms have more incentives to invest in formalizing and codifying their innovation processes, while smaller firms typically rely on informal knowledge sharing (Sunley et al., 2008). Still, developments in ICT and the use of dedicated software for design is changing the way design firms accumulate, store and access knowledge from projects (Dodgson et al., 2005). Specialised software allows designers to experiment with more options thanks to simulation tools. Also, the use of ICT forces designers to codify more steps in their work routines and shapes how designers share information both internally and with external parties, including clients and users.

3. Hypotheses

In our study, we limited our research to industrial design, graphic design, and web design. Fashion design has been already analysed in a similar way (Wenting et al., 2010) and video game design was excluded due to low numbers. Industrial design is concerned with transforming a set of product requirements into a configuration of materials, elements and components with an impact not only on aesthetics, but also on user friendliness, ease and efficiency of manufacture, functional performance (Gemser and Leenders, 2001). Graphic design can be defined as the process and art of combining text and graphics and communicating an effective message in visual communication. Finally, web design is about delivering content to an end-user through the World Wide Web.

Our dependent variable of interest is the personal income of the founder of a design firm. Thus, in the following, when we speak of a designer we always refer to the founder of a design firm. We choose to focus on personal income since this indicates both the success of a company (as participating in a cultural industry like design) and of the designer herself (as a member of the creative class). Hence, our study can be made relevant both to the discourse on cultural industries and that of the creative class. Furthermore, personal income can be considered as a main policy variable of interest in socio-economic perspective. That is, social policies are generally oriented towards improving personal income.

Traditionally, personal income is explained by socio-demographic variables as well as education-related variables. When considering entrepreneurs in a cultural industry, here specifically founders of design firms, a number of additional variables are expected to come into play given the nature of their activity. One can distinguish between personal, relational and spatial determinants. Wenting et al. (2010), for example, distinguished between experience (personal), networking (relational) and agglomeration economies (spatial). Experience is a result of cumulative knowledge gained from being active in the design sector and running an independent business. Networking relates to collaboration with other designers in various ways. And, agglomeration economies refer both to cluster advantages (localisation economies) and benefits from sheer population size (urbanisation economies). In addition to these determinants, we will add to personal determinants a designer's innovativeness and use of IPR, since - as just discussed - design is expected to have most economic impact when being an integral part of an entire innovation process.

3.1 Personal

3.1.1 Experience

Apart from formal education, experience is expected to play a major role in design. Though formal education teaches one the basic design skills, designers' knowledge remains essentially tacit. It is not only the creative aspect of design that can hardly be codified. Equally important is a designer's ability to understand the needs of a client and to translate these into a design that meets these needs. Given that these skills can only be acquired by experience, that is, by having developed different designs and in different client contexts, one expects experience to be a main determinant of income.

Looking at designers who founded their own firm, design experience can be acquired in two ways. First, experience depends on having run one's own business for a prolonged period of time. Second, experience can result from having worked before as an employee in another design firm. As an employee, one gains experience from working at design projects, and especially, from working with the lead designer who passes on her experience to other employees in the firm. In this case, one speaks of pre-entry experience held by designers who found their own 'spinoff' firm after having worked as a designer for another firm (Klepper, 2002). Previous research found indeed that spinoff companies outperform other companies in the cultural industries of fashion design (Wenting et al., 2010) and book publishing (Heebels and Boschma, 2012).

A final source of experience can be entrepreneurial experience. Some founders of design firms may have run a firm before (whatever its activity). This means they have acquired general experience in running an own independent business.

H1: The higher the age of the firm, the higher the income of a designer

H2: Pre-entry experience contributes to the income of a designer

H3: Entrepreneurial experience contributes to the income of a designer

3.1.2 Innovation

Design firms can have different business models corresponding to different means of competing. One way of competing is by differentiating the firm from other firms with respect to the designs that are being made. Unique, revolutionary designs and potentially new functions can give a firm competitive advantage, for example, by reputation. Therefore it is argued that innovating companies likely perform better. Note that every design could be defined as an innovation, since they are all new and unique in some way. For this reason, this study will focus on radically new designs thus excluding incremental innovation.

H4: Designers who recently introduced a radically new design have higher income

3.1.3 Intellectual property rights (IPR)

Designers can protect their creations by means of intellectual property rights (IPR). In the case of industrial design, designers can protect their designs by means of the 'industrial design right'. An

industrial design right protects the visual design of objects that are not purely utilitarian. An industrial design consists of the creation of a shape, configuration or composition of pattern or colour, or combination of pattern and colour in three-dimensional form containing aesthetic value (BBIE, 2011). Designs may be protected if they are 'novel', that is if no identical design has been made available to the public and if they have 'individual character', that is, an 'informed user' would judge it as being different from other designs.

In the case of graphic design, the central form of IPR is the copyright. A copyright is defined as the exclusive right to control reproduction and commercial exploitation of your creative work. Copyright protects any kind of artwork, including illustrations, photographs and graphic design (Bureau, 2011). A website is also protected by the copyright law. Even complete websites can be copyrighted, but professional web designers typically register their website. The copyright is a bundle of different exclusive rights, some of them being particularly relevant for designers. First, the copyright gives the right to reproduce. Second, it gives the right to display. Third, it gives the right to make adaptations on one's work. Designers can also sell their copyright to their clients, such that the client can use the design more often and even use adjusted versions. Some designers participate in a more open system, in which (parts of) designs are openly shared. The best known is 'Creative Commons', which is a system in which creators can share their copyright protected work for certain forms of reuse.

Finally, designers can use a trademark to protect their business as a whole. A trademark is defined as a sign, which serves to distinguish the goods and services of one organisation from those of another (Market, 2011). The trademark may be a word, several words (such as a slogan), a design, symbol, graphic or any combination of these elements. Trademarks are the legal counterparts of brands. For design firms the name of the founder is of particular value because

the company's reputation often gets associated with the name of its founder (Sunley et al., 2008) and represents the company's brand. The advantages of IPR have to be weighed against the time and cost involved in acquiring it, which can be substantial, especially for smaller firms[2]. Hence, its use may not be widespread. Nevertheless, IPR will help designers to prevent rivals from using their creations. Hence, IPR can be a source of income, either directly when sold or licensed, or indirectly, by reducing competition.

H5: Designers who protect their designs by means of IPR have higher income

3.1.4 ICT skills

A final individual-level determinant of success in the design sector concerns the ability to use advanced ICTs. Indeed, modern design is unthinkable without ICT as most designs are being conceived using design software. Yet, individual designers vary in the software they use with only some adopting the more specialised and advanced software. Such programmes allow them to explore a greater variety of designs and in less time than designers using standard software packages. ICTs also facilitate sharing within the company and with external parties, including clients and users, with an expected positive impact on their performance. Hence, we expect that:

H6: Designers who use specialised design software have higher income

3.2 Relational

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[2] For example, registering a trademark in Europe costs about 1000 euro.

Inter-firm collaboration is a ubiquitous phenomenon in design with the nature of collaboration varying in a number of ways (Shrader, 2000). First, useful knowledge exchange about products, services, and practices can take place. Second, it can reduce investment costs of an individual firm (e.g. specific tools to process materials). Third, it can reduce uncertainty about doing business in an unfamiliar environment. For example, designers who target a new client group benefit from collaboration with firms who have experience with these clients. Fourth, firms can leverage their competitive advantage as collaboration corresponds with increased size and more combined expertise. Fifth, but less relevant in a small firm focused sector, collaboration can help in more rapid expansion and expanding to more locations. Obviously, collaboration is not without risk. Shrader (2000) mentions a risk of knowledge dissemination, increased transaction and communication costs, and potential conflict. For a given project, a firm will thus try to weigh benefits and costs, and only collaborate when benefits are expected to outweigh the costs. Hence:

H7: The more a designer collaborates, the higher his/her income

3.3 Spatial

Members of the creative class are highly clustered, typically in the larger cities. Though Florida (2002) suggested that clustering may be due to common locational preferences among creative class members, Scott (2006) and others have suggested that agglomeration economies play an important role as well. Clusters in cultural industries are characterised by specialised production chains and skilled workers, two sources of 'Marshallian' localisation economies. Clustering can

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also support knowledge exchange since inter-firm networking as well as informal knowledge exchange are facilitated by face-to-face communication.

Agglomeration economies may also stem from urbanisation economies, that is, the economies that accrue from being located in large cities. Urbanisation economies stem from specialised service providers (e.g., financial institutions, conferences and fairs, public services) as well as from the larger potential to learn from firms in other (creative) industries. However, and different from localisation economies, urbanisation economies must be weighed against higher rents and congestion levels caused by the co-presence of many industries and services.

H8: Localisation economies contribute to the income of a founder of a design firm

H9: Urbanisation economies contribute to the income of a founder of a design firm

4. Data

This study makes use of data gathered through telephone questionnaires with founders of design firms, conducted in the summer of 2011. As mentioned before, we focused on Dutch design firms, and more specifically on the sectors industrial design, graphic design, and web design in the Netherlands. One reason to focus on design was the policy in Dutch innovation policy on design sectors. Another reason was that design firms are mostly small and run by their founders, meaning that interviewing their founders provides reliable information.

We used the Yellow Pages to search for design firms (and their telephone number). This source has the practical advantage over the data from Chamber of Commerce in that their sectoral classification is more fine-grained, misclassification of firms in sectors is much less frequent, and

more reliable, and extracting information can be done without cost. The disadvantage holds that only firms are present who deliberately applied for it. Hence, there may be a bias of some sorts.

Firms were randomly selected out of the three design categories (industrial, graphic and web design). In total 737 different firms were contacted by telephone. Out of these 737 firms, 200 firms responded, 238 firms did not want to participate, and 299 firms (repeatedly) did not answer the phone. Though are sample size is 200, the number of observations used in the statistical analysis is only 138 due to missing variables data, particularly, on the dependent variable income.

4.1 Dependent variable: income

Since most designers are self-employed or run a very small firm, net monthly income is considered a reliable indicator for a designer's success. Respondents were asked to report their net monthly income on a scale with the following categories (in euro): 0-1000, 1000-2000, 2000-3000, 3000-4000, 4000-6000, and 6000 or more. We choose a scale rather than the exact amount, as designers may both feel sensitive and uncertain about reporting their exact income.

4.2 Independent variables

4.2.1 Personal variables (*hypotheses 1-6*)

The first three hypotheses regarding the determinants of income concern experience which can be gained through running one's own business for a prolonged period of time, pre-entry experience from having worked as an employee for another design firms before, or having run another firm before. We use the *Founder year* of the firm to proxy the experience gained from running one's

own business. We use a dummy variable to indicate whether a founder had *Pre-entry experience* at the time of founding the firm. And we use another dummy variable called *Entrepreneurial experience* to indicate whether the founder had founded other firms in the past.

To measure whether a designer has recently introduced a radical innovation (*Radical innovation*), respondents were asked whether they engaged during the past 12 months in a design activity that was completely new for the company. This could be, among other things, a new functionality, a complete new design style such as 3D-design, or a newly used material. Thus, we do not define a radically new design as new for the whole market, but radically new in light of the firm. We used the time frame of 12 months because of two main reasons. First, going back further in time may have no effect any more on their performance *casu quo* income, assuming that innovation premium is paid upon delivery. Second, 12 months is a period for which it could be reasonably assumed that respondents can still memorize things accurately.

The *IPR* variable denotes whether a firm actively uses intellectual property rights in order to protect its designs. The reason why this definition states 'actively' is related to copyright. Copyright namely exists from the moment a (copyright covered) design is created. Therefore, not defining the use as active would mean that everyone (in the web- and graphic design sector) would use IPR, which would make the variable of little value.

The *ICT* dummy variable indicates whether the respondent uses specialised software (different from the industry standard Adobe). This variable is important as to capture the specific ICT skills of designers. Given the rapid evolution of ICT, variables measuring formal education are unlikely to reflect such skills. Rather, designers learn by using specialised software themselves or take

specialised courses. What is more, ICT skills may well be scarce in supply, thus contributing to the performance of a designer's firm.

4.2.2 Relational variables (*hypothesis 7*)

In this study two variables are used to measure collaboration. The first variable is the number of other design firms the company has collaborated with in the last twelve months (*Collaboration networks*). More specific, in the analyses the log of this number of firms is used due to diminishing marginal returns on the number of firms a company collaborates with. We define collaboration as a combined effort, regardless of the business results. We consider three forms of collaboration: working on an assignment in a consortium, outsourcing design work to a fellow designer, and joint action in the area of promotion and marketing.

The second variable is the number of other design firms the company has approached for business related advice (*Advice networks*). This variable has also been transformed using a log with the same reasons.

4.2.3 Spatial variables (*hypotheses 8-9*)

Localisation economies are measured by counting the number of firms active in same design sector by taking the number of firms in that specific design sector located in the same municipality and the adjacent municipalities. The data about the total number of design firms in every municipality is extracted from the Yellow Pages (www.goudengids.nl).

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Urbanisation economies are measured by taking the number of inhabitants of the corresponding municipality. The argument is that urbanisation economies increase with the number of inhabitants, because more inhabitants will very likely imply more economic activity as well. The data about the number of inhabitants is extracted from the Central Bureau for Statistics (CBS) in the Netherlands (www.cbs.nl).

4.2.4 Control variables

As demographic and educational control variables we used the year of birth (*Age*), gender (*Male*), firm size as measured by the number of full time equivalents working in the firm (*Firm size*), whether the designer completed higher education (*Higher education)* and whether the designer completed a design related educational program (*Design related education*). We also control for whether or not the respondent firm is active in each of the three predefined design sectors is captured by three dummy variables (*Web design*, *Graphic design*, *Industrial design*) as income levels may systematically vary across the three sectors.

4.2.5 Overview

Table 1 summarizes all the variables that are used in this study.

Table 1 around here

5. Analysis

5.1 Methodology

Designers differ substantially on their income. The net monthly income in terms of euros has been divided into six categories: 0-1000, 1000-2000, 2000-3000, 3000-4000, 4000-6000 and >6000. The income distribution is shown below in Figure 1. Of the 200 respondents, 148 have indicated to which category they belong. The other 52 did not want to answer, they were not able to answer, or net monthly income was not applicable (e.g. respondent that has recently started).[3]

Figure 1 around here

Since our dependent variable (*Income*) is an ordinal variable, we use ordinal regression, an extension of the logistic regression model where the dependent variable varies across more than two categories and is ordinal. Instead of considering the probability of binary events, the models rely on taking the cumulative probabilities (i.e. the probability of that particular score or less) and modeling their logits as linear functions of the independent variables. The ordinal logistic regression model is typically estimated under the assumption of proportional odds, which implies that the slopes of the fitted logistic lines are assumed to be constant, only the intercepts differ (Hosmer and Lemeshow, 2000). Fitting the model returns then a single coefficient for each

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[3] For the respondents that did not want to answer or could not answer, it has been examined whether this answer alternative is correlated with other variables. This is done to check whether there is a bias towards firms with certain properties. For example, larger firms could be less willing to answer the question, which would lead to a biased sample. However, the correlations with other variables are very low (i.e. around 0.1), indicating that the income distribution is not susceptible to this bias.

independent variable, which can be interpreted in terms of odds ratios. The model is estimated using maximum likelihood and the goodness of fit in explaining income can be evaluated with a pseudo R-square such as the Nagelkerke R-square.

5.2 Descriptive statistics

Table 2 provides the descriptive statistics for our independent variables. The designers in our sample are predominantly male (70 percent), highly educated (76 percent) having mostly completed a design-related education (62 percent). The majority is at their first entrepreneurial experience (only 18 percent have founded a firm before), but half of them has already been employed in the design sector before.

The average number of employees is 2.3, with the largest company having 30 employees. Most firms are one-man firms (69 percent) of the firms are one-man firms and only 3 percent of the firms have 10 employees or more. This confirms that small firms dominate the design sector.

An average firm has collaborated with 2.7 design firms in the last twelve months, and has approached 3.1 other design firms for business related advice. Only one out of five firms makes active use of IPR. The use of basic ICT is widespread, but specialised software packages are used only by a minority of the firms. Finally, one third has introduced a radically new design.

All independent variables included in this study are checked for correlation. We first check all bivariate correlations and we then examine Variance Inflation Factors (VIF's) to judge whether significant multicollinearity pose problems for the estimation of the regression coefficients. A number of our variables are significantly correlated. In particular, the IPR and the ICT variables

are both significantly correlated with all the three design sector dummies. Furthermore, the age of the designer and the founding year of the company are also strongly correlated (-0.620).

Localisation and urbanisation economies also turn out to be significantly correlated (0.653). Apparently, the number of design firms operating in the same sub-sector of the focal firm is proportional to the number of inhabitants at the firm's location, suggesting that the specific design sub-sectors are not particularly concentrated in space.

Table 2 around here

Whether these correlations pose a problem for the multivariate analysis was examined by means of the tolerance and VIF values. According to Williams (2011) VIF values above 2.5 or tolerance factors below 0.40 can become problematic. Applying this rule of thumb to our results (not shown here) we dropped the dummy for Industrial Design (VIF=3.451 and tolerance=0.291). After removing this variable, our two spatial variables remained problematic and we eliminated the one with the largest VIF, namely the Urbanisation economies variable, hence, hypothesis 9 could not be tested.

5.3 Regression results

Table 3 reports the estimated coefficients for the ordinal regression model explaining income. In Model 1, all the independent variables are included. The table shows a model of which seven of these variables seem to have a significant relationship with income. One practical issue with

respect to this model concerns the number of independent variables. Adding more variables tends

to reduce the precision of the estimates (Williams, 2011). A rule of thumb is to have twelve cases

per independent variable. As the number of valid cases is 138, the number of independent

variables should be eleven. We opt for keeping all our theoretically relevant variables and dismiss

those control variables, which appear not significant in the full model. We remove *Age*, *Higher

education*, *Design-related education*, and *Graphic design*. We then fit again an ordinal regression

model and we report the results as Model 1. The estimates are very similar to the ones of the full

model, the only difference being that the coefficient for entrepreneurial experience is now

statistically significant. Note that both models show an acceptable goodness of fit, as indicated by

pseudo R-square around 0.4.

Table 3 around here

5.4 Hypothesis testing

5.4.1 Personal-level hypothesis

H1: The higher the age of the firm, the higher the income of a designer. We found no effect of

the year a firm was founded and the income of a designer.

H2: Pre-entry experience contributes to the income of a designer. Pre-entry experience has a

highly significant impact on income. Compared to the other dummy variables, the impact is the

highest. This finding resonated with earlier findings in the entrepreneurship literature on the importance of pre-entry experience on the success of new firms.

H3: Entrepreneurial experience contributes to the income of a designer. Entrepreneurial experience, as the third and final variable capturing experience, is about the experience with managing a starting and managing a company. This type of experience is also positively and significantly related to income. Thus, although design firms can have different business models corresponding to different missions, the general entrepreneurial skills contribute to the success of designers.

H4: Designers who recently introduced a radically new design have higher income. This hypothesis is to be rejected. The variable is far from significant. Radical innovation does not seem to play a major role.

H5: Designers who protect their designs by means of IPR have higher income. Those making use of IPR do not have higher income. Despite the common emphasis on the need for strong IPR in cultural industries, design included, our findings suggests that if IPR is to play a role in improving designers income, the role would be only minor.

H6: Designers who use specialised design software have higher income. This variable has the expected sign. We can conclude that ICT plays an important role in that those making use of specialised software for their design activity enjoy an advantage over those who do not. Thus, designers who have the ICT skills required to make use of specialised software have a competitive advantage over their rivals.

5.4.2 Relational

H7: The more a firm collaborates, the higher the income of its founder. We find a significant effect on income for the number of firms that designers collaborate with and we conclude that networking plays a role in contributing to a designer's commercial success. Our second collaboration variable looked at a specific type of inter-organisational relations, the ones related to asking business advice. Since the effect of that variable is not significant, advice network do not seem to play a major role.

5.4.3 Spatial

H8: Localisation economies contribute to the income of a founder of a design firm. The common assertion that clustering benefits those located in the cluster is rejected by our analysis. We do not find any evidence for localisation economies as the number of fellow designers in the vicinity of one's location has no impact on income.[4] This is also in line with the absence of correlation between the localisation economies variable and the two network variables (correlation is -.063 with collaboration networks and 0.025 with advice networks). This is not to say that face-to-face interaction between designers plays no role, but most likely this is organised on a temporary basis at conferences and other venues (Maskell et al., 2006).

H9: Urbanisation economies contribute to the income of a founder of a design firm. This hypothesis could not be tested as the urbanisation economies variable had to be left out of the analysis due to multicollinearity issues.

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[4] Note that this result fits in a growing number of empirical studies, the results of which tend to question that clustering benefit firms (for a recent review, see Frenken et al. 2011).

6. Conclusion and discussion

Our analysis shows that several factors act as determinants of the incomes of designers. Not surprisingly, our results confirm that owners of larger firms earn more. The importance of experience also stands out: entrepreneurs with previous experience with founding a company or with experience as employee in the same sector are better off than entrepreneurs at their first experience in the design sector. Inter-firm collaboration is also positively related to the company's success, as collaborations with other firms may contribute to knowledge exchange and to capacity expansion.

Web-designers earn more than the other designers we considered here and designers that make use of specialised software are also able to achieve a better financial performance. In both cases, it might be a matter of scarcity. Given the recent surge of web-applications and dedicated design software, those firms able to offer those specialised services can charge a higher premium. And indeed our data show that only a minority of design firms is using specialised software.

Finally, some of the income determinants often put forward in the literature are surprisingly found to have no relation to income in our study. In particular, firms located in a design cluster do not have an advantage with respect to other design firms located outside design clusters. Apparently, the availability of specialised workforce and suppliers are not crucial for design firms. These firms are typically very small organisations that rely mostly on their own talents and creativity as their key production factors and do not depend on local suppliers or local labour markets. Furthermore, contrary to our expectations, we found that innovative designers, i.e. able to introduce significantly novel designs in the market, do not enjoy a higher income. When it comes to radical innovation, the higher but more uncertain revenues do not seem to outweigh the

higher development costs. On average, the extra investment does not seem to pay off for designers. Likewise, we found no effect of the use of IPR on income.

The results can point to a number of policy implications, both recommendations and warnings. These implications hold both for government policies at national and local levels and for sectoral agencies representing the design sector.

As to recommendations, policies should be oriented towards supporting designers to gain experience as an employee before starting an own business. This can be done by funding internship for design students as part of their program. Furthermore, financial support to designers who start up a new company is most likely to have the highest social return when given to those with previous experience.

The importance of the use of advanced software suggests policies for lifelong learning. Given the rapid advances in ICTs in general, and in the design sector in particular, the knowledge gained during formal education will be rapidly become obsolete. Hence, designers should be able to continue to upgrade their ICT skills during their professional careers.

We also found that networking among designer firms was beneficial for designers. Such collaborations are generally market-driven in that firms temporarily team up for the purpose of a single project. Though such networks are expected to be important source of knowledge spillovers, and hence create social returns on top of the private returns, it will be difficult to design specific policies supporting such project consortia. Policy makers will face serious information problems as to select and fund consortia that otherwise would not emerge through market-based agreements.

Our study did not find support for some of the common wisdom in current policy discourse concerning the advantages of spatial clustering. First, we found that the number of design firms operating in the same municipality closely follows the number of inhabitants of that municipality suggesting that design sectors are not particularly concentrated in space. Second, we also found no effect of the number of fellow designers nearby on the success of a designer. Hence, we conclude that policies that aim to co-locate designers may not have the intended effect of raising their performance.

Finally, as for the use of IPR, we found that designers do not profit from protecting their intellectual property. As a matter of fact, only one fifth of our respondents declared that they have protected their designs using either a copyright, a design model, a patent or an i-DEPOT registration. For the small design firms the costs of protecting their design are simply too high compared to their resources. Only the large firms have clear IPR strategies, especially in industrial design. They seem to have more incentives to block imitation. For all other firms, what might also explain this result is the ambivalence of imitation for many creative workers. Success and diffusion of a design often coincides with its imitation by other designers, and part of the design process also involves using existing designs in a novel way. Hence, current emphasis in "creative industries" policies emphasizing the need for IPR in the design sector seems unfounded (Dutch Ministry of Economic Affairs, Agriculture and Innovation, 2011).

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Table 1. Overview of the variables

Variable	Type	Description
Income	Dependent	The net monthly income of the founder of the design firm
Founding year	Personal	The year the firm is founded
Pre-entry experience	Personal	Whether the founder has been employed in wage labour in the design sector before founding the firm
Entrepreneurial experience	Personal	Whether the founder has founded a firm before
Radical innovation	Personal	Whether the firm has introduced a radically new design in the last 12 months
IPR	Personal	Whether the firm actively uses IPR in order to protect its designs
ICT	Personal	Whether the firm uses specialised software
Advice networks	Relational	The (log of the) number of other design firms the company has approached for business related advice
Collaboration networks	Relational	The (log of the) number of other design firms the company has collaborated with in the last 12 months
Localisation economies	Spatial	Number of firms in the same design sector in the same and adjacent municipalities
Urbanisation economies	Spatial	The number of inhabitants of the design firm's municipality
Age	Control	The age of the designer
Male	Control	The designer is a male
Firm size	Control	The (log of the) number of fulltime employees within the firm
Higher education	Control	Whether the founder completed a higher education program
Design-related education	Control	Whether the completed education program is design related
Industrial design	Control	Whether the designer is active in industrial design
Graphic design	Control	Whether the designer is active in graphic design
Web design	Control	Whether the designer is active in web design

Table 2. Descriptive statistics for the independent variables

	Mean	Std. Deviation	Minimum	Maximum
Founding year	2000	9.35	1959	2011
Pre-entry experience	0.52		0	1
Entrepreneurial experience	0.18		0	1
Radical innovation	0.36		0	1
IPR	0.20		0	1
ICT	0.16		0	1
Advice networks	3.07	22.65	0	250
Collaboration networks	2.71	7.67	0	100
Localisation economies	113.65	167.50	0	838
Urbanisation economies	242.39	270.37	5.40	767.46
Age	42.13	12.62	21	89
Male	0.70		0	1
Firm size	1.93	3.32	0.10	25
Higher education	.76		0	1
Design-related education	.62		0	1
Industrial design	.38		0	1
Graphic design	.45		0	1
Web design	.38		0	1

Table 3. Estimated coefficients for the ordinal regression models explaining Income

Variable name	Model 1	Model 2
Founding year	*-0.044**	*-0.052***
	(0.026)	*(0.020)*
Pre-entry experience	*1.043****	*1.039****
	(0.371)	*(0.331)*
Entrepreneurial experience	0.643	*0.822***
	(0.458)	*(0.418)*
Radical innovation	0.052	0.040
	(0.356)	(0.339)
IPR	0.542	0.665
	(0.454)	(0.434)
ICT	*1.111**	*1.024**
	(0.586)	*(0.519)*
Collaboration networks	*0.563****	*0.511****
	(0.204)	*(0.194)*
Advice networks	0.124	**0.127**
	(0.189)	**(0.184)**
Localisation economies	0.002	0.001
	(0.001)	(0.001)
Age	0.009	
	(0.019)	
Male	*0.855***	*0.869***
	(0.408)	*(0.386)*
Firm size	*0.853****	*0.864****
	(0.268)	*(0.257)*

Higher education	0.119 (0.467)	
Design-related education	-0.079 (0.427)	
Graphic design	0.010 (0.441)	
Web design	*0.782** *(0.410)*	*0.857*** *(0.388)*

Notes: *** p-value< 0.01 , ** p-value< 0.05 l, * p-value< 0.10 .

Model 1 No. observations = 138, Nagelkerke R-Square = 0.415

Model 2: No. observations = 143, Nagelkerke R-Square = 0.412

Figure 1. Distribution of net monthly income in euro's among founders of design firms