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The capital constraint paradox in micro and small family and nonfamily firms

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Abstract

Purpose – The purpose of this paper is to investigate the importance of the entrepreneur’s quest for independence and control over the firm for governance and financing strategies with a special focus on family firms and how they differ from nonfamily firms.

Design/methodology/approach – The analysis is based on 1,000 telephone interviews with Swedish micro and small firms. The survey data are matched with firm-level data from the Bureau van Dijks database ORBIS.

Findings – The analysis shows that independence is a prime motive for enterprises, statistically significantly more so for family owners. Family owners are more prone to use either their own savings or loans from family and are more reluctant to resort to external equity capital. Our results indicate a potential “capital constraint paradox”; there might be an abundance of external capital while firm growth is simultaneously constrained by a lack of internal funds.

Research limitations/implications – The main limitation is that the study is based on cross-section data. Future studies could thus be based on longitudinal data.

Practical implications – The authors argue that policy makers must recognize independence and control aversion as strong norms that guide entrepreneurial action and that micro- and small-firm growth would profit more from lower personal and corporate income taxes compared to policy schemes intended to increase the supply of external capital.

Originality/value – The paper offers new insights regarding the value of independence and how it affects strategic decisions within the firm.

Keywords Tax policy, Family firms, Informal institutions, Ownership

Paper type Research paper

JEL Classification — L210, G320, G340

The authors gratefully acknowledge the Confederation of Swedish Enterprise for financing the survey. Financial support for Johanna Palmberg from the Smelink Foundation is gratefully acknowledged. The authors are grateful for comments on earlier versions of the paper from Per-Olof Bjuggren, Ana Castro, Niklas Rudholm, seminar participants at CESIS, KTH Royal Institute of Technology, the Inaugural WINIR-conference in London, and Örebro University.
1. Introduction
There is an extensive discussion of the idea that small-firm growth is hampered by a lack of capital, which is expected to have significant economic and social costs (Abe, 2015; Carpenter and Petersen, 2002; Didier et al., 2014; Gallo et al., 2004; Haynes et al., 1999). Asymmetric information may make external investors more reluctant to supply capital to smaller firms than to larger, more mature firms (e.g. De Massis et al., 2015; Hubbard, 1998; Kon and Storey, 2003; Lee, 2014). Accordingly, various policy initiatives have been implemented across the member countries of the European Union (EU) and the Organization for Economic Cooperation and Development to facilitate access to external finance by smaller firms, particularly firms that are potentially innovative and high growth (Brown et al., 2014; European Commission, 2012; Mason and Brown, 2013; OECD, 2010).

However, previous studies have shown that small firms are characterized by governance attributes that influence financing decisions and restrict the demand for external capital (Davidsson, 1989; Gómez-Mejía et al., 2007; Romano et al., 2001). This observation is especially true of family firm owners, for whom the quest to remain independent and maintain control over their firms often serves as a norm that ultimately restricts financial and investment decisions (Blanco-Mazagatos et al., 2007; Gallo et al., 2004). External investors presumably require influence over their investments and thereby over firm governance. Thus, there may be a tradeoff between independence and firm growth. Seizing a business opportunity and expanding a business may require external funding, which might come at the cost of a loss of control, causing the owner to refrain from growth.

The purpose of this paper is to obtain additional insight into financing decisions of micro and small firms, particularly family firms. We investigate three related issues: is independence a stronger motive for enterprise among family owners than nonfamily owners? Is the control premium higher in family firms compared with nonfamily firms? Do preferences toward internal and external capital differ in family vs nonfamily firms? The analysis is grounded in research that recognizes the fundamental role of institutions in economic growth. These institutions are of both a formal and informal character, and economic development benefits when such institutions are aligned and conducive to productive entrepreneurship (Campbell, 2012). The idea underlying the paper is that norms – an informal institution – may encourage family firms to value independence to a greater degree than nonfamily businesses. Family firms thus exhibit a lower demand for external capital and a higher preference for internal funds.

Our study is based on a representative sample of the total population of Swedish private micro (1-9 employees) and small (10-49 employees) limited stock companies. Data were gathered through 1,000 telephone interviews with controlling owners matched with register data that enable us to distinguish family from nonfamily firms and to explore differences between the two. In the survey (conducted in 2013) we asked questions that allow for an investigation of the influence of family ownership on financial and investment decisions, controlling for personal features of the owner (e.g. gender, education, and age), firm characteristics (e.g. size, age, and industry affiliation) and capital structure (e.g. gearing and profitability). The data from the survey is matched with firm-level data from the comprehensive Bureau van Dijks database ORBIS. The combination of survey and register data is well-suited for the purpose of this study since it enables us to account for both owner attitudes and firm-specific characteristics in the empirical analysis.

Although previous research has examined motivational forces among business owners, control premiums, and attitudes toward internal and external capital, few empirical investigations, using larger samples, have examined these issues with respect
to micro and small family firms. Empirical analyses of family firms are frequently more difficult to conduct because official register-based databases often do not recognize family ownership or the involvement of families in firm governance[3]. The poor availability of data has directed empirical research on family firms toward studies of large listed firms, for which ownership data are more readily available and of better quality (Dyer, 2006; Fernando et al., 2014; Mazzi, 2011; Sciascia and Mazzola, 2008; Westhead and Howorth, 2006)[4]. Romano et al. (2001), who examined financial decision making in Australian family firms, including smaller firms, is an important exception[5]. Recently, Koropp et al. (2014) applied planned behavior theory to study financial choices in 118 larger (sales required to exceed Euro 750,000 to be included) German family firms[6]. Our study adds to previous literature by focussing on micro and small firms, identifying both family and nonfamily firms and thus enabling a comparison of these two categories of firms in various respects. Adding to previous studies, we investigate whether there are statistically significant differences between family and nonfamily owners. For example, are family owners largely motivated by independence, and do they have stronger preferences for own equity? We also seek to estimate the control premium in these firms and examine whether it differs between family and nonfamily firms. We argue that this is of interest for research as well for economic policy because family firms are estimated to be the most common business form around the world and make notable contributions to entrepreneurship, innovation, employment, and economic growth (Andres, 2008; Astrachan and Shanker, 2003; Barca and Becht, 2001; Claessens et al., 2002; Claessens and Fan, 2002; Isakov and Weisskopf, 2014; La Porta et al., 1999; Villalonga and Amit, 2010). Additional knowledge of family firms’ financial and investment decisions and how they differ from those of nonfamily firms are therefore of importance for researchers in understanding economic development and for policy makers in conducting efficient economic policy. The focus on micro and small firms is motivated by three considerations. First, the literature shows that lack of capital is firm size dependent; simplified, the smaller the firm and the less established the business idea, the more difficult it is to finance investment, and the larger the firm and the more established the business idea, the easier it is to access capital. Second, financial decision making in micro and small family and nonfamily firms is a less explored field of research. Third, research suggests that a fraction of smaller and younger firms with growth ambitions are critical to job generation and economic growth and help explain country differences with respect to job creation (Anyadike-Danes et al., 2015; Daunfeldt et al., 2014; Henrikson and Johansson, 2010). Additionally, family businesses are associated with entrepreneurship. It may be difficult to identify entrepreneurs and entrepreneurial firms (Campbell and Mitchell, 2012), but firms established by entrepreneurs have probably been, and perhaps in many cases remain, family firms in terms of the definition based on family control and participation in governance[7]. Indeed, Schumpeter (1934) argued that founding a family dynasty was a motive for many entrepreneurs[8].

Our results are in line with previous research and provide new insights with a bearing on economic policy. Nearly all of the respondents – approximately 90 percent – indicate that independence is an important or very important motive for enterprising. As found in previous research, we observe that family owners are significantly more likely than nonfamily owners to answer that they find independence “very important.” Also similarly to other studies, we find support for the “pecking-order theory,” [9] which asserts that both family and nonfamily firms most prefer to finance growth with company profits, followed by bank debt and equity from current owners, while equity from external investors is less preferred. Additionally, we find that family firms are significantly more
prone to use the equity of current owners and loans and equity of new family members than are nonfamily firms. Furthermore, such firms are less willing to use equity of external investors than are nonfamily firms, although the latter result is not statistically significant. We also observe that the control premium for the survey firms largely exceeds estimates for listed firms. Approximately one-third of respondents are unwilling to sell shares that give an external investor major influence when they are offered the market value of the shares plus 70-100 percent. Unexpectedly, we find no statistically significant difference between family and nonfamily owners in this respect. One possible explanation for this result is that both family and nonfamily owners highly value control and that the scale should have been set even higher to detect potential differences.

This study has a number of policy implications relevant to the contemporary debate on capital as a constraint on productive entrepreneurship and firm growth. We argue that smaller firms, and particularly family firms, may face a “capital constraint paradox,” whereby the supply of external capital might be sufficient, but firm owners might refrain from accessing it due to fear of losing control of their companies. This suggests a conflict between policy schemes directed toward increasing the supply of external capital and the informal institution of independence as a norm. Thus, lack of retained cash flows and private wealth would hinder investment in profitable projects and constrain firm growth. Our results indicate that policy schemes that aim to increase the supply of external capital will be less effective, due to low demand from business owners, compared with other programs directed toward increasing internally generated funds. As business owners appear to be willing to forgo business opportunities to avoid losing control over their businesses, our study suggests that firm growth would be enhanced by stimulating private savings and internally generated funds. Lowering personal and corporate income taxes are two reforms that would increase such funding, which could be used to finance innovation and growth (cf., Bruce et al., 2014; Gurley-Calvez and Bruce, 2014; Yakovlev and Davies, 2014). Lower tax levels could also be expected to lead to a higher demand for external equity because the after-tax compensation for giving up independence and control would increase.

The remainder of this paper is organized as follows. The next section presents the theoretical framework of the study and develops the hypotheses tested in the empirical analysis. The third section presents our definitions, the survey, supplementary firm data, and summary statistics. The econometric model and the results of the empirical analysis are reported in Section 4. The final section discusses the results and concludes the paper. Appendix 1 presents the questionnaire used in the telephone interviews, and Table AI describes the Eurostat Industry classification used in the econometric analysis.

2. Theoretical framework and hypotheses
Institutions are recognized as fundamental to economic growth and development because they provide the basic rules of human interaction for people in their use of scarce resources. Institutions can broadly be categorized as either formal or informal. Formal institutions are composed of constitutions, statutes, common law, and other governmental regulations, whereas informal institutions are syntheses of traditions, customs, moral values, beliefs, religion, and other norms of behavior that have endured over time. Formal institutions are policy variables for the expression of collective preferences and the realization of the programs of political parties. In contrast, informal rules are not policy variables over which the state has control. They are enforced by society through sanctions, such as expulsion from the community, ostracism by friends and neighbors, loss of reputation, and dishonor. These sanctions can be efficient enforcement mechanisms because human beings are social creatures who depend on social networks (Kasper et al., 2013).
In particular, research has shown that independence and control are strong norms that motivate and guide business owners. It is plausible that these norms are stronger in family than in nonfamily firms because they are foundations upon which family ownership rests (Romano et al., 2001; Sirmon and Hitt, 2003; Wyrwich, 2015). We therefore hypothesize that family owners in general value independence and control more highly than do owners of firms with dispersed ownership:

H1. Independence is a stronger motive for enterprising among family owners than among nonfamily owners.

H2. The control premium is higher in family firms than in nonfamily firms.

Moreover, it is plausible that norms toward independence and control affect behavioral intention to use different sources of finance, which in turn affects financing behavior (Koropp et al., 2014). This is in line with empirical findings observing that family owners often appear to have a stronger aversion to external capital to maintain control over the firm and thus are more dependent on private savings and internally generated funds than are nonfamily firms (Gómez-Mejía et al., 2007; Romano et al., 2001). Thus, they might overlook innovation, investment, and growth opportunities due to capital constraints caused by dependence on internally generated cash flows, such as retained earnings and family wealth (De Massis et al., 2015). Many family firms are small and take the form of close corporations. Both of these traits imply further limitations on access to external capital markets (Akyüz et al., 2006; Beck and Demirguc-Kunt, 2006; Sirmon and Hitt, 2003).

Accordingly, we theorize that family owners more strongly prefer to rely on internal financing and personal wealth to finance investments and firm growth. To analyze funding preferences among family and nonfamily owners, we draw on the pecking-order theory and distinguish among six sources of funding: company profits, loans from family, loans from banks and others, equity of owners, equity of new family members, and equity of new external investors. Theoretically, family firms should be more reluctant than nonfamily firms to use equity of external investors (and loans from banks and others because such funding threatens their independence). Similarly, family firms should be more prone than nonfamily firms to use other sources of funding because they “guarantee” family control. Thus, we formulate the following hypotheses:

H3. Family firms are more prone than nonfamily firms to use company profits to finance growth.

H4. Family firms are more prone than nonfamily firms to use equity of owners to finance growth.

H5. Family firms are more prone than nonfamily firms to use equity of new family owners to finance growth.

H6. Family firms are more reluctant than nonfamily firms to use equity of new external investors to finance growth.

H7. Family firms are more prone than nonfamily firms to use loans from family to finance growth.

H8. Family firms are more reluctant than nonfamily firms to use loans from banks and others to finance growth.

The results have a bearing on theory as well on economic policy, in particular on the discussion of access to capital for entrepreneurial firms and the taxation of
entrepreneurial profits. Tax theory is inconclusive regarding the effects of taxation of firm owners. According to one line of argumentation, taxation of owners has limited effect on investments because the loss of funds due to taxation can easily be compensated by new equity or loans from international capital markets. According to another line of argumentation, entrepreneurs may be reluctant to use international capital markets, due to fear of loss of control (Henrekson and Sanandaji, 2016). Economic policy will get opposite design depending on which argument the legislator relies on.

Sweden can, in this regard, be considered an interesting policy experiment. The strive for an egalitarian society and a belief in the efficiency of large firms because of economies of scale coincided with an ideological aversion against capitalists and a confidence in a tax theory advocating the first line of argument. This resulted in very high taxation of entrepreneurs and poor incentives to start and grow entrepreneurial firms after Second World War, especially during the 1970s and 1980s when taxation could have confiscatory effects. Tax policy was drastically reformed in the beginning of the 1990s in connection with a severe economic crisis caused by misconducted economic policy. This reform and further reforms of tax policy has been pointed out as an important explanation to the recovery of the Swedish economy. Though much improved, taxation of Swedish entrepreneurs remain high in an international perspective (Henrekson, 2005; Henrekson and Johansson, 2009, 2010; Heshmati et al., 2010; Johansson et al., 2015).

3. Method

3.1 Definition of family firms

There is no universally accepted definition of what constitutes a family firm. However, most empirical studies use a definition that considers ownership, control and/or participation in executive management (Astrachan and Shanker, 2003; Miller et al., 2007; Villalonga and Amit, 2006, 2009). The European Commission (2009, p. 9) identifies more than 90 definitions, most of which are not operational and thus not applicable to empirical research[12]. In this paper, we use the definition proposed by the European Commission (2009) and define non-listed family firms as follows[13]:

A firm, of any size, is a family business, if:

i) The majority of decision-making rights is in the possession of the natural person(s) who established the firm, or in the possession of the natural person(s) who has/have acquired the share capital of the firm, or in the possession of their spouses, parents, child or children’s direct heirs. The majority of decision-making rights are indirect or direct.

ii) At least one representative of the family or kin is formally involved in the governance of the firm.

3.2 Survey and data

The empirical analysis is based on a telephone survey of owners of Swedish limited liability corporations with 1-49 employees, where employees are defined as anyone who receives a salary from the company, including the owners. The upper limit of 49 employees derives from the fact that smaller firms generally have greater difficulty sourcing external capital and that, for comparative purposes, we wish to follow the EU definition of micro (0-9 employees) and small (10-49 employees) firms. The survey
covers all industries and the firms are categorized according to the Eurostat industry classification, see Appendix 2. Corporations with no employees are excluded because they generally report low (or no) economic activity (European Recommendations, 2003).

In total, 3,984 firm owners were contacted to ensure 1,000 complete responses to our survey[14]. The firms were selected through a randomized stratified sample. The sample was stratified over micro and small firms: 918 of the interviews were conducted with firms with 1-9 employees, and 82 were conducted with companies with 10-49 employees. All of the interviews were conducted in 2013 by a professional market research firm in Sweden. The largest controlling owner of each firm was asked to respond to the survey.

The survey consists of 11 questions (see Appendix 1 for an English version of the survey). Three of the questions concern the owner’s attitudes toward independence, control, and financing strategy (questions 5-7). The survey also includes four questions to identify family and nonfamily firms, e.g., the number of owners and their shares of decision-making rights (questions 1-4), and four questions addressing background facts about the owners (questions 8-11). The following questions in the survey correspond to the hypotheses formulated in the previous section.

3.3 Variables

Independence. To investigate whether independence is a stronger motive for family owners than for nonfamily owners, we presented respondents with the statement, (question 5) “To be independent is very important to me,” with possible answers ranging from “totally disagree” = 1 to “totally agree” = 5. The questions is inspired by Davidsson (1989) and Wiklund et al. (2003) who both have conduct surveys to examine the importance of independence as a motive for enterprising among Swedish business owners. Combining three telephone interview studies, with 440, 400, and 630 respondents, they find that noneconomic factors may be more important than financial outcomes in explaining business managers’ attitudes toward growth. The studies do not distinguish between family and nonfamily firms.

Control premium. For larger, often listed, firms, there are two ways to estimate the control premium (Dyck and Zingales, 2004a). The first is to estimate cross-country variations in the price of decision-making rights compared with cash-flow rights, given that decision-making rights do not entail inferior dividend rights (Barclay and Holderness, 1989; Villalonga and Amit, 2006; Zingales, 1995). If there is a positive price difference, one can assume that controlling investors identify a control value that is not available to minority shareholders. The second way to estimate the value of control for listed firms is to compare the price of shares in private negotiations for controlling blocks with the share price after the market has absorbed the knowledge of a new controlling owner. The difference in price should reflect the value that the new block owner places on both cash flows from the investment and the value of the private benefits of control generated as a result of being a block holder. Dyck and Zingales (2004b) apply this method and find that the average value of control[15] across countries is 14 percent. Sweden, together with the USA and the UK, report relatively low values (7, 1, and 1 percent, respectively). Nenova (2003) applies the first method in a cross-country analysis of 18 countries, reporting quite similar values as Dyck and Zingales.

Our study focusses on micro and small non-listed firms; thus, we cannot observe firms’ market values. Instead, we estimate the control premium as the price at which the
owner would be willing to sell shares that would give an external investor major influence in the company. We asked (question 6): “At what price would you be willing to sell shares of your company that would give an external investor a major influence in the company?’ The fictitious example offers an interval between the company’s estimated market value and an additional 10 percent up to 70-100 percent over the market value.

Attitudes toward different sources of funding. Question 5 was used to test H3: “Regardless of whether your company plans to grow, with which of the following sources of finance would you prefer to finance growth?” The answers range from “not preferred” = 1 to “most preferred” = 5. Respondents could choose between equity of owners, company profits, equity of new family owners, equity of new external investors, loans from family, and loans from banks and others[16].

Studies of control aversion and the propensity to use external capital to finance investments in small Swedish firms have previously been published by Berggren et al. (2000) and Cressy and Olofsson (1997). In both studies, surveys were mailed to firms with 5-199 employees; more than 500 firms were included in the sample, and the response rate was approximately 50 percent. The two studies conclude that business owners highly value control, that the demand for external capital is low, and that internally generated funds are preferred when making new investments. The studies do not distinguish family from nonfamily firms or estimate the control premium.

Control variables. The survey data are matched with firm-level data for 2012 from the Bureau van Dijks database ORBIS, which contains balance sheet and income statement data along with information on firm age, firm size, and industry affiliation. The key variable of interest is a dummy variable that equals one if a firm is defined as a family firm and zero otherwise, where a family firm is defined in terms of a combination of equity ownership and active participation in governance. We also include a set of control variables for owner, firm, and financial characteristics commonly used in previous research. Variables for owner characteristics, education, gender, nationality, number of owners, and owner’s age, are seen as critical for understanding owners’ motives for enterprising and decision making, for instance education has shown to impact entrepreneurial decisions (Block et al., 2013), females’ investment and financing decisions are suggested to be influenced by them being more risk avert than males (Du Rietz and Henrekson, 2000), entrepreneurship may differ between natives and immigrants (Constant and Zimmermann, 2006), concentrated and dispersed ownership are expected to have an effect (as discussed in this paper) and owners’ age seems to be negatively correlated with debt and outside participation in firms (Romano et al., 2001). Firm variables relate to firm age, firm size, and industry affiliation, and have been shown to impact enterprising in a number of aspects (Coad et al., 2014; Cucculelli and Marchionne, 2012). Financial variables on profitability and capital structure (EBIT, gearing ratio, operating revenues, profit margin, solvency ratio, and total assets) are also included since they also are considered to have an influence (see, e.g. Romano et al. (2001) for further discussion). Table I presents the variables used in the analysis.

4. Results
4.1 Descriptive statistics
Table II presents descriptive statistics for the variables. The sample consists of 53 percent family firms and 47 percent nonfamily firms. The firms are relatively young, with an average age of 14 years. The oldest firm is 100 years old, and the youngest firm is one year old. The average firm has five employees and 1.36 million USD in assets.
The variance is quite high, with the largest firm having 47 employees and total assets of 295 million USD. The profitability measures (profit margin) illustrate that the sample firms are profitable on average. Relatively few of the surveyed firms are high or medium high-tech (2 percent), medium low-tech (4 percent) or low-tech (4 percent) manufacturing firms, whereas a larger share (29 percent) are active in knowledge-intensive services (KIS). Most firms (43 percent) are active in less-KIS.

The average owner in the sample is a 50-year-old male born in Sweden with a secondary school education. One-fifth of the firms have a female as the largest owner. In total, 8 percent of the business owners are non-Swedish; 4 percent originate from Europe, and 2 percent originate from Africa and other Nordic countries. In total, 10 percent of the respondents have a primary education, and 42 percent have a tertiary education. The correlation table reports no problem with collinearity[17].
Table III presents descriptive statistics comparing mean values for family and nonfamily firms, including $t$-values to determine whether there are significant differences between the two types of firms. On average, family firms are slightly older than nonfamily firms (14.04 and 13.78 years, respectively), but the difference is not statistically significant. The average family firm has fewer employees but is larger in terms of total assets; both differences are statistically significant. The two measures of profitability show that family firms are less profitable than nonfamily firms; however, the differences are not statistically significant. Family firms exhibit significantly smaller mean operating revenues. The average family firm also has higher levels of debt (the gearing ratio is significantly higher in family firms) and lower, but not significantly lower, solvency ratio levels (i.e. the probability of meeting debt obligations is lower in family firms).

There are no statistically significant differences in the levels of firms operating in different industries, with the exception of KIS industries, where family firms are slightly less likely to be active (the $t$-value is 1.96).

The descriptive statistics exhibit interesting features with respect to governance structure. Family firms have significantly fewer owners (1.38 compared to 1.51 for

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>SD</th>
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<td><strong>Panel A: firm variables</strong></td>
<td></td>
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<tr>
<td>Family firm (%)</td>
<td>53.30</td>
<td>49.91</td>
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<tr>
<td>Firm age (years)</td>
<td>13.92</td>
<td>12.84</td>
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<td>100</td>
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<tr>
<td>Firm size (employees)</td>
<td>4.54</td>
<td>6.06</td>
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<td>47</td>
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<tr>
<td>High and medium high-tech (%)</td>
<td>2.30</td>
<td>15.00</td>
<td>0</td>
<td>1</td>
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<tr>
<td>Medium low-tech (%)</td>
<td>4.40</td>
<td>20.52</td>
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<tr>
<td>Low-tech (%)</td>
<td>3.60</td>
<td>18.64</td>
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<td>KIS (%)</td>
<td>28.70</td>
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<tr>
<td>Less-KIS (%)</td>
<td>43.30</td>
<td>49.57</td>
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<tr>
<td>Other industries (%)</td>
<td>17.70</td>
<td>38.19</td>
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<td>1</td>
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<tr>
<td><strong>Panel B: financial variables</strong></td>
<td></td>
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<tr>
<td>Gearing ratio (%)</td>
<td>87.50</td>
<td>161.95</td>
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<td>Operating revenues (1,000,000 USD)</td>
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<td>4.09</td>
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<td>Profit margin (%)</td>
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<td>15.50</td>
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<td>Solvency ratio (%)</td>
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<td>28.79</td>
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<td>Total assets (1,000,000 USD)</td>
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<td><strong>Panel C: owner variables</strong></td>
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<td>Education (%)</td>
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<td>Nationality (%)</td>
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<td>Owner age (years)</td>
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</tbody>
</table>

Notes: See Table I for definitions. There are 1,000 observations. Variables taking a minimum value of zero and a maximum value of one are dummy variables.

Sources: Survey data, ORBIS, and own calculations.

Table II. Summary statistics – all firms
nonfamily firms). The share of female owners is significantly higher in family firms than in nonfamily firms, at 22 and 15 percent, respectively. Nonfamily owners have higher educational levels than family owners. Owners of family firms are significantly less likely to have tertiary degrees and significantly more likely to have only secondary school degrees. There are no differences in nationality between family and nonfamily firms.

### 4.2 Econometric model and results

We use a two-step procedure to test the first hypothesis that independence is a stronger motive for enterprising for family owners than for nonfamily owners; first, we apply a $t$-test. Table IV reports two different measures of independence based on respondents’ answers. The first measure is equal to one if a respondent answered “agree” or “totally agree.” The second measure employs a stricter definition, taking a value of one only if the respondent answered “totally agree.” In total, 92 percent of the family firms answered “agree” or “totally agree,” and 73 percent answered “totally agree.” The corresponding numbers for nonfamily firms are 85 and 65 percent, respectively.
The differences between groups – 7 and 8 percent, respectively – are statistically significant at the 1 percent level.

Second, we estimate a linear probability model (LPM) according to the following equation:

\[ \Pr(Y_t = 1) = \alpha + \beta \text{family}_t + \gamma_1 X_{1,t} + \gamma_2 X_{2,t} + \gamma_3 X_{3,t-1} + \epsilon \] (1)

where \( Y \) is a dummy variable that takes a value of one if independence is deemed important, family is a dummy variable that takes a value of one for family firms, \( X_1 \) and \( X_2 \) denote vectors of owner and firm characteristics, respectively, and \( X_3 \) is a set of financial control variables, \( \beta, \gamma_1, \gamma_2, \text{ and } \gamma_3 \) are the corresponding coefficient vectors, and \( \epsilon \) is an error term. The null hypothesis is:

\( H_0: \beta > 0; \)
\( H_1: \beta \leq 0; \) \( Y = 1 \) if independence is deemed important and 0 otherwise.

Models 1 and 2 in Table V show the estimation results for the LPM, using the stricter definition of independence, i.e., \( Y \) equals one if the respondent answered “totally agree” to the statement that independence is a very important motive for enterprising. Financial control variables are included in the second model to test for the robustness of the estimated effect of being a family firm. We also estimate Equation (1) with non-linear models without any significant difference in the estimated marginal effects, which one would expect (Angrist and Pischke, 2008)[18]. Therefore, we present the marginal effects from the LPM which have a more direct interpretation than their non-linear counterparts.

Table V shows the marginal effects from the estimation of Equation (1) using a LPM. The calculated marginal effects for family firms in the second column show that family firm owners are 10.7 percent more likely to state that independence over the firm’s decisions and activities are very important, a result that is statistically significant. The estimated effect increases in magnitude when the financial control variables are included. Thus, we do not reject \( H_1 \).

To determine whether family firms and nonfamily firms place different premia on control, respondents were presented with a hypothetical offer to sell shares that would give an external investor major influence over the company (Figure 1). For each possible answer (estimated market value +10 percent, estimated market value +10-20 percent, etc.), we apply Equation (1). The null hypothesis is as follows:

\( H_0: \beta < 0; \)
\( H_1: \beta \geq 0; \) \( Y = 1 \) if the respondent accepts the offered price and 0 otherwise (the control variables are defined as in Equation (1)).

<table>
<thead>
<tr>
<th>Variable</th>
<th>Family firms Mean</th>
<th>SD</th>
<th>Nonfamily firms Mean</th>
<th>SD</th>
<th>Diff. in mean</th>
<th>t-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>“Agree” or “totally agree” (%)</td>
<td>91.74</td>
<td>27.55</td>
<td>85.22</td>
<td>35.52</td>
<td>6.52***</td>
<td>(3.26)</td>
</tr>
<tr>
<td>“Totally agree” (%)</td>
<td>72.80</td>
<td>44.54</td>
<td>65.10</td>
<td>47.72</td>
<td>7.70***</td>
<td>(2.64)</td>
</tr>
</tbody>
</table>

Notes: The scale used was 1 = totally disagree and 5 = totally agree, with the table providing percentages answering in the top two categories. There are 1,000 observations in total: 533 of family firms and 467 of nonfamily firms. ***Significant at 10, 5 and 1 percent level, respectively

Sources: Survey data and own calculations

Table IV. t-test: independence is very important to me
The analysis reveals two interesting findings[19]. First, owners of micro and small firms are highly reluctant to sell to external investors. Approximately 30 percent of owners are unwilling to sell their firms despite the hypothetical offer of market value plus 70-100 percent. This supports previous research findings that independence and control are important attributes of entrepreneurship. Second, and unexpectedly, there is no statistically significant difference between the willingness of family firms and nonfamily firms to sell shares. Thus, we reject \( H2 \).[20]

Finally, the respondents were asked to state their preferences regarding how to finance expansion. Again, the respondents are divided into two groups, family firms and nonfamily firms, allowing for a two group mean comparison (t-test). Table VI summarizes the results.

The results show that company profits are the most preferred source of finance, followed by loans from banks and others, and finally by equity of owners, which lends support to the pecking-order theory[21].

<table>
<thead>
<tr>
<th>Variables</th>
<th>1</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Family firm</td>
<td>0.092***</td>
<td>0.107***</td>
</tr>
<tr>
<td></td>
<td>(0.030)</td>
<td>(0.035)</td>
</tr>
<tr>
<td>Firm age</td>
<td>0.001</td>
<td>0.002</td>
</tr>
<tr>
<td></td>
<td>(0.001)</td>
<td>(0.001)</td>
</tr>
<tr>
<td>Firm size</td>
<td>-0.003</td>
<td>-0.001</td>
</tr>
<tr>
<td></td>
<td>(0.003)</td>
<td>(0.003)</td>
</tr>
<tr>
<td>High and medium high-tech</td>
<td>-0.017</td>
<td>0.001</td>
</tr>
<tr>
<td></td>
<td>(0.105)</td>
<td>(0.113)</td>
</tr>
<tr>
<td>Medium low-tech</td>
<td>0.045</td>
<td>0.001</td>
</tr>
<tr>
<td></td>
<td>(0.079)</td>
<td>(0.085)</td>
</tr>
<tr>
<td>KIS</td>
<td>0.035</td>
<td>-0.019</td>
</tr>
<tr>
<td></td>
<td>(0.047)</td>
<td>(0.056)</td>
</tr>
<tr>
<td>Less-KIS</td>
<td>0.098**</td>
<td>0.074</td>
</tr>
<tr>
<td></td>
<td>(0.040)</td>
<td>(0.045)</td>
</tr>
<tr>
<td>Female</td>
<td>0.055</td>
<td>0.013</td>
</tr>
<tr>
<td></td>
<td>(0.040)</td>
<td>(0.048)</td>
</tr>
<tr>
<td>Secondary</td>
<td>0.174****</td>
<td>0.135***</td>
</tr>
<tr>
<td></td>
<td>(0.044)</td>
<td>(0.050)</td>
</tr>
<tr>
<td>Tertiary</td>
<td>0.149***</td>
<td>0.096*</td>
</tr>
<tr>
<td></td>
<td>(0.050)</td>
<td>(0.057)</td>
</tr>
<tr>
<td>Nordic</td>
<td>-0.040</td>
<td>-0.017</td>
</tr>
<tr>
<td></td>
<td>(0.108)</td>
<td>(0.126)</td>
</tr>
<tr>
<td>Europe</td>
<td>0.145*</td>
<td>0.211**</td>
</tr>
<tr>
<td></td>
<td>(0.080)</td>
<td>(0.103)</td>
</tr>
<tr>
<td>Africa/Asia</td>
<td>0.132</td>
<td>0.175</td>
</tr>
<tr>
<td></td>
<td>(0.100)</td>
<td>(0.152)</td>
</tr>
<tr>
<td>Number of owners</td>
<td>0.014</td>
<td>0.008</td>
</tr>
<tr>
<td></td>
<td>(0.025)</td>
<td>(0.030)</td>
</tr>
<tr>
<td>Owner age</td>
<td>0.008***</td>
<td>0.008***</td>
</tr>
<tr>
<td></td>
<td>(0.001)</td>
<td>(0.001)</td>
</tr>
<tr>
<td>Financial controls</td>
<td>No</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Table V.
Regression results, dependent variable: independence is very important to me

Notes: Standard errors are in parentheses. Models 1 and 2 are estimated by a linear probability model (OLS). The regression analyses are based on 1,000 observations. ***: Significance at 1, 5 and 1 percent level, respectively
Sources: Survey data, ORBIS and own calculations
To test the first hypothesis concerning independence, the question about financing is used to specify a dependent variable. We use Equation (1) to test whether there is a higher/lower probability that family firms use a particular source of funding. We test the hypothesis for the six sources of funding. The econometric analysis confirms the \( t \)-tests; therefore, to save space, we do not show the results\(^{22}\).

Family firms prefer to use company profits and bank loans as a financing source to a greater extent than nonfamily firms. However, the differences in mean values are statistically insignificant, and thus, we reject \( H3 \) and \( H8 \). Financing through new external owners is less likely to be used by family firms than by nonfamily firms.

Regardless of whether your company plans to grow, with which of the following sources of finance would you prefer to finance growth?

<table>
<thead>
<tr>
<th>Source of Finance</th>
<th>Family (%)</th>
<th>Nonfamily (%)</th>
<th>Difference (ppt)</th>
<th>( t )-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Company profits</td>
<td>80.11</td>
<td>76.66</td>
<td>3.45</td>
<td>1.32</td>
</tr>
<tr>
<td>Loans from banks and others</td>
<td>45.97</td>
<td>41.11</td>
<td>4.86</td>
<td>1.54</td>
</tr>
<tr>
<td>Equity from the owners</td>
<td>38.65</td>
<td>30.19</td>
<td>8.46***</td>
<td>2.82</td>
</tr>
<tr>
<td>Loans from family</td>
<td>12.57</td>
<td>5.35</td>
<td>7.22***</td>
<td>4.06</td>
</tr>
<tr>
<td>Equity from new external investors</td>
<td>12.01</td>
<td>14.56</td>
<td>-2.56</td>
<td>-1.18</td>
</tr>
<tr>
<td>Equity from new family owners</td>
<td>10.13</td>
<td>5.78</td>
<td>4.35**</td>
<td>2.56</td>
</tr>
</tbody>
</table>

Notes: Percentage points. The scale used was 1 = not preferred, 5 = most preferred, with the table providing percentages answering in the top two categories, i.e., “preferred” and “most preferred.” The respondents could give multiple answers. There are 1,000 observations, with 533 family firms and 467 nonfamily firms. **,** ***Significant at the 10, 5 and 1 percent level, respectively.

Source: Survey data and own calculations.
however, this result is not statistically significant. Thus, we reject $H6$. However, family firms more strongly prefer the use of equity of owners and loans from family than nonfamily firms. Because these findings are significant, we do not reject $H4$ and $H7$. Family firms are also more willing than nonfamily firms to engage new family owners in the financing of an expansion. We therefore do not reject $H5$. Table VII summarizes the hypothesis tests.

5. Concluding discussion

The present study aims to further our understanding of financing and investment decisions of micro and small firms, particularly family firms. Our central question is: does the supply or demand of external capital and/or access to internal funds constrain firm growth? The study is based on 1,000 phone interviews with controlling owners. The survey included questions regarding attitudes toward independence and various types of internal and external funding. The idea underlying the study is that external financing may impose a tradeoff between independence and the exploitation of business opportunities, a tradeoff that may be particularly relevant for family firms, characterized by concentrated ownership, the mixing of family and business life, and the incorporation of non-financial goals into decision making. Our findings bear on other research fields – for instance, small business economics, finance, and corporate governance – that have shown increasing interest in family business.

The analysis shows that for both family and nonfamily owners, independence is a primary motive for enterprising, although it is of significantly greater importance for family owners than for nonfamily owners. Both family and nonfamily firm owners also highly value control, measured as the price they would require for shares that would give an external investor major influence in the company. In line with the pecking-order theory, a majority of firms, both family and nonfamily, prefer to use company profits, bank loans, and own equity to finance growth, whereas few would consider using equity financing of new investors. There are statistically significant differences between the two types of firms: family firms more strongly prefer own equity, loans from family, and equity of new family owners than do nonfamily firms.

The present study sheds light on the current policy debate regarding the effects of capital constraints on small-firm growth. Our findings suggest that policy initiatives

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>$H1$: Independence is a stronger motive for enterprising for family owners than for nonfamily owners</td>
<td>Not rejected</td>
</tr>
<tr>
<td>$H2$: The control premium is higher for family firms than for nonfamily firms</td>
<td>Rejected</td>
</tr>
<tr>
<td>$H3$: Family firms are more prone than nonfamily firms to use company profits to finance growth</td>
<td>Rejected</td>
</tr>
<tr>
<td>$H4$: Family firms are more prone than nonfamily firms to use equity from the owners to finance growth</td>
<td>Not rejected</td>
</tr>
<tr>
<td>$H5$: Family firms are more prone than nonfamily firms to use equity from new family owners to finance growth</td>
<td>Not rejected</td>
</tr>
<tr>
<td>$H6$: Family firms are more reluctant than nonfamily firms to use equity from new external investors to finance growth</td>
<td>Rejected</td>
</tr>
<tr>
<td>$H7$: Family firms are more prone than nonfamily firms to use loans from family to finance growth</td>
<td>Not rejected</td>
</tr>
<tr>
<td>$H8$: Family firms are more reluctant than nonfamily firms to use loans from banks and others to finance growth</td>
<td>Rejected</td>
</tr>
</tbody>
</table>

Table VII. Summary of the hypotheses testing

Source: Own table
directed toward increasing the supply of external capital are largely ineffective because they transfer control to external investors and therefore conflict with informal institutional independence as an entrepreneurial norm. Instead, our results indicate a possible capital constraint paradox: there may exist a surplus of external capital even as firms – family firms more so than nonfamily firms – forgo growth opportunities due to a lack of internally generated funds and own equity. A more effective policy would then be to increase the supply of own equity and internal funds – preferred sources of funding for investment and growth – by reducing capital income taxes. This would foster a better alignment between formal and informal institutions. Additionally, the capital tax that shields the price of shares that a new investor is prepared to pay and the amount that the entrepreneur receives should be reduced. Given that the entrepreneur can be compensated adequately for lost control over the corporation, welfare-generating transactions can occur. Indeed, small losses of tax revenues could finance substantial tax cuts, as capital taxes contribute little to total tax revenues, especially in high-tax countries such as Sweden.

Notes
1. Throughout this paper, we denote capital from the family, including profits from the family firm, new equity from the family and loans from the family, as “internal capital.” Capital invested by external investors, i.e., investors outside the family, will be referred to as “external capital.”

2. In line with Cressy (1995) and Cressy and Olofsson (1997), we refer to control as the right to make decisions about the firm without the involvement of external stakeholders and lenders. Similarly, we refer to control aversion to describe aversion to outside lenders and to equity stake holding by external investors. The term “control” is part of “independence,” which can loosely be referred to as “being one’s own boss” with respect to customers, external investors, suppliers, and others (Davidsson, 1989).

3. We use the definition of family firms proposed by the European Commission (2009), which includes both control of the majority of decision-making rights and family involvement in firm governance (see Section 3 for further discussion). Swedish register data identify family ownership but not family governance (Bjuggren et al., 2011).

4. See Dyck and Zingales (2004a, b) and Nenova (2003) for cross-country estimations of the control premium and private benefits of control in large listed firms. See Benavides-Velasco et al. (2013), Bird et al. (2002), Casillas and Acedo (2007), Dyer and Sánchez (1998) and Zahra and Sharma (2004) for surveys and discussions of research on family ownership and control.

5. Their analysis was based on a questionnaire mailed to 5,000 business owners; the valid response rate was a bit less than one-third. They found, among other things, that family control has a significant impact on capital structure decisions, for instance that external equity is less likely to be used by family firms who prefer to retain control.

6. Based on a mail survey, they found that family norms and attitudes had an effect on behavioral intention and the use of different sources of finance. For instance, perceived behavioral control, was shown to negatively affect behavioral intentions to use external equity and was positively related to the use of internal funds.

7. See, for instance, Mathews et al. (2012) who argue that family business and nascent entrepreneurship are intertwined.

8. Although entrepreneurial firms probably have been, or remain, family firms, most family firms are probably not entrepreneurial (Cucculelli, 2012).
9. Pecking-order theory, in its simplest form, posits that because of transaction costs, firms will most prefer to finance investment with internal funds, followed by debt, and finally by new equity (Donaldson, 1961; Myers and Majluf, 1984). Empirical studies suggest that the theory needs to be modified to a larger extent to account for the special circumstances of small- and medium-sized enterprises (Fama and French 2002). Zoppa and McMahon (2002), for instance, study the financial structure of 871 manufacturing small and medium-sized enterprises based on data from the Australian federal government’s Business Longitudinal Survey and argue that the broad categories of internal funds, debt and new equity should be divided into more narrow categories, e.g., new equity from family and new equity from yet uninvolved partners, to reveal further insights about the preferences of various kinds of SMEs toward different sources of finance.

10. As Penrose (1959, p. 31) already concluded: “In many industries and areas there are a considerable number of firms which have been operating successfully for several decades under competent and even imaginative management, but have refrained from taking full advantage of opportunities for expansion. Many of these are family firms whose owners have been content with a comfortable profit and have been unwilling to exert themselves to make more money or to raise capital through procedures that would have reduced their control over their firms” (our italics).

11. According to the pecking-order theory of capital, firms prefer internally generated funds to debt and share issuance when financing investments because asymmetric information and other transaction costs raise the costs of external capital (Donaldson, 1961; Myers, 1984; Myers and Majluf, 1984).

12. See Garcia-Castroa and Aguilera (2014) for a recent overview of the literature on family firms and how they are defined.

13. “Listed companies meet the definition of family enterprise if the person who established or acquired the firm (share capital) or their families or descendants possess 25 percent of the decision-making rights mandated by their share capital. The requirement of family involvement, however, makes it impossible to identify family firms in the official statistics, since this information is not collected.” (European Commission, 2009, p. 9)

14. In total, 1,000 interviews were required to obtain precise estimates, i.e., the response rate was 25 percent (Koropp et al., 2014, report 16 percent). For ethical reasons, no information was saved about firms that did not wish to participate in the survey. Comparing the variables observable in register data (see main text below for definitions) to the total population of Swedish private limited liability firms with 1-49 employees, we only find minor differences with regard to gearing ratio, solvency ratio, and the share of firms in knowledge-intensive services. The differences do not influence our main conclusions. No differences exist with regard to firm age, firm size, EBIT, operating revenues, profit margin, total assets, share of firms in less knowledge-intensive services, high and medium high-tech, medium low-tech, low-tech, or other industries. There is no indication that the variables in our sample that are not identified in register data (family ownership, number of owners, education, gender, nationality, and owner age) should differ from the population. We therefore judge that we have a representative sample and that our results are generalizable to the total population of Swedish private limited liability firms with 1-49 employees.

15. The control premium is an estimate value of private benefits of control. Dyck and Zingales (2004b) measure it as the difference in share price of a control block and the market share price the day following the announcement of the block trade.

16. A similar question regarding past financing decisions was also included, but the results were similar, and we therefore do not comment upon them.

17. The correlation table is available from the authors upon request.
18. We have also checked the robustness for other model specifications, estimators, etc.
The results are robust and are available from the authors upon request.

19. As with the first hypothesis, we conducted a number of robustness checks, finding that the results are robust. To save space, we do not report the results here. They are available from the authors upon request.

20. One explanation for this result could be that both family and nonfamily owners highly value control and that the scale should have been set even higher to detect potential differences.

21. The internal preference ordering among sources of capital was tested using a $t$-test. The results are available from the authors upon request.

22. The null hypothesis is formulated as $H_0: \beta > 0$, and the alternative hypothesis is formulated as $H_1: \beta \leq 0$. In the case of new equity from external investors and loans from banks and others, the hypothesis is $H_0: \beta < 0$. In line with previous analysis, we conducted a set of robustness checks, finding that the results are robust. The results are available from the authors upon request.

References


(The Appendix follows overleaf.)
Appendix 1. Telephone survey (conducted in Swedish)

**Background questions about ownership**

1. Does your company have one or several owners?
   One owner, 2-4 owners, 5 or more owners, Do not know/do not want to answer

2. Are you employed by the company, i.e., do you receive a salary from the company?
   Yes, No, Do not know/do not want to answer

3. How many employees does your company have, excluding the owner/owners?
   ___ # employees, ___ Do not know/do not want to answer

4. What percentage of the decision-making rights is in the possession of the natural person(s) who established the firm, the natural person(s) who has/have acquired the share capital of the firm, or their spouses, parents, child or children’s direct heirs? The majority of decision-making rights are indirect or direct.
   ___ percentage, ___ Do not know/do not want to answer

5. Is at least one representative of the family or kin formally involved in firm governance?
   Yes, No, Do not know/do not want to answer

**Questions about the owner’s attitudes toward independence, control, and financing strategy**

6. Regardless of whether your company plans to grow, with which of the following sources of finance would you prefer to finance growth?
   1= Not preferred 2= Not very preferred 3= Neither preferred nor preferred 4= Preferred 5= Most preferred 6= Do not know/do not want to answer
   a) Company profits b) Equity from the owners c) Equity from new family owners
   d) Equity from new external investors e) Loans from family f) Loans from bank and others
   g) Any other source of capital with any significance?

7. Does the following statement apply to you as an entrepreneur?
   To be independent is very important to me
   1= Totally disagree 2= Disagree 3= Neither disagree nor agree 4= Agree 5= Totally agree 6= Do not know/do not want to answer

8. Assume that you receive an offer for a controlling stake in your company. At what price would you be willing to sell shares of your company that would give an external investor a major influence in the company? Estimated market value plus

**Background questions about the controlling owner**

9. Gender?
   Female   Male

10. How old are you?
    ___ years, Do not want to answer

11. What is your highest completed education?
    Preliminary education  Secondary education  Tertiary education
    Do not know/do not want to answer

12. Where were you born?
    a) Sweden
    b) A Nordic country other than Sweden, including Iceland
    c) Another European country that is a member of EU
    d) Another European country that is not a member of the EU (Croatia, Montenegro, Macedonia, Russia, Serbia, Turkey, Bosnia and Herzegovina, Albania, Kosovo)
    e) Africa
    f) Asia
    g) North America
    h) South America
    i) Oceania
    j) Do not know/do not want to answer
## Appendix 2

<table>
<thead>
<tr>
<th>Manufacturing industries</th>
<th>Knowledge-based services</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>High technology</strong></td>
<td></td>
</tr>
<tr>
<td>21 manufacture of basic pharmaceutical products and pharmaceutical preparations</td>
<td>Knowledge-intensive services (KIS)</td>
</tr>
<tr>
<td>26 manufacture of computer, electronic, and optical products</td>
<td>50-51 water transport, air transport</td>
</tr>
<tr>
<td></td>
<td>58-63 publishing activities, motion picture, video and television program production, sound recording and music publishing activities, programming and broadcasting activities, telecommunications, computer programming, consultancy and related activities, information service activities (section J)</td>
</tr>
<tr>
<td>64-66 financial and insurance activities (section K)</td>
<td></td>
</tr>
<tr>
<td>20 manufacture of chemicals and chemical products</td>
<td>69-75 legal and accounting activities, activities of head offices, management consultancy activities, architectural and engineering activities; technical testing and analysis, scientific research and development, advertising and market research, other professional, scientific and technical activities, veterinary activities (section M)</td>
</tr>
<tr>
<td>27-30 manufacture of electrical equipment, manufacture of machinery and equipment n.e.c., manufacture of motor vehicles, trailers and semi-trailers, manufacture of other transport equipment</td>
<td>78 employment activities</td>
</tr>
<tr>
<td><strong>Medium high technology</strong></td>
<td></td>
</tr>
<tr>
<td>19 manufacture of coke and refined petroleum products</td>
<td>80 security and investigation activities</td>
</tr>
<tr>
<td>84-93 public administration and defense, compulsory social security (section O), education (section P), human health and social work activities (section Q), arts, entertainment and recreation (section R)</td>
<td></td>
</tr>
<tr>
<td><strong>Medium low technology</strong></td>
<td></td>
</tr>
<tr>
<td>22-25 manufacture of rubber and plastic products, manufacture of other non-metallic mineral products, manufacture of basic metals, manufacture of fabricated metal products, except machinery and equipment</td>
<td>Less knowledge-intensive services</td>
</tr>
<tr>
<td>33 repair and installation of machinery and equipment</td>
<td>45-47 wholesale and retail trade, repair of motor vehicles and motorcycles (section G)</td>
</tr>
<tr>
<td>33 repair and installation of machinery and equipment</td>
<td>49 land transportation and transport via pipelines</td>
</tr>
<tr>
<td><strong>Low technology</strong></td>
<td></td>
</tr>
<tr>
<td>10-18 manufacture of food products, beverages, tobacco products textiles, wearing apparel, leather and related products, wood and products of wood, paper and paper products, printing and reproduction of recorded media</td>
<td>52-53 warehousing and support activities for transportation, postal, and courier activities</td>
</tr>
<tr>
<td>31-32 manufacture of furniture, other manufacturing</td>
<td>55-56 accommodation and food service activities (section I)</td>
</tr>
<tr>
<td>68 real estate activities (section L)</td>
<td></td>
</tr>
<tr>
<td>77 rental and leasing activities</td>
<td></td>
</tr>
</tbody>
</table>

*Table AI.* Industry classification according to Eurostat 2014
<table>
<thead>
<tr>
<th>Manufacturing industries</th>
<th>Knowledge-based services</th>
</tr>
</thead>
<tbody>
<tr>
<td>79 travel agency, tour operator reservation service, and related activities</td>
<td>81 services to buildings and landscape activities</td>
</tr>
<tr>
<td>82 office administrative, office support, and other business support activities</td>
<td>94-96 activities of membership organizations, repair of computers and personal and household goods, other personal service activities (section S)</td>
</tr>
<tr>
<td>97-99 activities of households as employers of domestic personnel, undifferentiated goods and services-producing activities of private households for own use (section T), activities of extraterritorial organizations and bodies (section U)</td>
<td></td>
</tr>
</tbody>
</table>

**Source:** Eurostat (2014)

**Corresponding author**

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