

Lawless, Martina; O'Connell, Brian; O'Toole, Conor

Working Paper

Financial structure and diversification of European firms

ESRI Working Paper, No. 492

Provided in Cooperation with:

The Economic and Social Research Institute (ESRI), Dublin

Suggested Citation: Lawless, Martina; O'Connell, Brian; O'Toole, Conor (2014) : Financial structure and diversification of European firms, ESRI Working Paper, No. 492, The Economic and Social Research Institute (ESRI), Dublin

This Version is available at:

<https://hdl.handle.net/10419/129399>

Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

Terms of use:

Documents in EconStor may be saved and copied for your personal and scholarly purposes.

You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.

If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.

Working Paper No. 492

September 2014

Financial Structure and Diversification of European Firms

Martina Lawless, Brian O'Connell and Conor O'Toole

Abstract: Small and medium enterprises have been shown to rely mainly on banks for funding and, unlike larger firms, rarely have direct access to capital markets. This paper looks at the extent to which SMEs avail of a wider range of funding options and how their use differs across firms and countries. Using the Survey of Access to Finance in Europe (SAFE) covering sixteen Euro Area countries, we find that firms are currently using two or three sources of finance to fund their firm's operations and have had previous experience of other types of funding. There are some noticeable differences across countries with funding types in peripheral economies generally being less diversified. Differences across firm size and age groups are more marked than cross-country variation, with smaller and younger firms significantly more reliant on a limited set of finance types and older, larger firms having more diversified financial structures. Looking at individual sources of financing, we find that trade credit and informal sources of finance are extremely prevalent across all countries, with Irish firms being particularly likely to use them as sources of funding.

Corresponding Author: Martina.Lawless@esri.ie

ESRI working papers represent un-refereed work-in-progress by researchers who are solely responsible for the content and any views expressed therein. Any comments on these papers will be welcome and should be sent to the author(s) by email. Papers may be downloaded for personal use only.

Financial Structure and Diversification of European SMEs

1. Introduction

The greater difficulty of smaller firms in accessing formal credit has been the subject of considerable research. It can be difficult for SMEs to convince banks of the quality of their business plans and, for newer firms in particular, it can take a considerable amount of effort to build a reputation that signals that they are low risk. The heterogeneous nature of SME loans means that relationships are important. This involves an investment of time and personnel from the bank side, even for low-volume customers to overcome the differences in information about the firm and its prospects that the bank and firm have available to them (Levine, 2005). Furthermore, SMEs often have less collateral that could protect creditors (ECB, 2007).

The SME sector accounts for the vast majority of enterprises in the EU and employs more than half of the labour force (OECD, 2009). Although it makes up a significant proportion of employment, the SME sector tends to be characterised by a greater degree of output and profit volatility than larger enterprises. They are also more liable to failure; manufacturing firms with fewer than 20 employees have been found to be five times more likely to fail in a given year than larger firms (OECD, 2006). This is the case even in times of stable economic growth. In times of recession or crisis, SMEs are particularly vulnerable as their limited diversification and dependence on short-term credit give them much less of a buffer against demand falls than are available to larger firms (OECD, 2009).

Even prior to the current financial crisis, the funding opportunities and constraints of this type of firm had been of interest to economists and policy-makers. SMEs are thought to have more limited internal resources than larger firms and little or no direct access to capital markets; as a result they tend to rely mainly on banks for funding. Since the start of the crisis, there has been an increase in reports of difficulties facing SMEs in accessing bank credit (see for example Ferrando and Griesshaber, 2011). Examining the impact of financial constraints during the crisis across a range of countries, Clarke, Cull and Kisunko (2012) found that firms were more likely to survive the crisis if they had access to external credit.

This paper broadens the analysis of firm funding away from the focus on bank lending that tends to characterise research on SME financing and looks at the extent to which these firms avail of a wider range of funding options and how their use differs across firms and countries. Along with formal bank lending, we look at how commonly firms use their internal resources, when they access informal sources of funding such as family loans and trade credit, and when they raise funds from issuing new equity or other sources of risk capital.

The financing structure and ability of SMEs to fund investment through a diversified set of instruments is not just important because of the size of the SME sector. A range of papers have found that the establishment and growth of new firms makes a considerable contribution to overall economic growth and, if financial obstacles hamper entrepreneurship and limit the growth opportunities of younger firms in particular, this could have negative implications for the performance of the economy overall. For example, within Europe the relatively low level of entrepreneurship has been singled out as an important factor slowing down economic growth and job creation (European Commission, 2013).

Examining how entrepreneurship can impact on economic growth in the context of a standard Solow-type model, Acs, Audretsch, Braunerhjelm and Carlsson (2012) argue that the rate at which new knowledge or technologies are transmitted through the economy depends on the extent of entrepreneurship, which transforms the knowledge into marketable products. The contribution as well as the vulnerability of entrepreneurial firms is highlighted by Adelino, Ma and Robinson (2014), who examine the relationship between economic shocks and the job creation rates of different types of firm. They find that younger firms are systematically more sensitive to fluctuations than older firms and suggest that there is a role for access to finance in this pattern. They suggest that easing access to finance for younger firms could have a direct job promoting effect.

In our study of sixteen European countries, we find that firms are currently using two or three sources of finance to fund their current operations and most have had previous experience of a wider range of funding types at some point. There are some noticeable differences across countries with peripheral economies generally being less diversified. Differences across firm size and age groups are more marked than cross-country variation, with smaller and younger firms significantly more reliant on a limited set of finance types and older, larger firms having more diversified financial structures. Looking at individual sources of financing, we find that trade credit and informal sources of finance are extremely prevalent across all countries, with Irish firms being particularly likely to use them as sources of funding.

This paper proceeds as follows: Section 2 examines the existing research and hypotheses on the capital structure and funding sources available to SMEs, focusing in particular on the effect that the firm's life-cycle has on opportunities to access different types of finance. Section 3 introduces the cross-country survey data and describes some general patterns of funding diversification and use of different sources. Section 4 presents the econometric analysis examining the effect of firm characteristics on range of finance types used and on the use of each source separately. Section 5 concludes.

2. Capital Structure of SMEs

The classic result in corporate finance is that of Modigliani and Miller (1958), which posits that, in the absence of market failures, firms are indifferent between debt and equity as ways to raise financing. Later work by Myers (1984) and Myers and Majluf (1984) however take into account that firm owners can be assumed to have more information about the value of the firm and its projects than external investors and also assume owners prefer to maximise their own control of their business. This leads to the “pecking order” theory of corporate financing, whereby businesses seek financing for investment according to a preferred hierarchy. The first preference would be to use internal financing, and if this is not sufficient, to raise debt rather than equity when looking towards external financing. Internal financing is also found to be the first choice of funding by Carpenter and Petersen (2002), who find that the average firm retains all of its income and raises relatively little external finance.

A different type of ordering of finance preferences, based on the cost of different types of debt, is outlined in the model by Diamond (1991) where firms gradually become able to access different sources of financing as they develop their reputation. At early stages of their life-cycle, firms are limited to accessing more expensive types of financing, such as short-term, collateralised bank loans. However, as they develop a good reputation, they may find themselves able to access cheaper form of financing such as public debt.

Expanding on the theory that as firms become more established, the types of financing they use change, a stylised figure of a “financial growth cycle” is presented by Berger and Udell (1998). This shows the evolution of the range and types of financing available as firms become older and larger, replicated here as Figure 1. The smallest and youngest firms, who face the greatest difficulties in convincing investors or lenders of their quality, tend to rely on initial financing from the business owner’s own resources, trade credit and, in certain cases, from angel finance. As the firm grows and becomes more established, it begins to gain access to more formal sources of finance. At this stage equity financing may become an option from venture capital funds but more commonly the funding comes from raising debt from banks and other types of financial intermediary. As firms get older and larger, accumulated retained earnings may also become an important source of funding in itself, as well as providing reassurance for potential external funders of the firm’s performance. For the largest, more mature firms, participation in public equity and debt markets may eventually become an option. The larger, more established firms retain the ability to also use most of the funding sources available to younger firms (with the exception of angel or venture capital funds), so they have the ability to have a greater diversity of funding types available.

According to this typology of financing sources, bank financing is not generally available to firms at the very early start-up stage, when the business idea is still being developed and there are limited tangible assets for use as collateral. Only once the business has been established as a trader and some level of tangible assets have been acquired is external debt likely to be available to the firm.

This does not totally exclude start-up firms from the obtaining external debt, but rather results in the loans obtained frequently being collateralised by the business owner's personal property or being guaranteed by the owner or other family or associates.

Coleman and Robb (2011) find that the problems of informational opacity are particularly relevant for high-technology start-ups and that these firms therefore have to initially rely on greater proportions of owner-provided equity until they can build up a credit record that enables them to access external funding. They hypothesise that the reason that external funding is less available to these high-technology firms is due to their limited tangible assets and high level of intangible intellectual property which cannot be pledged as collateral. They are therefore viewed as more risky, at least in the early stages. Also focusing specifically on start-ups, Gratner, Frid and Alexander (2012) find that personal sources of finance are relied on heavily by these firms. Estimates of potential growth and official registration of business are important for rising outside financing. External finance, when used, came almost exclusively from various forms of debt, with outside equity relatively rare.

Previous survey evidence on the capital structure of Irish SMEs by Mac an Bhaired and Lucey (2010) finds a pecking order of funding types that is generally consistent with a Myers (1984) style model. In particular, internal sources such as retained earnings are preferred to external sources, emphasising the role of firm profitability in funding further investment. Correlation coefficients show a negative relationship between the usage of owner's collateral and the age and size of the firm, at the same time that retained earnings become more important as the firm ages and grows. Long-term debt is also negatively related to firm age, presumably also being superseded by internal funds, although a positive relationship is observed between long-term debt and firm size.

Berger and Udell (1998) highlight the role of trade credit in financing early-stage firms. Although trade credit can be a more expensive form of borrowing than bank credit, it can have other benefits for firms in terms of flexibility and cash flow management. The informational asymmetries between firm and bank that prove an obstacle to small firm financing could be less severe in a trade credit relationship, where the supplier providing credit has experience of the firm's sector and production process. There is also evidence that access to trade credit can play an important role in mitigating the impact of bank credit constraints, in particular during periods of recession (Love, Preve and Sarria-Allende, 2007; Ferrando and Mulier, 2013; Casey and O'Toole, 2013).

External risk capital use is relatively rarely accessed by SMEs, with the exceptions of angel and venture capital funds that aim to invest particularly in young, high potential firms. There are huge differences across countries in the relative amounts raised and invested in venture capital, influenced by the presence of active IPO markets, interest rates, corporate income tax rates and R&D spending (Bonini and Alkan, 2012). In terms of its impact, Kortum and Lerner (2000) find a

significantly positive effect of venture capital investment on patents, estimating that it accounted for 8% of industrial innovations in the decade ending in 1992 and that this ratio was increasing.

Despite arguments that there is a market failure in external funding for start-up companies, and particularly for high-technology firms, government intervention to bridge this gap by supporting venture capital funds has not been without criticism. The main problems besetting these schemes relate to the ability of government officials to adequately identify and support potential high-growth firms and the danger that decisions on the firms to support may be taken on political rather than strictly economic grounds (Del-Palacio, Zhang and Sole, 2012).

Venture capital tends to be restricted to narrow subsectors and is therefore unlikely to be a broad source of financing for SMEs. Fenn, Liang and Prowse (1997) find that the majority of firms with some venture capital financing were in high-technology sectors such as computing and biotechnology. These firms are characterised by high ratios of research and development expenditures relative to assets and tended to have lower ratios of debt to assets.

Previous comparative research on SME funding across countries has focused on examining the effects of differences in institutional characteristics and financial sophistication, mainly in less developed countries. Using data from firms in eighty countries, Beck, Demirgüç-Kunt, Laeven and Maksimovic (2004) find that measures of financial intermediation development and legal system efficiency are amongst the most significant factors explaining cross-country variation in the ability of firms to access finance. Variation in access to financing across firms is strongly negatively related to firm size and also to firm age. Foreign-owned firms were considerably less likely to report difficulties in accessing credit, even controlling for other characteristics.

Within Europe, Psillaki and Daskalakis (2009) look at four countries (Greece, France, Italy and Portugal), focusing on the firm-specific factors that they find are common in determining capital structure across countries. They find that the relationships between leverage and firm characteristics such as size or profitability have consistently signed coefficients across the different countries.

3. Data and Patterns of Financing Sources

Survey Description

We use firm-level survey data from the ECB's Survey of Access to Finance in Europe (SAFE), which is a twice yearly survey of euro area SMEs. We use data from seven waves of the survey, starting in 2010 and ending in the April-September 2013 wave. The aim of the survey is to provide information on the financing needs of SMEs, their experience in attempting to access finance, and information on their perceptions of current economic and financial conditions. The survey also asks firms about changes in their turnover, employment, ownership type, age and sector of activity.

The SAFE survey has been widely used to examine the extent of bank credit constraints encountered by European SMEs and the effects these have on firm performance (for example, Ferrando and Grieshaber, 2011; Gerlach-Kristen, O'Connell and O'Toole, 2013; Holton, Lawless and McCann, 2014). In this paper, we move away from the focus on bank credit to examine the broader financing mix used by European SMEs, the level of diversification of funding across different countries and firm types and the extent to which firm characteristics explain which of the possible funding sources are actually used.

Table 1 lists the sixteen countries covered by the data and the number of firm observations in each country. This gives us a total number of observations over the seven time periods sampled of 51,800 firms. The table also reports a breakdown of the sample by firm size groups, showing one-third of firms are micro enterprises (10 employees or fewer), another one-third are classed as small (between 11 and 50 employees), one-quarter are medium (between 51 and 250 employees) with the remainder being larger firms.

The range of information on financing sources the firm may have used is very detailed in SAFE, with each firm being asked about ten potential sources of finance listed below:

- Retained earnings or sale of assets
- Grants or subsidised bank loan (involving support from public sources)
- Bank overdraft, credit line or credit cards overdraft
- Bank loan
- Trade credit
- Other loan (e.g. from a related company or shareholders or from family and friends)
- Leasing or hire-purchase or factoring
- Debt securities issued
- Subordinated loans, participating loans, preferred stocks or similar financing instruments
- Equity (quoted or unquoted shares or other equity, including venture and angel capital)

In relation to its financial structure, the question put to each firm is as follows:

“Turning to the financing structure of your firm, to finance normal day-to-day business operations or more specific projects or investments, you can use internal funds and external financing. For each of the following sources of financing, could you please say whether you used them during the past 6 months, did not use them but have experience with them, or did not use them because this source of financing has never been relevant to your firm?”

For each of the ten sources of finance, the firm is given three possible answers. They can respond that that type of finance is being currently used (“used in the past 6 months”), that the firm “did not

use in the past 6 months, but have experience with this source of financing” or that it “did not use as this source of financing has never been relevant to my firm”. This allows us to examine both the current financial structure of firm by looking at the types of finance currently being used, and also to look at a broader measure of all finance types that the firm has had some previous experience of using. We use this measure on the assumption that previous experience of a finance type indicates that this type of finance is a source the firm is familiar with and could potentially use again in the future. It is therefore a useful broader indicator of the portfolio of financing options for each firm type.

Diversification of Finance Sources

Across all countries, we find that firms are currently using two or three sources of finance to fund their firms operations. The distribution of the number of funding sources used is quite strongly skewed to the left as can be seen in Figure 2, with 90 per cent of firms using four sources or fewer and only the remaining 10 per cent using a more diversified funding structure. A surprisingly large 17 per cent of firms report not using any of the listed finance options, but unfortunately it is not possible to observe any further information on what alternatives they are using. When we look at the level of diversification of sources that the firms report having used previously, we find that the percentage reporting that they have not used any of the possible survey options falls to just over 5 per cent. The range of sources firms have had experience of is considerably more diversified than those that they are currently using, implying that firms are actively managing and changing their funding mix, either in response to changes in their own requirements or because different types of finance become more easily available or more suitable at different stages of the firms development.

Figure 3 shows how the average number of funding sources currently used and previously experienced varies across countries. There are some noticeable differences, with firms in Cyprus, Greece and Portugal being the least diversified both in terms of number of products used (average number of sources used below 2) and number of experienced sources (average below 4). This could indicate the results of fallout from the financial crisis in restricting options across these countries, although the previous experience option should pick up a longer time horizon that suggests the range of finance available to firms in these countries was more limited than elsewhere even prior to the recent crisis. Spain and Ireland, on the other hand, have rates of product usage and experience that are in line with the overall average.

Our hypothesis drawn from the existing literature on firm financing is that the firm’s size and age are important determinants of both the range and types of funding that are available to it. The survey collects information on the broad size group of the firm, dividing firms into micro (from 1 to 9 employees), small (10 to 49 employees), medium (50 to 249 employees) and large (250 employees or more). Figures 4 and 5 show respectively the diversification of the funding sources currently and previously used for these different size groups. As predicted, the firms using a limited number of funding sources (especially none, one or two) are much more likely to be in the micro or small groups than in the bigger groups. This pattern reverses sharply when we look at the size of firms

using four or more finance sources: here the larger groups are many times more likely to be represented than the smallest. A similar picture appears when we look at the number of sources that the firm reports as having had previous experience of despite the average number of sources being higher in Figure 5 than it was in Figure 4. Micro firms are around twice as likely to only experienced one or two sources compared medium or larger firms. The slope begins to shift when we get above five sources, when instead we see much larger percentages of medium and large firms reporting that they have experience of a more diversified set of financial options.

The information on firm age in the survey is also broken into categories, with firms classified as less than two years old, two or more but less than five, five or more but less than ten and ten years or more. Similarly to firm size, we graph the distribution of the number of finance sources separately for if they are currently used (in Figure 6) and if firms report having experience of (Figure 7) across each of the firm age groups. Our expected pattern of a greater concentration of younger firms using a less diversified set of financial sources than older firms is noticeable, most particularly when we look at the range of sources firms have experience of.

Usage of Finance Sources

Although Figure 3 showed that the variation in funding diversification across countries was moderate, when we look at the individual financial sources separately, we observe considerable heterogeneity across countries. For each of the ten types of financing source, Table 2 shows the percentage of firms in each country that use the source currently and Table 3 reports the percentage that report having had experience of that source. The most striking, although not particularly unexpected, aspect of these results is the very small percentage of firms using debt securities, subordinated debt or external equity as ways to fund their business. Of these three, raising equity is the most likely to have been experienced at some point by the firm with close to one-quarter saying it was had been used at some point. However, less than eight per cent name it as a source they have accessed in the previous six months.

At the other end of the scale, bank overdrafts and loans are familiarly used products for the majority of firms, with 42 per cent currently using an overdraft and 64 per cent saying it is a source of finance they have experience with. Trade and informal sources of finance are also extremely prevalent across all countries, with Irish firms being particularly likely to use them as sources of funding.

Across firm size groups, reported in Table 4, we see that larger firms are more likely to use each of the individual financing sources, consistent with the earlier observation that they tend to have considerably more diversified financial structures. The higher rate of use of what we term “informal” loans by larger firms may initially seem surprising but this category covers loans from other business sources (but excluding banks and trade credit) as well as including loans from friends and family so it may be the case that the type of loan being referred to here is different for the different size groups

and the data is not granular enough to allow us to distinguish between the precise source of the loans.

The rate at which different finance types are accessed is broken down by firm age categories in Table 5 and the pattern is fairly similar to that of the firm size groups. Older firms are more diversified and this extends to them having a higher probability of using (either currently or having previous experience) each of the individual sources. The only exception is for the informal loan category which is more likely to be of current use in the youngest age cohort.

4. Econometric Results

The first question we want to investigate econometrically is the extent to which firm characteristics affect the level of diversification of finance sources for the firm. Our dependent variable is therefore a count of finance sources and we use two different measures – the first is a count of finance sources currently being used by the firm, and the second is a count of the sources that the firm has experience of, either because it currently uses the finance type or because it has used it in the past. Our basic specification is therefore modelled as a Poisson regression:

$$C_{ijt} = \alpha + \beta X_{ijt} + D_{jt} + \varepsilon_{ijt}$$

Where C_{ijt} is the count measure of finance sources used by firm i in country j at time t and X is a vector of firm characteristics. We control for unobserved country-time effects with D_{jt} and in addition the standard errors are clustered at the country-time level. The error term is represented by ε . It should be noted that the data set is a repeated cross-section so we are unable to follow individual firms across time. As such the relationships presented in the analysis are best interpreted as correlations and we will be cautious in ascribing causal interpretations to them.

The firm characteristics included as explanatory variables are indicator variables for age group and size group as in the descriptive tables. We also control for the firm's ownership structure (relative to public ownership as the base category) using dummy variables for family ownership, sole trader, if the firm is owned by another business or venture capital group with a final other category if none of these apply. In addition, we include an indicator for whether or not the firm is a subsidiary. There is a control for the broad sector of activity of the firm, indicating if it is in industry, services or trade, with the base category being construction firms. Along with these basic characteristics, we include a number of variables relating to the firm's current performance in order to capture some reflection of firm credit-worthiness or investment promise that would affect the financial structure. To do this, we include indicator variables for whether the firms' turnover and profit increased or remained unchanged (with decreased as the omitted category). We also control for whether the firms' capital position and credit history improved or remained unchanged over the previous six months.

Table 6 presents the results for the number of financial products currently being used and the number of experienced products. Looking first at firm age, relative to the oldest firm group we find that there is no significant difference in diversification of number of sources currently used across the different groups when other factors are controlled for. However, for the number of sources that the firm has experience of, there is a strongly significant pattern of younger firms being less diversified as observed in the descriptive statistics.

Firm size is a significant factor for financial diversification regardless of which of the measures is used as the dependent variable. Micro and small firms use a much smaller range of financial sources than do larger firms. There is little variation by ownership type on the number of products used, apart from a lower level of diversification by sole traders. For the number of experienced products, venture capital owned firms are the most diversified, and family owned firms are also likely to avail of a wider range of funding sources compared to the base category of publically-owned companies.

Subsidiaries have significantly lower levels of funding diversification, which is likely to be due to their ability to rely on parent companies to raise funding rather than seek external finance on their own behalf. Across the broad sectoral groups, services have a lower level of diversification for both measures, whereas industrial firms are more likely to have a wider range of experience of financing options. The firm performance measures show that firms that are growing their turnover are more likely to have a wider set of financing options but that change in profit or credit history results in firms consolidating their financial structure. The cross-sectional nature of the data makes it difficult to establish if this is due to a wider range of funding being made available to firms with improved performance or because funding diversification itself has a positive impact on firm outcomes.

Having looked at the range of finance sources used, our next specification looks at each source of finance separately to examine if there are any patterns in the firm characteristics associated with their usage. As the question about each finance sources is formulated as asking firms about their current use of the source, if they have used it previously and if the source has never been used, our dependent variable is a three-point outcome. However, as the factors that affect current use and previous experience of a source may vary, we do not treat the three options as being ordered. Instead we use a multinomial logit approach to estimate the three options jointly but without imposing restrictions on the coefficients of the explanatory variables.

$$F_{ijt} = \delta + \gamma X_{ijt} + D_{jt} + u_{ijt}$$

Where F_{ijt} is any of the ten finance sources we use as dependent variables and takes a value of 0 if the source has never been relevant, a value of 1 if the source is currently used and a value of 2 if the source is not currently used but the firm has experience of using it. As before, X_{ijt} and D_{jt} are vectors of firm characteristics and country-time controls respectively and the error term is represented by u_{ijt} . As in the diversification specifications, we cluster all the standard errors at the country-time level.

Tables 7 and 8 present the source-by-source results of the multinomial logit regressions. Looking across the rows by firm characteristic, we see that the size of the firm has a significantly negative effect on both current use and previous experience in almost every case. The only instance where firm size does not have any effect is on the experience of using a bank overdraft, but even in this case the likelihood of current use is lower amongst micro firms.

Consistent with the greater range of diversification as firms get older, the coefficients on age are mainly negative and significant relative to the group aged ten years or more. The main exception to this pattern is a strong positive association between younger firms and the current use of informal finance. This is in accordance with expectations that younger firms with less of an established history find it more difficult to access formal sources of finance and therefore make greater use of loans from family and friends for example (although this category also includes unspecified “other” loans in the questionnaire wording, making it somewhat difficult to interpret accurately). The youngest group of firms has a positive coefficient on the use of equity when all other factors are controlled for, capturing early stage investment sources.

The sectoral differences in the use and previous experience of the different types of finance are mainly insignificant once firm characteristics have been controlled for. Bank overdrafts are one of the exceptions, where all sectors are significantly less likely to use compared to construction, which is the reference category. This may be due to a particular scheduling of payments issue in construction where materials and workers have to be paid regularly throughout a project but the sale proceeds may only come at the end of the project or at intermittent stages. Another interesting sectoral pattern is in regard to trade credit, where relative to the reference construction sector, industrial and trade firms are significantly more likely to use trade credit as a funding source and services sectors significantly less likely to do so. This is in keeping with some of the rationale for why firms may extend trade credit to one another outlined by Berger and Udell (1998) linking trade credit to supply chains. If the supplier provides an important input to the firm, they have a potentially strong threat position of withholding future supplies if not repaid on schedule, protecting them to some extent from the risk of not being paid. In the event of the firm defaulting, suppliers may have the option of repossessing and selling on the previously supplied goods, a course of action that financial institutions would not always have the industry-specific knowledge to undertake. Both of these explanations are more likely to apply to industrial and trade firms taking receipt of physical supplies than they are to services where there are fewer goods to act as implicit collateral.

Looking at the effect of ownership across funding types, we restrict the reporting to family and sole trader firm types. Family owned and sole trader firms appear to make less use of internal resources, probably due to have lower levels of available retained earnings, relative to the reference category of publically owned companies. Somewhat surprisingly, the firm performance measures also included as controls showed little consistent relationship across the funding types.

5. Summary and Conclusions

This paper examines the financing structure of SMEs using survey data from SAFE covering sixteen European countries. We document the level of diversification of sources of financing used by firms and how they vary across firm types. We then look at each potential financing source individually to investigate the firm characteristics associated with its use, both currently and if the firm has any previous experience with the financing option. In addition to formal bank lending which has been the main focus of research on SME financing, we look at how commonly firms use their internal resources, when they access informal sources of funding such as family loans and trade credit, and when they raise funds from issuing new equity or other sources of risk capital.

Across all countries, we find that firms are currently using two or three sources of finance to fund their operations. Firms also report previous experience of a wider range of sources, implying that they are actively managing and changing their funding mix. Whether this is in response to changes in their own requirements or because different types of finance become more easily available or more suitable at different stages of the firm's development would be an useful avenue of further research, although more extensive data on finance availability would be necessary to examine this in detail.

There are some noticeable differences across countries with peripheral economies generally being less diversified, although this is less the case for Ireland than for Greece and Portugal. Differences across firm size and age groups are more marked than cross-country variation, with smaller and younger firms significantly more reliant on a limited set of finance types and older, larger firms having more diversified financial structures. This is in keeping with much of the literature on firm financing across the life-cycle, where financing options for firms are limited until they establish a track record of performance and possibly acquire adequate collateral to pledge against loans.

Although we found that the variation in funding diversification across countries was moderate, when we look at the individual financial sources separately, we observe considerable heterogeneity across countries. In line with previous evidence of the limited availability of more sophisticated financial products for SMEs, we find only a small percentage of firms using debt securities, subordinated debt or external equity as ways to fund their business. On the other hand, we find that trade credit and informal sources of finance are extremely prevalent across all countries, with Irish firms being particularly likely to use them as sources of funding.

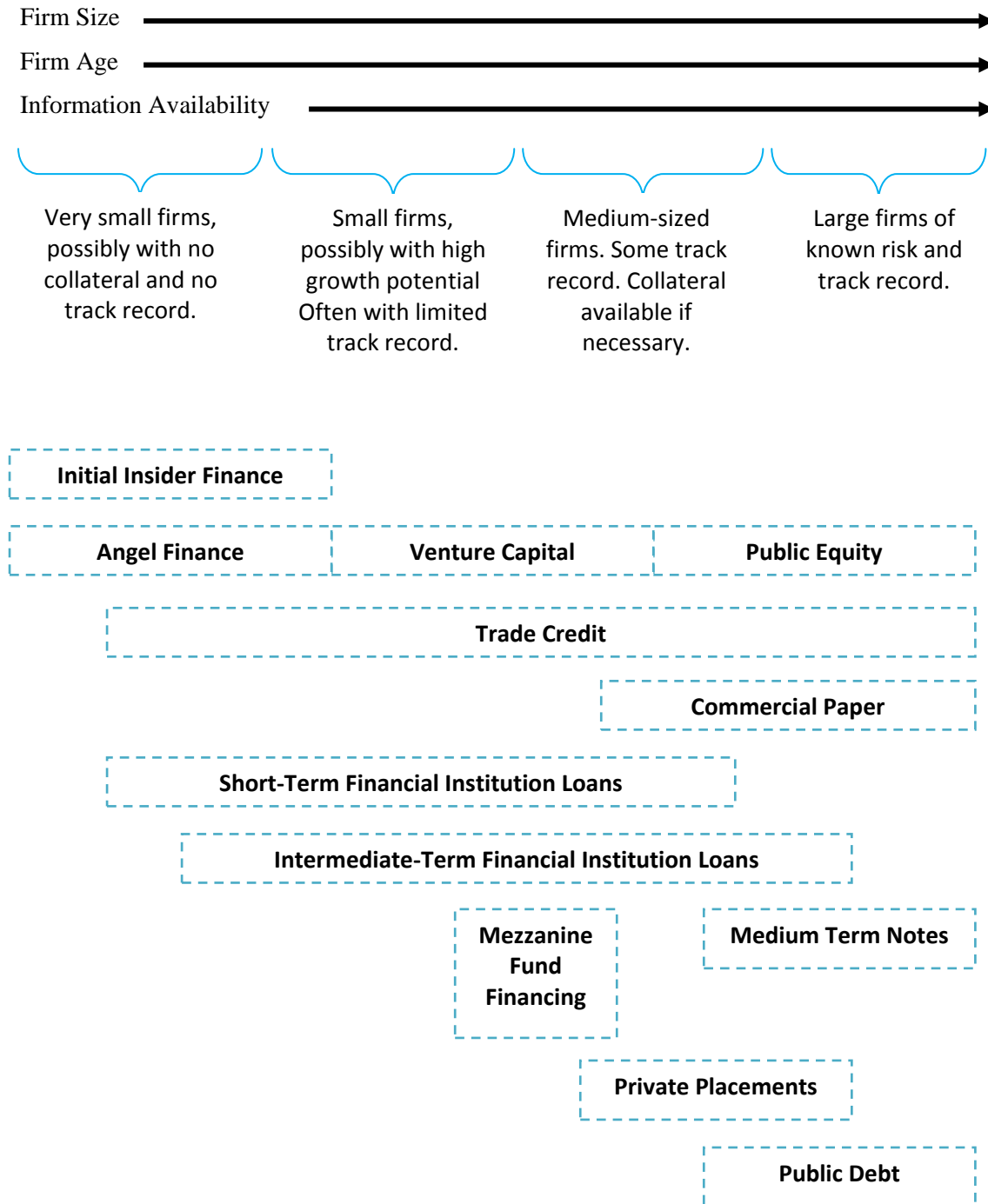
Larger firms are more likely to use each of the individual financing sources, consistent with the earlier observation that they tend to have considerably more diversified financial structures. The only exception is for the informal loan category which is more likely to be of current use in the youngest age cohort, presumably due to their more limited access to more formal financing options.

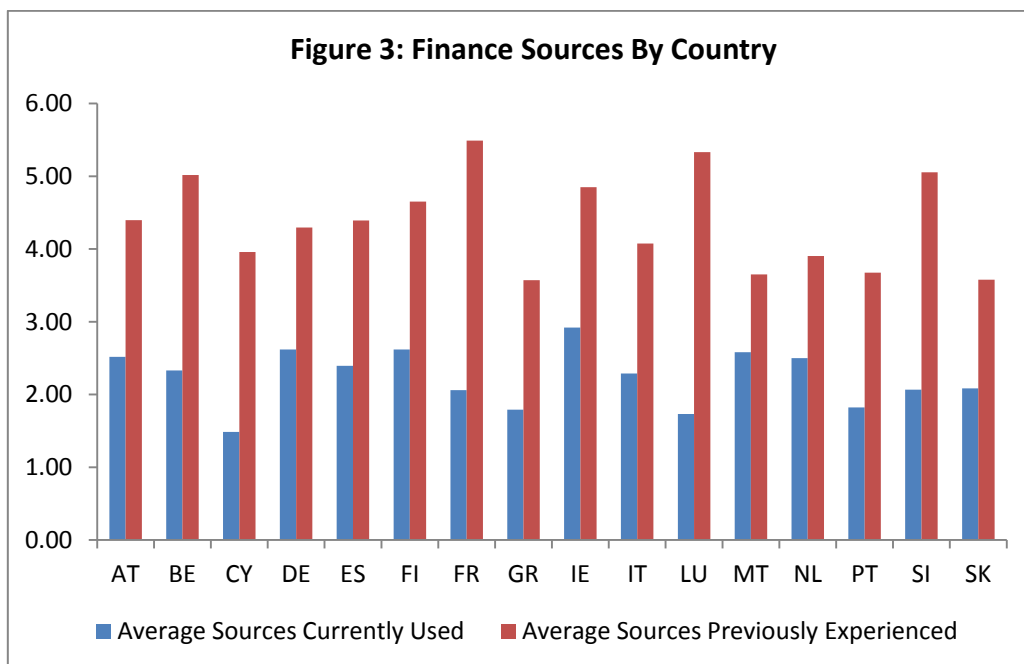
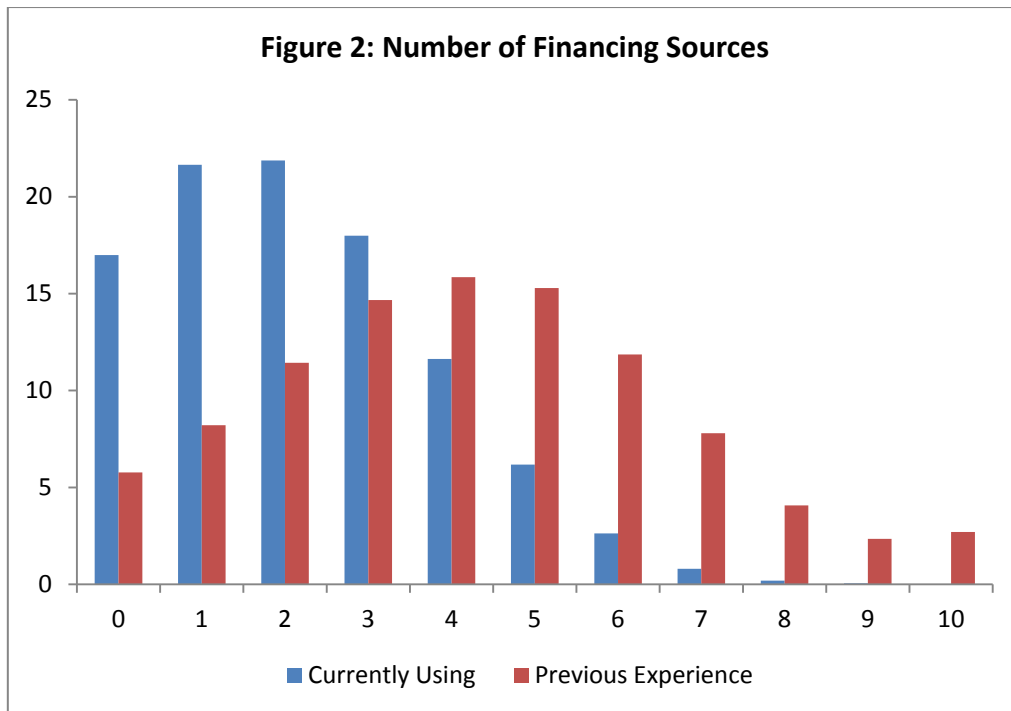
References

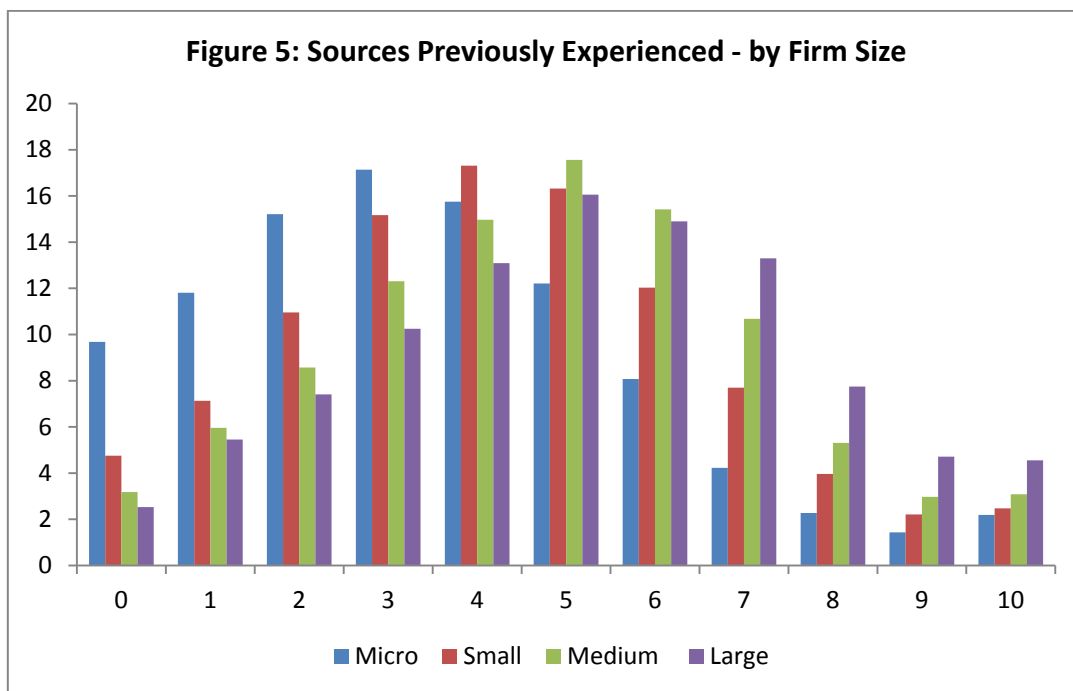
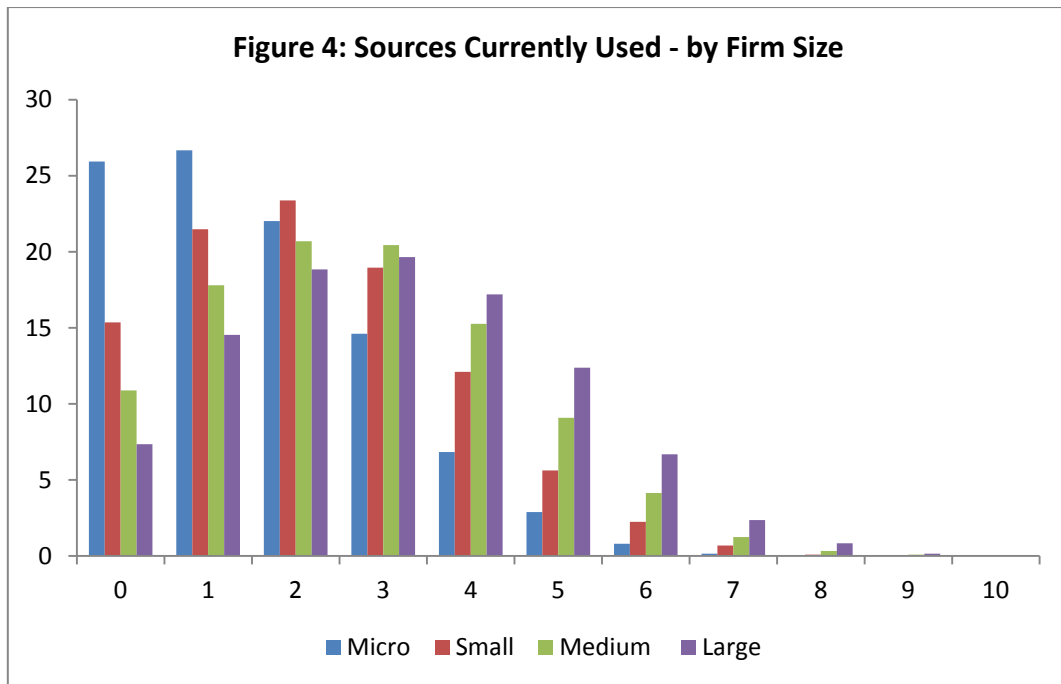
- Acs, Zoltan J., David B. Audretsch, Pontus Braunerhjelm and Bo Carlsson (2012). "Growth and entrepreneurship", in *Small Business Economics* Vol.39(2), pages 289–300
- Adelino, Manuel, Song Ma and David T. Robinson (2014). "Firm Age, Investment Opportunities and Job Creation" NBER Working Paper No.19845
- Beck, Thorsten, Asli Demirgüç-Kunt, Luc Leaven and Vojislav Maksimovic (2004). "The Determinants of Financing Obstacles", World Bank Policy Research Working Paper No.3204
- Berger, Allen N. And Gregory F. Udell (1998). "The Economics of Small Business Finance: The Roles of Private Equity and Debt Markets in the Financial Growth Cycle", in *Journal of Banking and Finance*, Vol.22(6-8), pages 613-673
- Bonini, Stefano and Senem Alkan (2012). "The political and legal determinants of venture capital investments around the world", in *Small Business Economics*, Vol.39(4), pages 997–1016
- Carpenter, Robert E. and Bruce C. Petersen (2002). "Is the Growth of Small Firms Constrained by Internal Finance?" in *The Review of Economics and Statistics*, Vol.84(2), pages 298–309
- Casey, Eddie and Conor O'Toole (2013), "Bank-lending Constraints and Alternative Financing during the Financial Crisis: Evidence from European SMEs", WP450, Economic and Social Research Institute (ESRI)
- Clarke, George R.G., Robert Cull and Gregory Kisunko (2012). "External Finance and Firm Survival in the Aftermath of the Crisis: Evidence from Eastern Europe and Central Asia", World Bank Policy Research Working Paper No.6050
- Coleman, Susan and Alicia M. Robb (2011) "Financing Strategies of New Technology-based Firms" in *Review of Economics & Finance*, 2011-No.4
- Del-Palacio, Itxaso, Xiaotian Tina Zhang and Francesc Sole (2012). "The Capital Gap for Small Technology Companies: Public Venture Capital to the Rescue?", in *Small Business Economics*, Vol.38(3) pages 283–30
- Diamond, D. (1991). "Debt Maturity Structure and Liquidity Risk", in *Quarterly Journal of Economics*, Vol.106(3), pages 709-737
- European Central Bank (2007), "Corporate Finance in the Euro Area", *ECB Occasional Paper Series* No.63/June 2007
- European Commission (2013). *Entrepreneurship 2020 Action Plan: Reigniting the entrepreneurial spirit in Europe*, Brussels
- Fenn, George W., Nellie Liang and Stephen Prowse (1997). "The Private Equity Market: An Overview", in *Financial Markets, Institutions, and Instruments*, Federal Reserve Board: Washington
- Ferrando, Annalisa, and Nicolas Griesshaber (2011): "Financing obstacles among euro area firms: Who suffers the most?", Working Paper Series 1293, European Central Bank

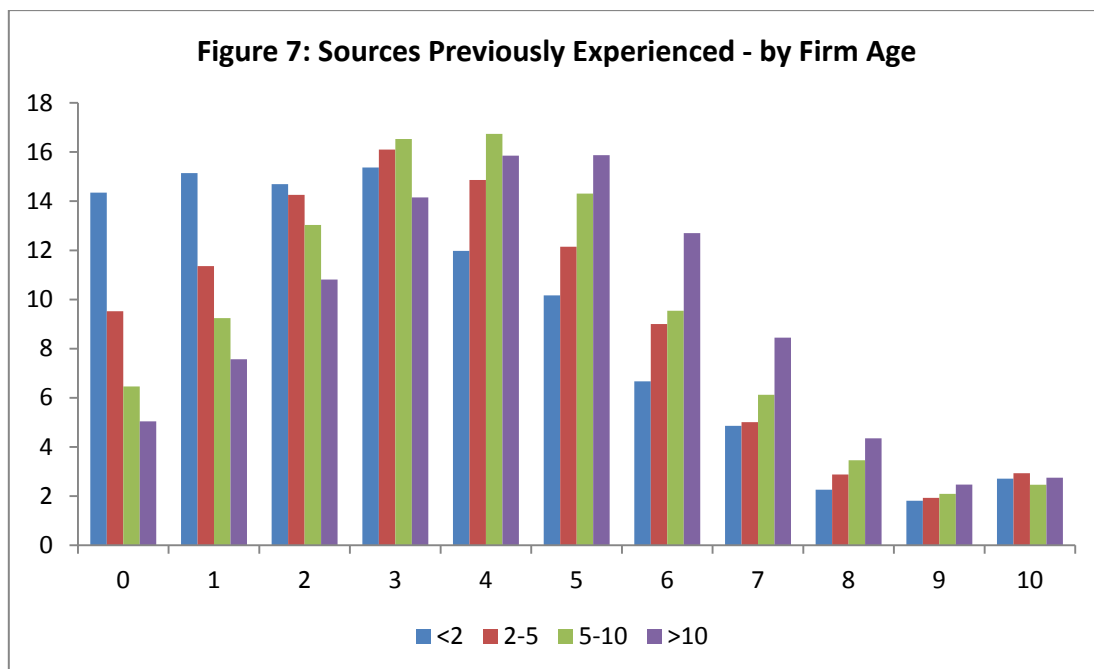
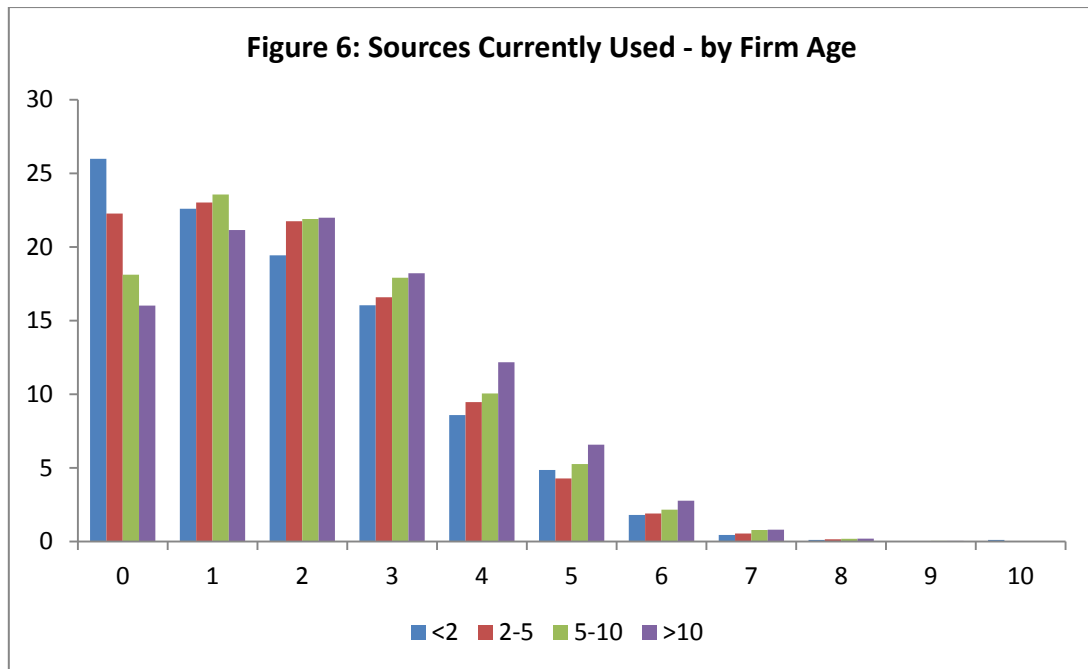
- Gartner, William B., Casey J. Frid and John C. Alexander (2012). "Financing the Emerging Firm", in *Small Business Economics*, Vol.39(3) pages 745–761
- Gerlach-Kristen, Petra, Brian O'Connell and Conor O'Toole (2013). "SME Credit Constraints and Macroeconomic Effects", Working Paper No.467, Economic and Social Research Institute
- Hogan, Teresa and Hutson, Elaine (2004). "Capital structure in New Technology-based Firms: Evidence from the Irish Software Sector", Centre for Financial Markets Working Paper WP-04-19, University College Dublin
- Holton, Sarah, Martina Lawless and Fergal McCann (2014). "Firm credit in Europe: A tale of three crises" *Applied Economics* forthcoming, 2014
- Jöeveer, Karin (2006). "Sources of Capital Structure: Evidence from Transition Countries," CERGE-EI Working Papers WP-306, Prague
- Jöeveer, Karin (2013). "What do we know about the Capital Structure of Small Firms?" in *Small Business Economics*, Vol. 41(2), pages 479-501
- Kortum, Samuel and Josh Lerner (2000). "Assessing the contribution of venture capital to innovation", in *RAND Journal of Economics*, Vol. 31(4), pp. 674–692
- La Rocca, Maurizio, Tiziana La Rocca and Alfio Cariola (2011). "Capital Structure Decisions during a Firm's Life Cycle" in *Small Business Economics* Vol.37(1), pages 107–130
- Levine, Ross (2005). "Finance and Growth: Theory and Evidence" in P. Aghion and S. Durlauf (eds.), *Handbook of Economic Growth*. Elsevier Science: The Netherlands
- Love, Inessa, Lorenzo A. Preve and Virginia Sarria-Allende (2007). 'Trade credit and bank credit: Evidence from recent financial crises', *Journal of Financial Economics*, 83 (2), 453-469
- Mac an Bhaird, Ciarán and Brian Lucey (2010). "Determinants of Capital Structure in Irish SMEs" in *Small Business Economics* Vol.35(3), pages 357–375
- Modigliani, F. and M. Miller (1958). "The Cost of Capital, Corporation Finance, and the Theory of Investment", in *American Economic Review*, Vol.48(3), pages 261-297
- Myers, S. (1984). "The Capital Structure Puzzle", in *Journal of Finance*, Vol.39(3), pages 575-592
- Myers, S. and N. Majluf (1984). "Financing Decisions When Firms Have Information that Investors Do Not Have", in *Journal of Financial Economics*, Vol.13(2), pages 187-221
- OECD (2006), *The SME Financing Gap: Theory and Evidence*, www.oecd.org
- OECD (2009), *The Impact of the Global Crisis on SME and Entrepreneurship Financing and Policy Responses*, www.oecd.org
- Psillaki, Maria and Nikolaos Daskalakis (2009). "Are the determinants of capital structure country or firm specific?", in *Small Business Economics*, Vol.33, pp.319-333.

Figure 1: Sources of Finance (Berger and Udell, 1998)









| Table 1: SAFE Data Coverage | | | | | |
|-----------------------------|--------|------------|------------|-------------|------------|
| | Firms | % Micro | % Small | % Medium | % Large |
| Austria | 3,209 | 34.6 | 35.3 | 23.3 | 6.7 |
| Belgium | 3,223 | 38.8 | 39.6 | 17.9 | 3.8 |
| Cyprus | 200 | 30.0 | 30.0 | 30.0 | 10.0 |
| Germany | 7,014 | 30.1 | 31.0 | 29.1 | 9.8 |
| Spain | 7,006 | 30.4 | 31.0 | 29.3 | 9.2 |
| Finland | 3,101 | 39.7 | 39.7 | 17.4 | 3.2 |
| France | 7,019 | 29.8 | 30.5 | 29.7 | 10.0 |
| Greece | 3,200 | 39.4 | 39.3 | 17.8 | 3.4 |
| Ireland | 3,102 | 39.7 | 39.6 | 17.4 | 3.3 |
| Italy | 7,004 | 29.9 | 30.5 | 30.5 | 9.1 |
| Luxemburg | 200 | 30.5 | 30.0 | 30.0 | 9.5 |
| Malta | 200 | 28.5 | 35.5 | 28.0 | 8.0 |
| Netherlands | 3,258 | 35.5 | 35.1 | 22.8 | 6.6 |
| Portugal | 3,264 | 35.5 | 35.5 | 22.7 | 6.3 |
| Slovenia | 200 | 30.0 | 30.0 | 30.0 | 10.0 |
| Slovakia | 600 | 28.0 | 30.2 | 31.3 | 10.5 |
| Total | 51,800 | 33.3 | 33.8 | 25.5 | 7.5 |

Table 2: Finance Types Currently Used by Firms in Each Country

| | Internal | Grants | Overdraft | Bank loan | Trade | Informal | Leasing | Debt Sec. | Subordinated | Equity |
|-----|----------|--------|-----------|-----------|-------|----------|---------|-----------|--------------|--------|
| AT | 42.3 | 21.0 | 38.2 | 39.8 | 26.5 | 18.4 | 49.2 | 2.0 | 4.1 | 9.1 |
| BE | 25.1 | 17.5 | 40.5 | 44.7 | 28.2 | 24.0 | 33.4 | 4.4 | 5.8 | 9.0 |
| CY | 19.1 | 9.7 | 31.9 | 19.2 | 49.4 | 2.8 | 13.7 | 3.6 | 0.2 | 1.3 |
| DE | 45.0 | 19.0 | 36.6 | 41.8 | 21.5 | 24.1 | 55.4 | 0.9 | 4.9 | 13.1 |
| ES | 28.6 | 24.9 | 39.1 | 39.4 | 45.1 | 19.7 | 32.5 | 2.9 | 4.4 | 3.2 |
| FI | 51.3 | 12.1 | 26.6 | 30.1 | 48.4 | 19.4 | 51.7 | 6.0 | 6.1 | 9.1 |
| FR | 17.2 | 11.7 | 44.4 | 38.5 | 20.8 | 16.7 | 43.7 | 2.3 | 1.3 | 8.8 |
| GR | 22.3 | 13.3 | 12.6 | 29.0 | 48.5 | 6.7 | 18.0 | 18.0 | 2.2 | 9.6 |
| IE | 40.9 | 15.2 | 60.4 | 35.0 | 68.4 | 20.1 | 35.2 | 3.8 | 2.8 | 9.4 |
| IT | 26.5 | 17.4 | 54.5 | 39.5 | 46.0 | 11.0 | 26.6 | 2.0 | 1.2 | 4.5 |
| LU | 20.6 | 13.8 | 37.5 | 35.3 | 7.8 | 16.7 | 35.2 | 0.7 | 0.3 | 7.8 |
| MT | 28.6 | 23.4 | 60.7 | 29.7 | 48.1 | 15.8 | 24.8 | 20.1 | 2.0 | 6.5 |
| NL | 26.9 | 7.8 | 51.0 | 36.2 | 40.8 | 25.6 | 47.4 | 1.0 | 12.3 | 2.6 |
| PT | 6.1 | 20.6 | 43.7 | 31.7 | 35.2 | 11.9 | 29.7 | 2.4 | 1.7 | 1.6 |
| SI | 22.9 | 22.9 | 39.0 | 48.3 | 18.9 | 15.1 | 40.3 | 2.2 | 0.7 | 5.3 |
| SK | 27.9 | 13.3 | 47.9 | 31.5 | 19.5 | 22.1 | 47.1 | 0.4 | 0.8 | 1.7 |
| All | 30.3 | 17.2 | 42.3 | 39.0 | 33.2 | 18.6 | 41.0 | 2.5 | 3.8 | 7.7 |

Table 3: Previous Experience of Finance Types by Firms in each Country

| | Internal | Grants | Overdraft | Bank loan | Trade | Informal | Leasing | Debt Sec. | Subordinated | Equity |
|-----|----------|--------|-----------|-----------|-------|----------|---------|-----------|--------------|--------|
| AT | 62.7 | 52.8 | 61.8 | 74.9 | 38.5 | 34.7 | 70.2 | 7.5 | 11.9 | 22.4 |
| BE | 52.0 | 46.1 | 68.8 | 80.8 | 56.2 | 52.3 | 58.2 | 21.9 | 30.3 | 36.3 |
| CY | 36.2 | 42.6 | 53.4 | 62.5 | 70.5 | 27.5 | 34.7 | 19.1 | 19.3 | 33.9 |
| DE | 61.9 | 50.3 | 58.5 | 74.2 | 30.3 | 41.1 | 73.7 | 3.7 | 12.5 | 24.3 |
| ES | 47.2 | 60.8 | 57.4 | 74.9 | 61.6 | 38.0 | 68.0 | 8.7 | 13.3 | 10.0 |
| FI | 68.9 | 36.5 | 43.1 | 72.8 | 56.5 | 46.4 | 68.6 | 12.0 | 22.2 | 35.9 |
| FR | 50.8 | 50.7 | 79.0 | 87.7 | 55.6 | 50.7 | 78.0 | 26.6 | 21.8 | 51.0 |
| GR | 37.2 | 42.7 | 26.8 | 59.6 | 63.9 | 20.3 | 34.6 | 28.3 | 13.6 | 30.9 |
| IE | 60.3 | 38.4 | 78.7 | 68.8 | 75.2 | 38.7 | 64.9 | 13.9 | 10.1 | 37.1 |
| IT | 48.3 | 52.7 | 69.8 | 74.1 | 54.3 | 24.2 | 57.9 | 7.8 | 5.8 | 13.8 |
| LU | 57.0 | 59.0 | 72.3 | 77.3 | 41.8 | 53.1 | 67.3 | 30.2 | 34.6 | 40.9 |
| MT | 41.3 | 37.5 | 65.7 | 47.4 | 53.6 | 25.0 | 36.0 | 32.8 | 11.7 | 16.5 |
| NL | 46.2 | 22.1 | 64.1 | 60.8 | 52.3 | 43.2 | 59.2 | 6.8 | 25.9 | 11.0 |
| PT | 19.7 | 47.2 | 61.6 | 64.6 | 52.1 | 30.9 | 61.3 | 10.4 | 10.7 | 11.5 |
| SI | 52.0 | 53.4 | 71.2 | 80.3 | 52.3 | 45.3 | 69.4 | 25.4 | 25.6 | 30.6 |
| SK | 50.8 | 28.1 | 65.3 | 56.6 | 31.6 | 37.7 | 76.8 | 3.2 | 2.5 | 8.2 |
| All | 51.8 | 49.5 | 64.0 | 75.0 | 49.0 | 38.7 | 67.4 | 11.5 | 14.6 | 24.7 |

Table 4: Finance Sources by Firm Size

| Currently Using | Internal | Grants | Overdraft | Bank loan | Trade | Informal | Leasing | Debt Sec. | Subordinated | Equity |
|----------------------------|----------|--------|-----------|-----------|-------|----------|---------|-----------|--------------|--------|
| Micro | 20.7 | 11.1 | 38.9 | 27.3 | 26.5 | 9.9 | 19.2 | 2.1 | 1.5 | 4.6 |
| Small | 26.0 | 15.9 | 43.8 | 38.2 | 29.9 | 13.1 | 41.1 | 1.7 | 2.4 | 7.1 |
| Medium | 33.2 | 20.1 | 41.7 | 43.0 | 34.7 | 20.0 | 52.6 | 1.8 | 4.0 | 8.9 |
| Large | 41.6 | 23.0 | 45.2 | 49.5 | 41.4 | 30.6 | 57.6 | 3.8 | 6.9 | 10.9 |
| All Firms | 30.3 | 17.2 | 42.3 | 39.0 | 33.2 | 18.6 | 41.0 | 2.5 | 3.8 | 7.7 |
| Previous Experience | Internal | Grants | Overdraft | Bank loan | Trade | Informal | Leasing | Debt Sec. | Subordinated | Equity |
| Micro | 38.0 | 40.9 | 60.2 | 67.5 | 41.8 | 26.3 | 48.5 | 7.4 | 7.9 | 16.2 |
| Small | 48.5 | 48.7 | 66.6 | 77.4 | 46.6 | 32.8 | 71.4 | 8.6 | 10.8 | 22.9 |
| Medium | 57.2 | 52.7 | 64.7 | 77.4 | 50.0 | 42.2 | 77.6 | 11.0 | 15.0 | 27.2 |
| Large | 65.3 | 57.2 | 65.8 | 80.0 | 57.7 | 53.6 | 79.3 | 17.7 | 23.6 | 33.3 |
| All Firms | 51.8 | 49.5 | 64.0 | 75.0 | 49.0 | 38.7 | 67.4 | 11.5 | 14.6 | 24.7 |

Table 5: Finance Sources by Firm Age

| Currently Using | Internal | Grants | Overdraft | Bank loan | Trade | Informal | Leasing | Debt Sec. | Subordinated | Equity |
|----------------------------|----------|--------|-----------|-----------|-------|----------|---------|-----------|--------------|--------|
| <2 | 23.3 | 14.1 | 30.8 | 30.5 | 25.4 | 24.5 | 37.5 | 1.1 | 3.4 | 8.8 |
| 2-5 | 23.1 | 14.9 | 38.0 | 31.7 | 29.0 | 18.3 | 34.8 | 1.9 | 3.4 | 6.9 |
| 5-10 | 24.0 | 14.5 | 42.2 | 34.2 | 29.4 | 17.1 | 36.9 | 2.5 | 3.3 | 6.2 |
| >10 | 31.9 | 18.2 | 42.9 | 40.7 | 34.4 | 18.7 | 42.1 | 2.6 | 3.9 | 8.2 |
| All Firms | 30.1 | 17.4 | 42.3 | 39.1 | 33.3 | 18.5 | 40.9 | 2.5 | 3.8 | 7.9 |
| Previous Experience | Internal | Grants | Overdraft | Bank loan | Trade | Informal | Leasing | Debt Sec. | Subordinated | Equity |
| <2 | 36.2 | 35.5 | 51.6 | 55.9 | 37.5 | 37.8 | 53.0 | 7.8 | 13.1 | 18.8 |
| 2-5 | 40.5 | 43.0 | 57.6 | 66.2 | 45.9 | 38.2 | 57.0 | 10.4 | 13.2 | 24.8 |
| 5-10 | 42.5 | 43.6 | 62.6 | 69.3 | 45.4 | 37.9 | 60.8 | 10.0 | 12.3 | 22.5 |
| >10 | 54.3 | 51.5 | 65.1 | 77.2 | 50.6 | 39.0 | 69.7 | 12.0 | 15.2 | 25.3 |
| All Firms | 51.6 | 49.7 | 64.1 | 75.2 | 49.4 | 38.8 | 67.5 | 11.6 | 14.6 | 24.8 |

Table 6: Diversification of Funding – Count of Finance Types

| | Sources Currently Used | | Sources Previously Experienced | |
|--------------------------|------------------------|--------|--------------------------------|--------|
| Size micro | -0.42*** | (0.02) | -0.23*** | (0.01) |
| Size small | -0.16*** | (0.01) | -0.09*** | (0.01) |
| Age <2 | -0.02 | (0.05) | -0.13*** | (0.04) |
| Age 2-5 | 0.02 | (0.02) | -0.07*** | (0.02) |
| Age 5-10 | 0.02 | (0.01) | -0.04*** | (0.01) |
| Industry | 0.01 | (0.02) | 0.04*** | (0.01) |
| Trade | -0.01 | (0.02) | -0.02 | (0.01) |
| Services | -0.12*** | (0.01) | -0.07*** | (0.01) |
| Family owned | 0.04 | (0.03) | 0.06** | (0.03) |
| Other firm | 0.00 | (0.03) | 0.04 | (0.03) |
| Venture capital | 0.05 | (0.05) | 0.11*** | (0.04) |
| Sole trader | -0.08** | (0.03) | -0.04 | (0.03) |
| Other | -0.03 | (0.07) | 0.05 | (0.04) |
| Subsidiary | -0.12*** | (0.02) | -0.10*** | (0.02) |
| Turnover unchanged | -0.01 | (0.01) | -0.02** | (0.01) |
| Turnover increase | 0.11*** | (0.02) | 0.03** | (0.01) |
| Profit unchanged | -0.07*** | (0.02) | -0.04*** | (0.01) |
| Profit increased | -0.07*** | (0.02) | -0.02 | (0.01) |
| Credit history unchanged | -0.23*** | (0.02) | -0.12* | (0.01) |
| Credit history improve | -0.09*** | (0.02) | 0.00 | (0.01) |
| Capital unchanged | -0.07*** | (0.02) | -0.04*** | (0.01) |
| Capital increased | -0.02 | (0.02) | -0.02 | (0.01) |
| Observations | 41,457 | | 41,457 | |
| Log-likelihood | -54745.3 | | -67760.122 | |

Poisson regression, standard errors in parentheses, clustered at country-time level.

*** significant at 1%, ** at 5% and * at 10%. Country-time effects also included.

Base category: construction, public ownership, age >10 years, more than 50 employees, decreased turnover, decreased profit, decreased credit history, decreased capital position.

Table 7: Firm Characteristics and Credit Sources

| | Internal | | Overdraft | | Bank loan | | Trade Credit | | Informal | |
|--------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| | Current | Experience | Current | Experience | Current | Experience | Current | Experience | Current | Experience |
| Size micro | -0.701*** (0.065) | -0.577*** (0.049) | -0.272*** (0.062) | -0.054 (0.057) | -0.884*** (0.056) | -0.229*** (0.065) | -0.709*** (0.051) | -0.194*** (0.049) | -0.58*** (0.045) | -0.304*** (0.054) |
| Size small | -0.441*** (0.045) | -0.245*** (0.044) | 0.003 (0.037) | 0.015 (0.057) | -0.256*** (0.039) | 0.021 (0.046) | -0.339*** (0.033) | -0.015 (0.045) | -0.391*** (0.041) | -0.212*** (0.048) |
| Age <2 | -0.242 (0.158) | -0.648*** (0.145) | -0.559*** (0.128) | -0.278** (0.13) | -0.607*** (0.152) | -0.87*** (0.13) | -0.213* (0.125) | -0.214 (0.196) | 0.527*** (0.154) | -0.163 (0.172) |
| Age 2-5 | -0.158** (0.067) | -0.468*** (0.068) | -0.245*** (0.062) | -0.44*** (0.091) | -0.468*** (0.082) | -0.525*** (0.093) | 0.091 (0.065) | -0.065 (0.092) | 0.449*** (0.063) | -0.086 (0.069) |
| Age 5-10 | -0.15*** (0.048) | -0.272*** (0.043) | -0.015 (0.05) | -0.212*** (0.066) | -0.267*** (0.055) | -0.292*** (0.057) | 0.002 (0.043) | -0.149** (0.063) | 0.18*** (0.062) | 0.055 (0.049) |
| Industry | 0.068 (0.066) | 0.084 (0.055) | -0.034 (0.058) | 0.039 (0.081) | 0.064 (0.063) | 0.19*** (0.055) | 0.246*** (0.06) | 0.206*** (0.056) | 0.176** (0.073) | 0.179*** (0.051) |
| Trade | -0.017 (0.061) | -0.035 (0.059) | -0.036 (0.053) | -0.116* (0.063) | -0.038 (0.07) | -0.001 (0.06) | 0.297*** (0.061) | 0.171** (0.07) | 0.106 (0.079) | 0.039 (0.06) |
| Services | -0.124** (0.063) | -0.048 (0.061) | -0.258*** (0.053) | -0.12* (0.073) | -0.377*** (0.061) | -0.19*** (0.057) | -0.425*** (0.054) | -0.179*** (0.065) | -0.031 (0.067) | 0.029 (0.056) |
| Family owned | 0.073 (0.112) | 0.131 (0.107) | 0.415*** (0.093) | 0.387*** (0.13) | 0.807*** (0.113) | 0.623*** (0.11) | 0.182 (0.117) | 0.096 (0.124) | -0.386*** (0.099) | 0.041 (0.102) |
| Sole trader | -0.157 (0.134) | -0.089 (0.114) | 0.351*** (0.102) | 0.313** (0.133) | 0.658*** (0.118) | 0.564*** (0.115) | -0.103 (0.118) | -0.034 (0.13) | -0.743*** (0.115) | -0.186* (0.103) |
| Observations | | 42774 | | 42982 | | 43027 | | 42927 | | 42955 |
| Pseudo-R2 | | 0.064 | | 0.064 | | 0.062 | | 0.103 | | 0.076 |

Multinomial logit regression, standard errors in parentheses, clustered at country-time level. *** Significant at 1%, ** at 5% and * at 10%. Country-time effects, changes in turnover, profit, credit history, capital position and additional ownership categories also included

Table 8: Firm Characteristics and Other Finance Sources

| | Equity | | Leasing | | Debt securities | | Subordinated Debt | | Grants | |
|--------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| | Current | Experience | Current | Experience | Current | Experience | Current | Experience | Current | Experience |
| Size micro | -0.426*** (0.102) | -0.418*** (0.059) | -1.522*** (0.051) | -0.556*** (0.051) | -0.352*** (0.127) | -0.527*** (0.085) | -0.795*** (0.121) | -0.494*** (0.076) | -0.859*** (0.079) | -0.369*** (0.045) |
| Size small | -0.159*** (0.06) | -0.128** (0.052) | -0.423*** (0.043) | -0.046 (0.041) | -0.164 (0.12) | -0.302*** (0.059) | -0.462*** (0.094) | -0.23*** (0.056) | -0.391*** (0.061) | -0.15*** (0.039) |
| Age <2 | 0.533** (0.228) | -0.288 (0.177) | -0.121 (0.162) | -0.772*** (0.151) | -0.396 (0.373) | 0.095 (0.239) | 0.244 (0.256) | 0.427** (0.203) | 0.044 (0.169) | -0.416*** (0.135) |
| Age 2-5 | 0.071 (0.138) | 0.049 (0.08) | -0.167*** (0.084) | -0.506*** (0.1) | -0.299 (0.272) | 0.005 (0.09) | 0.321* (0.176) | 0.038 (0.081) | 0.047 (0.077) | -0.215*** (0.078) |
| Age 5-10 | 0.028 (0.077) | 0.012 (0.058) | 0.011 (0.051) | -0.296*** (0.054) | 0.031 (0.148) | -0.125* (0.066) | 0.162 (0.111) | 0.04 (0.088) | -0.027 (0.067) | -0.143*** (0.051) |
| Industry | 0.025 (0.081) | -0.062 (0.061) | -0.228** (0.093) | -0.091 (0.075) | -0.071 (0.174) | -0.004 (0.068) | 0.063 (0.138) | 0.14* (0.079) | 0.522*** (0.092) | 0.50*** (0.054) |
| Trade | -0.078 (0.08) | -0.144*** (0.054) | -0.633*** (0.09) | -0.457*** (0.083) | 0.083 (0.182) | -0.178 (0.078) | -0.085 (0.137) | -0.062 (0.08) | -0.009 (0.086) | 0.058 (0.059) |
| Services | -0.153** (0.072) | -0.129** (0.057) | -0.336*** (0.087) | -0.34*** (0.085) | 0.082 (0.152) | -0.296*** (0.071) | -0.193 (0.143) | -0.105 (0.084) | 0.01 (0.068) | 0.006 (0.039) |
| Family owned | -0.621** (0.154) | -0.186 (0.116) | 0.19* (0.099) | 0.327*** (0.115) | -0.263 (0.319) | -0.186 (0.145) | -0.334* (0.174) | -0.076 (0.121) | 0.205** (0.104) | 0.329*** (0.086) |
| Sole trader | -1.037*** (0.165) | -0.496*** (0.131) | -0.169* (0.095) | 0.01 (0.111) | -0.563* (0.339) | -0.372** (0.15) | -0.604*** (0.183) | -0.286** (0.129) | -0.09 (0.115) | 0.177 (0.088) |
| Observations | | 42864 | | 43022 | | 42599 | | 42635 | | 42906 |
| Pseudo-R2 | | 0.151 | | 0.101 | | 0.163 | | 0.098 | | 0.053 |

Multinomial logit regression, standard errors in parentheses, clustered at country-time level. *** Significant at 1%, ** at 5% and * at 10%. Country-time effects, changes in turnover, profit, credit history, capital position and additional ownership categories also included.

| Year | Number | Title/Author(s) ESRI Authors/Co-authors <i>Italicised</i> |
|------|--------|--|
| 2014 | 491 | SME Recovery Following a Financial Crisis: Does Debt Overhang Matter? <i>Martina Lawless, Brian O'Connell and Conor O'Toole</i> |
| | 490 | Examining the Relationship between employee Resistance to changes in job conditions and Wider Organisational Change: Evidence from Ireland Hugh Cronin and <i>Seamus McGuinness</i> |
| | 489 | Estimating Building Energy Ratings for the Residential Building Stock: Location and Occupancy <i>John Curtis, Niamh Devitt, Adele Whelan</i> |
| | 488 | Gaming in the Irish Single Electricity Market and Potential Effects on Wholesale Prices <i>Darragh Walsh and Laura Malaguzzi Valeri</i> |
| | 487 | Household Formation and Tenure Choice: Did the great Irish housing bust alter consumer behaviour? <i>David Byrne, David Duffy and John FitzGerald</i> |
| | 486 | Changing Time: Possible Effects on Peak Electricity Generation Sara Crowley (UCC), <i>John FitzGerald</i> and <i>Laura Malaguzzi Valeri</i> |
| | 485 | Changes in Labour Market Transitions in Ireland over the Great Recession <i>Adele Bergin, Elish Kelly, Seamus McGuinness</i> |
| | 484 | Examining the Relationships between Labour Market Mismatches, Earnings and Job Satisfaction among Immigrant Graduates in Europe <i>Seamus McGuinness</i> and Delma Byrne |
| | 483 | Worth a Try: A Statistical Analysis of Brian O'Driscoll's Contribution to the Irish Rugby Team <i>Pete Lunn and David Duffy</i> |
| | 482 | Who Should We Ask? Employer and Employee Perceptions of Skill Gaps within Firms <i>Seamus McGuinness</i> and Luis Ortizd |
| | 481 | Trends in Socio-Economic Inequalities in Mortality by Sex in Ireland from the 1980s to the 2000s <i>Richard Layte, Joanne Banks</i> |

For earlier *Working Papers* see

http://www.esri.ie/publications/search_for_a_working_pape/search_results/index.xml