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Exploring SME Investment Patterns in Ireland:
New Survey Evidence

E. Gargan, M. Lawless, M. Martinez-Cillero,
C. O'Toole

EXPLORING INVESTMENT PATTERNS FOR IRISH SMES: NEW SURVEY EVIDENCE[1]

Eric Gargan, Martina Lawless, Maria Martinez-Cillero, Conor O'Toole*

ABSTRACT

An empirical profile of SME investment in Ireland is critical to understanding the growth possibilities and productive capacity of Irish indigenous enterprises. However little is known about SME investment activity outside the more aggregate information. This paper uses new survey evidence compiled as part of the Department of Finance SME Credit Demand Survey to profile the types of assets SMEs are investing in, how firms are financing these investments and what barriers firms face to investment. We provide a detailed exploration of the trends across firms looking at different size classes, age groups, exporting status and sectors. A number of findings emerge. We find that two in every three SMEs invested in their staff; one-in-two invested in fixed assets; and less than one-in-ten invested in intangible assets in 2016. SMEs were in general satisfied with their investment levels or their current capacity with only one-in-five facing a capital gap. For those with perceived insufficient investment, a lack of internal funds, rather than access to external finance, was identified as the main reason. Finally, SMEs reported having significant liquidity levels in 2016. These findings suggest that any perceived sluggishness in borrowing or investment appetite could potentially be demand-side in orientation.

1. INTRODUCTION

Understanding the determinants of investment activity for domestic Irish SMEs is critical in terms of assessing their long-term productive capacity. To have adequate scope to grow and develop, firms need to continually invest in fixed and other assets to boost output. Indeed, a major determinant of productivity for firms is the growth in capital assets at their disposal.

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* Eric Gargan is an Assistant Principal in the Banking Policy Division, Department of Finance, Martina Lawless is an Associate Research Professor at the Economic and Social Research Institute and an Adjunct Professor at Trinity College, Dublin, Maria Martinez-Cillero is a Postdoctoral Research Fellow in the Economic and Social Research Institute, and Conor O'Toole is a Senior Research Officer in the Economic and Social Research Institute and an Adjunct Associate Professor in Trinity College Dublin. Corresponding author: maria.martinezcillero@esri.ie.

Following the onset of the financial crisis, aggregate investment activity in the Irish economy dropped dramatically. While much of the retrenchment in capital formation was accounted for by the adjustment in building and construction, investment in machinery and equipment and other non-construction assets also fell. At a domestic level, investment activity amongst SMEs also declined. Gerlach-Kristen et al. (2015) show that the share of SMEs investing in fixed assets declined from 55 per cent in 2005 to under 30 per cent in 2013. This fall was even more pronounced for micro-sized enterprises.

While undoubtedly the deterioration in the business climate, through poorer fundamentals, would have led firms to pull back investment, a number of research papers have highlighted the negative impact of the banking crisis and credit boom on investment levels. Gerlach-Kristen et al. (2015) show that SMEs' investment was negatively affected by credit constraints following the banking collapse. Lawless et al. (2015) show that debt overhang from the boom phase also negatively impacted investment activity amongst SMEs. Lawless et al. (2013) show that investment financing has shifted to the use of internal funds with a major reduction in the usage of bank credit. SME financing has been a popular topic of research in empirical literature. The different nature of financing of large and small companies has been well established in the literature (Rajan and Zingales, 1995; Berger and Udell, 1998), largely due to information opacity. In terms of external finance, small firms rely largely on private equity and debt markets. However due to information asymmetries between firm managers and lending institutions, access to external credit for small firms is highly reliant on the availability of collateral and liquidity.

As the economy has recovered, some of the credit market drags on investment have abated. Carroll et al. (2016) document a marked pick-up in investment for SMEs following the improvements in the domestic economy in 2014 and 2015. However the rapid growth domestically in recent years, and the improvements in trading conditions for firms, have not seen a substantial increase in SME investment activity. Lawless et al. (2018) test the extent to which SME investment in Ireland is explained by economic fundamentals and find that, in 2016, firms were underinvesting by approximately 30 per cent. A portion of this gap, approximately 20 per cent is explained by factors relating to financial market issues (indebtedness, interest rates, credit rejections, etc.).

However, given data limitations, a number of unanswered questions remain. Three specific issues are of particular pertinence. First, which type of assets are SMEs investing in, and is investment activity relatively larger when scaled against the level of existing total assets (data which have been missing to date)? Second,

do firms themselves consider their investment activity to be optimal and what are the barriers to investment if not? Third, how much savings do firms hold on their balance sheets and how does this link to investment financing? Shedding light on these issues can provide further insight into what is happening with SME investment in Ireland.

To address these specific issues, a special 'Investment activity and company assets' module was appended to the regular Department of Finance SME Credit Demand Survey (CDS) to capture data on the aforementioned information gaps. The new module captures new information on the types of assets firms are investing in, the barriers they face to investment, and information on how they finance that investment. More detailed insights of this new information are provided in the Data Overview section.

This article provides a first insight into the new data and attempts to address the questions raised. A number of important findings emerge. Half of SMEs in the sample invested in fixed assets in 2016, however only 7 per cent of firms invested in intangibles. Moreover, both the investment level and rate were between 4.5 and 4.8 times higher for fixed assets than for intangibles. Although a significant number of firms invested in staff (66 per cent), the mean and median level of investment made by these companies are the lowest relative to all types of investment. More than two-thirds of SMEs in the sample reported that they were satisfied with their investment levels or with their current capacity. In terms of barriers to investment, the lack of internal funds was identified as the main reason behind the lack of, or insufficient, investment. Finally, the data suggest that SMEs had remarkably high liquidity levels, which might be linked to the low demand for external funding sources for investment.

2. DATA OVERVIEW

The Department of Finance SME CDS contains firm-level data on a random sample of Irish SMEs, and is carried out on a biannual basis. It was designed to include a good representation of micro, small and medium-sized firms and a proportional representation of selected key sectors of the economy.

The 2016 CDS included a new module which contained a series of questions specifically asking about firms' investment activity and assets. In addition, the new module in the CDS also contained important questions regarding investment financing sources and barriers.[2] Past data did not provide any insights on key

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[2] A full list of variables available in the new module is provided in Appendix I.

issues such as the types of fixed assets firms were investing in, or staff and intangibles investment patterns. Information regarding firms' value of total assets was also absent, which prevented an exploration of the different investment rates across SMEs. As part of this module, firms were asked to provide a numeric figure of the value of their total assets, as well as declaring the percentages of assets that were in fixed or liquid form.[3] This allowed us to also explore the liquidity of Irish SMEs in 2016. Information was also requested on the value of turnover, profits, investment per asset or outstanding debt, and the number of employees and the value of investment in them.
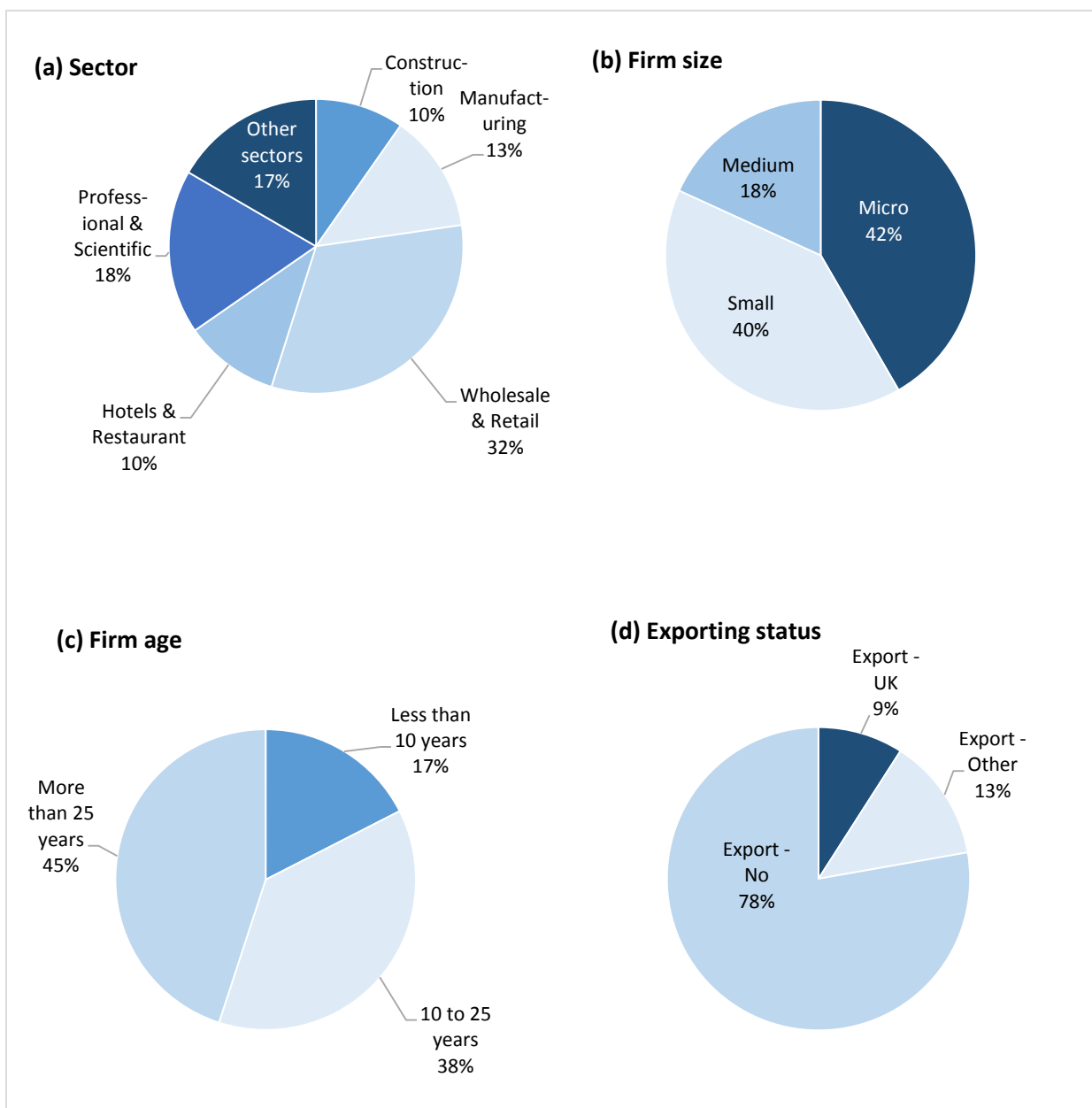
Some of the value variables obtained through this set of questions (i.e. debt, turnover or value of total assets) had a significant share of missing observations. For the case of total assets, about 50 per cent of firms did not report a value. However, as an alternative to providing the value of total assets, firms were given the option to state this information through pre-defined ranges of values. For firms which provided a range, the value of total assets was generated using multiple imputations.[4] After this procedure, the percentage of firms with a missing total assets value was reduced to about 18 per cent.

The figures below report the percentage of observations in selected firm categories, to provide an overview of the composition of the sample used.

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[3] Liquid assets include cash, stocks or other liquid assets such as accounts receivable.

[4] An OLS regression was performed in each sub-sample of firms classified in each range, and range-specific predicted values were then calculated for each firm. If the predicted value was within the range, it was assigned as the value of total assets for that firm. If the value was not within range the value was left as missing.

FIGURE 1   DATA OVERVIEW

(a) Sector

Construction 10%
Manufacturing 13%
Other sectors 17%
Professional & Scientific 18%
Hotels & Restaurant 10%
Wholesale & Retail 32%

(b) Firm size

Medium 18%
Micro 42%
Small 40%

(c) Firm age

Less than 10 years 17%
More than 25 years 45%
10 to 25 years 38%

(d) Exporting status

Export - UK 9%
Export - Other 13%
Export - No 78%

Most SMEs included in the sample operated in the Wholesale and Retail sector, followed by the Professional and Scientific sector. The sample includes a large proportion of micro and small sized firms, as opposed to medium sized firms. According to 2015 CSO data, the majority of active enterprises in Ireland fall into the micro firm category, while small and medium firms represent 6.4 and 1.1 per cent respectively (CSO, 2017b). Therefore, although medium and small firms are overrepresented in the sample, which is a common occurrence in SMEs microdata, we also include a very high proportion of micro firms. The data include a small share of firms with less than ten years of operation, with almost half of the firms operating for over 25 years. Although the sample included a number of companies which had been in business for less than two years, these companies

usually are not listed in Company Registration Office records and therefore are not in the database on which sampling is based. For this reason, this analysis excludes a certain cohort of very young rapidly growing firms for which credit constraints may be quite a significant issue. Finally, just over three-quarters of firms included did not export their products outside Ireland.

As is standard in treating extreme observations in microdata studies, outliers have been removed from the sample, and were defined as observations situated above and below the 99 and 1 percentiles respectively. After cleaning the data, the total number of observations in the sample was 1,419. All statistics presented in the tables and figures that follow are weighted using probability weights provided in the dataset.

3. PROFILING INVESTMENT ACROSS FIRMS

This section provides an overview of the extent to which Irish SMEs are investing in assets and, if investing, explores what type of assets are being purchased. It also provides information regarding the size of the investment made in each asset class, and the scale of the investment relative to the firm size. For this last purpose, investment rates, defined as the percentage of the value of investment relative to the value of total assets, are computed.

Column 1 in Table 1 displays the percentage of firms which reported investing in 2016. Disaggregated information on investment activities by type of asset is also provided, which is a novelty of the 2016 data. Overall, just over 80 per cent of firms undertook some form of investment activity in either fixed assets, intangible assets or staff. Roughly 50 per cent of firms invested in fixed assets in 2016; however, disparities across different types of assets emerge. Most firms invested in machinery, followed by transport, while only 14.6 per cent of firms invested in larger types of assets such as buildings. The extent to which Irish SMEs are investing in intangible assets (such as new production processes, procedures, patents, research and development, branding, etc.) is of great interest. In contrast with the importance of intangibles suggested by the National Accounts (CSO, 2017a), merely 6.9 per cent of SMEs reported undertaking this type of investment. Finally, a large share of firms, 66.4 per cent, invested in staff in 2016.

The average size of investment by asset type is also reported in Table 1.[5] The mean and median investment levels are reported in Columns 2 and 3, respectively. Due to the skewed distribution of investment, which is displayed in

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[5]   Note that the statistics of investment levels and rates only refer to investing firms, and not the total sample.

Figure 2, the mean and median investments are quite different. The largest mean investment levels correspond unsurprisingly to buildings, followed by machinery and transport. In comparison to fixed assets, the investment level was low for intangible assets and particularly for staff.

**TABLE 1   INVESTMENT BY TYPE OF ASSET**

	All firms	Investing firms		
	%	Mean inv.	Median inv.	Inv. rate
a. Total investment	*80.30*	*79,243*	*22,000*	*0.19*
b. Fixed assets	*50.21*	*103,813*	*45,000*	*0.24*
Buildings	14.60	123,584	40,000	0.14
Transport	25.56	51,854	30,000	0.17
Machinery	35.75	58,365	20,000	0.10
c. Intangible assets	*6.92*	*21,966*	*10,000*	*0.05*
d. Staff	*66.41*	*11,463*	*5,000*	*0.02*

Source: ESRI.

Mean investment rates are also displayed in the last column of Table 1. They were calculated as the ratio of the level of investment undertaken in 2016 by each firm to their level of total assets in 2015.[6] This measure facilitates a comparison of investment across firms relative to their size, as conclusions taken from investment level statistics can be affected by larger firms making larger investments. In contrast with the average investment level, the average rate is the highest for transport assets, indicating that investment relative to firm size was higher for this type of asset. Again, the distribution of the investment rates is also quite skewed to the left, as shown in Figure 3. This suggests that most investing firms did not invest large amounts relative to their size, regardless of the type of asset.

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[6]   The level of total assets in 2015 is obtained by subtracting the 2016 investment from the 2016 value of total assets. Recall, the value of total assets in 2016 for some observations is imputed (see Data Overview section).
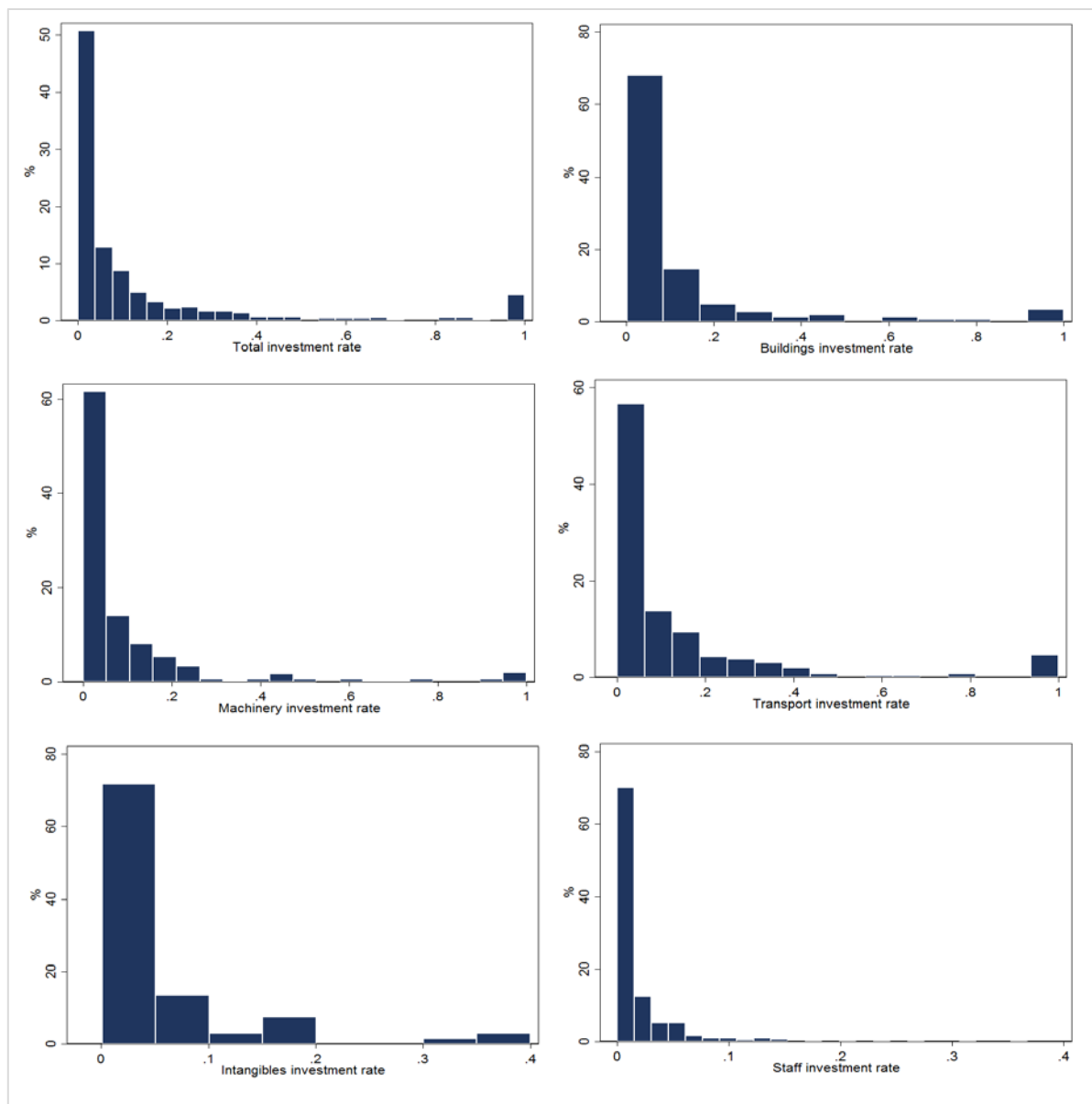
FIGURE 2   HISTOGRAMS – INVESTMENT LEVEL BY ASSET
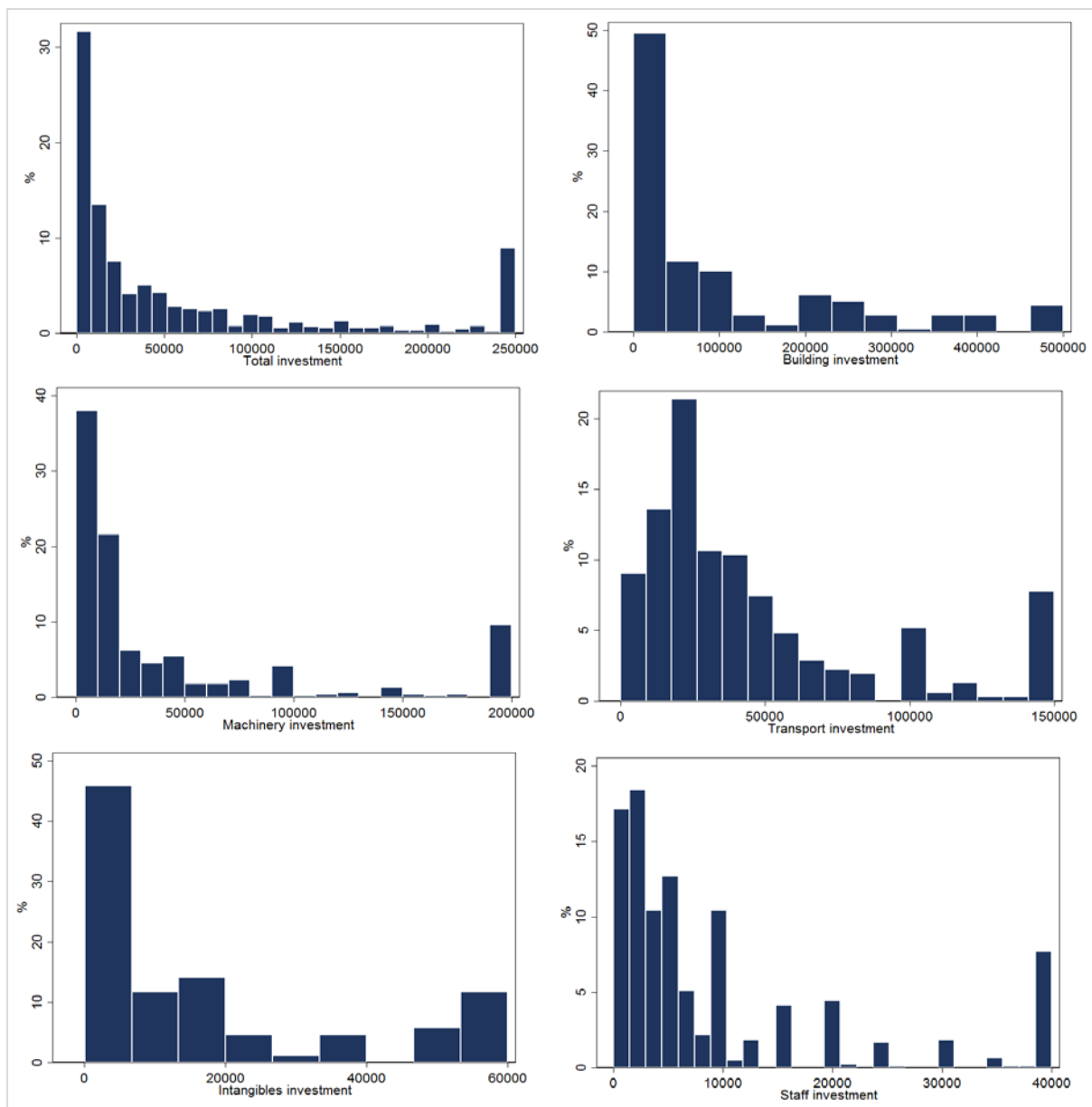
FIGURE 3   HISTOGRAMS – INVESTMENT RATE BY ASSET

Following the description of the general investment patterns of Irish SMEs, we briefly explore whether heterogeneity in terms of firm characteristics affects the incidence and level of investment. The graphs provided in Figures 4 to 7 display the percentage of investing firms, mean investment rates, and mean and median investment levels[7] by selected firm categories. These are defined in terms of firm age,[8] size,[9] exporting status[10] and sectors.

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[7]   The percentages of investing firms and the investment level and rates by category on which graphs in Figures 4 to 7 are based are provided in Tables A.2a and A.2b in Appendix II.

[8]   According to the number of years a firm has been operating.

**FIGURE 4   INVESTMENT BY TYPE OF ASSET AND AGE CATEGORY**
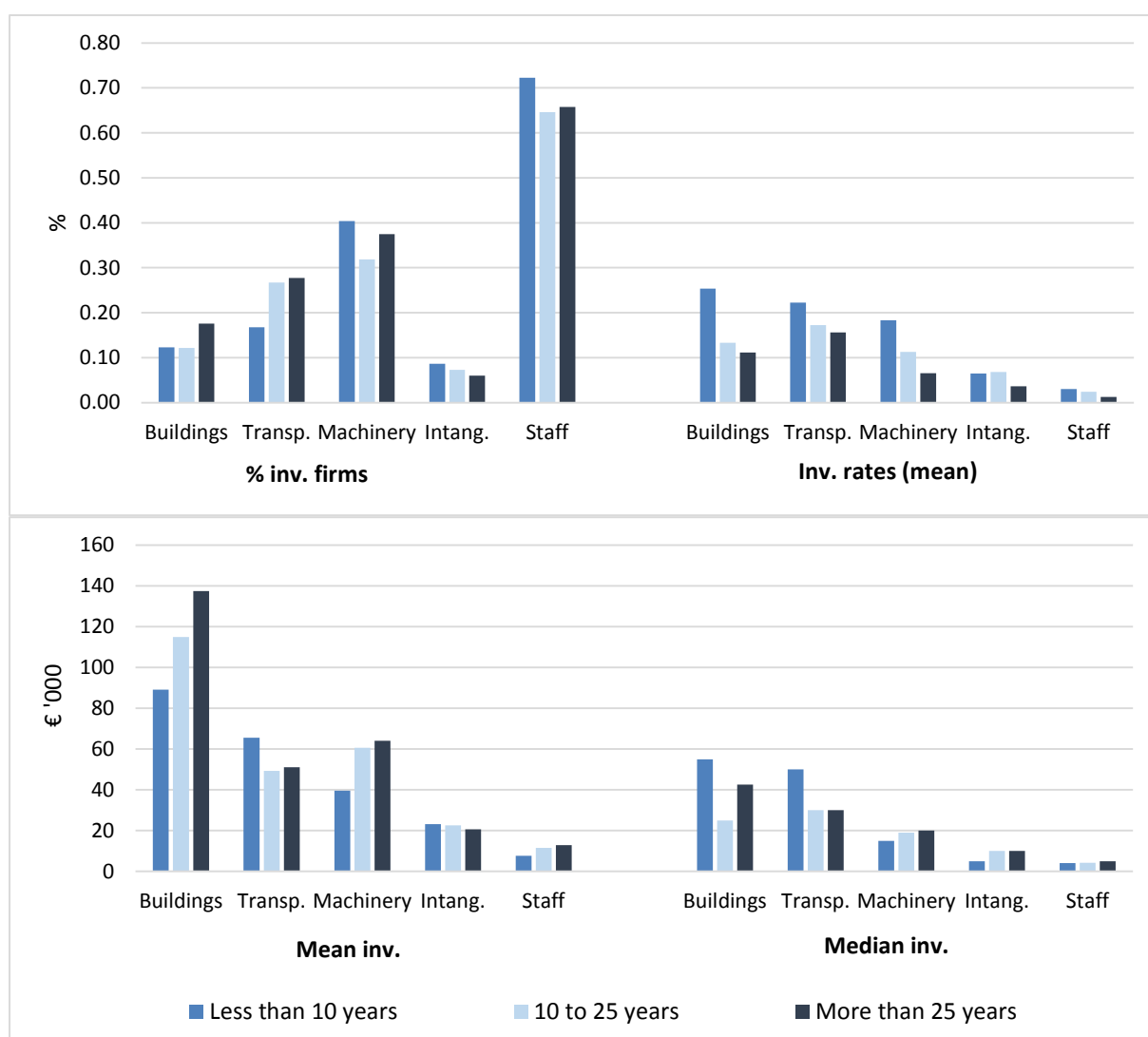
Source: ESRI.

A higher percentage of younger firms invested in machinery, intangibles and staff while more mature firms invested in buildings and transport assets. However, the average investment level appears to be higher for older firms across assets, except for transport and intangibles. After accounting for differences in firm size, the mean investment rates show younger firms performing higher investment in all types of assets and staff. This finding is consistent with the firm lifecycle whereby large investments (relative to size) are made early in firms' existence and decline in relative magnitude as firms age.

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[9] Defined by the number of employees in each firm. The micro category includes firms that employ between one and nine people, small firms have between ten and 49 employees, and medium firms employ between 50 and 249 people.

[10] Three categories are defined, according to the percentage of output exported to different destinations. One category includes firms which export only to UK markets, the second one includes firms which export mostly to countries other than the UK (although some UK exports are present in this category, they are of much smaller importance). Finally the third category includes firms which do not export production.

FIGURE 5 INVESTMENT BY TYPE OF ASSET AND SIZE CATEGORY
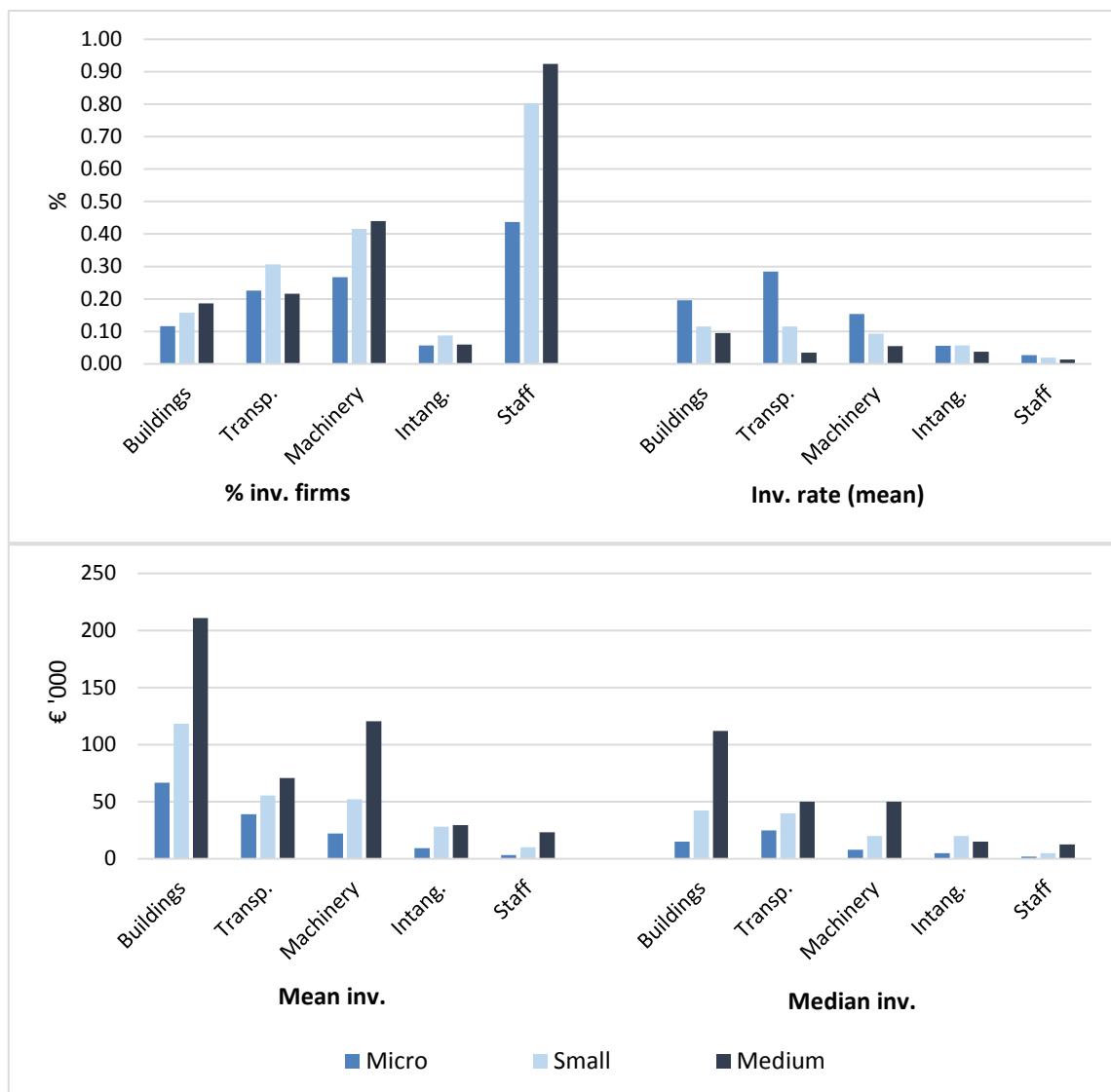
Larger numbers of small and medium sized firms invested in assets, and particularly in staff, when compared to micro firms in 2016. Similar patterns emerge in terms of mean and median investment levels; however, the investment rates indicate that micro firms are investing the most relative to their size, as expected of firms setting up and starting production activities.

FIGURE 6   INVESTMENT BY TYPE OF ASSET AND EXPORTING STATUS
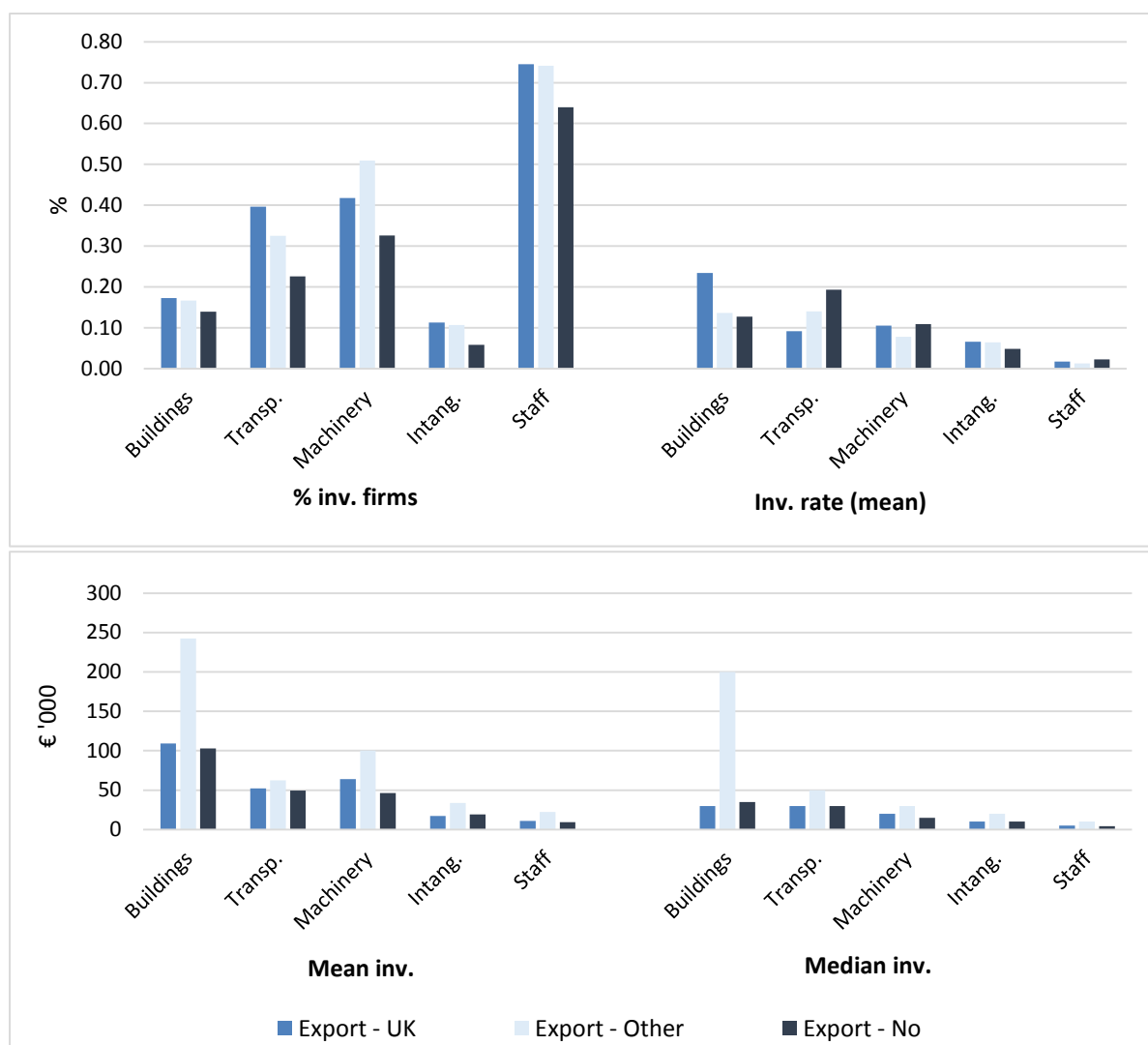
Higher shares of firms which export their output exclusively to the UK invested in fixed assets (except machinery), intangibles and staff, when compared to the rest of firms. Firms which also export to the rest of the world have the largest mean and median investment levels. The pattern is less clear when considering the investment rates. Non-exporting firms emerge as the main investors in transport, machinery and staff; while firms exporting only to the UK are the largest investors in intangibles and in buildings. This indicates that the very large mean and median investment levels of firms exporting to the rest of the world are somewhat distorted by these firms being larger in terms of total assets.

FIGURE 7   **INVESTMENT BY TYPE OF ASSET AND SECTOR**
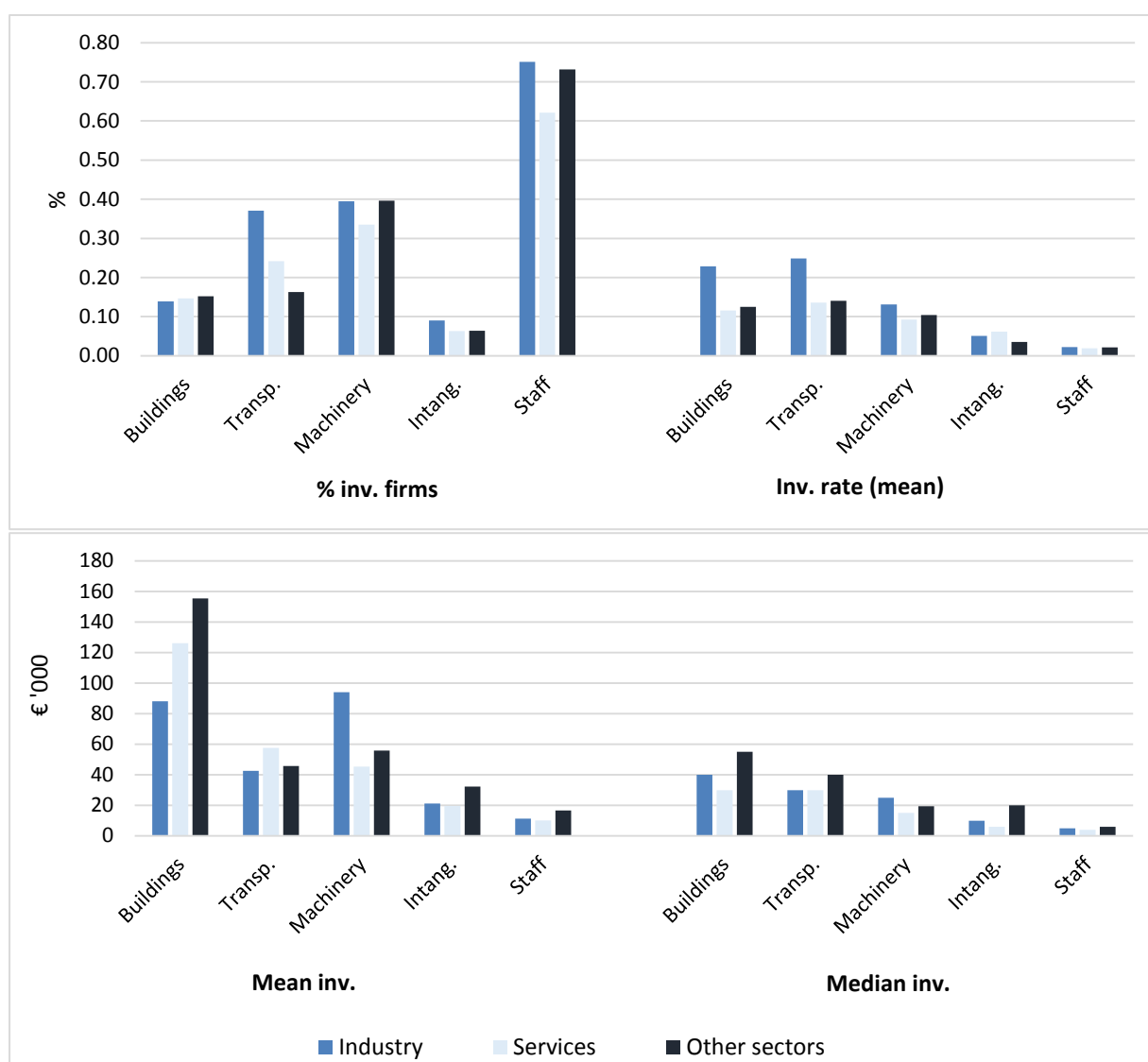
Finally, the same comparison is performed by grouping SMEs in three broadly defined sector categories.[11] A higher share of firms operating in the industry sector invested in assets such as transport and intangibles, and also in staff. Industrial firms also display the highest mean investment rates (except for intangibles). Firms operating in the services sector have the largest average investment rate in intangibles.

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[11]   See Appendix III for further details regarding the sector composition.

4. BARRIERS AND CHALLENGES TO INVESTMENT

In this section, the attitudes of both investing and non-investing firms are explored, to identify potential investment and capacity constraints that might be affecting SME growth and development.

For investing firms, the focus is placed on whether they considered their level of investment in different types of assets to be adequate or insufficient; while for non-investing firms, the possible reasons behind the lack of investment activities are explored. The purpose of this analysis is to identify potential investment constraints faced by Irish firms which may need to be addressed.

TABLE 2   FIRMS' PERCEPTIONS

	Invested less	Invested adequately	Adequate capacity	Not adequate capacity	Capital gap
Total	**9.37**	**46.36**	**33.4**	**11.87**	**21.24**
Young	7.98	44.33	34.66	13.03	21.01
Old	10.47	46.18	32.39	10.96	21.43
Export – Yes	10.47	58.53	20.93	10.08	20.55
Export – No	9.02	41.22	37.32	12.44	21.46
Industry	10.62	46.9	32.3	10.18	20.8
Services	9.04	44.59	33.63	12.74	19.77
Other sectors	9.04	46.33	33.9	10.73	19.77
Micro	7.61	38.26	39.15	14.99	22.6
Small/Medium	10.62	50.4	29.32	9.67	20.29

Source: ESRI.
Note: Rows add up to 100 per cent (for Columns 1 to 4).

The first row in Table 2 shows the percentage breakdown of firms' reported attitudes towards their investing behaviour. Overall, 46.36 per cent of firms reported they were satisfied with the level of investment undertaken in 2016, while 33.4 per cent of firms stated adequate capacity as the reason not to invest in the same year. This implies that over three-quarters of firms were satisfied with their decision whether to invest or not. Around 9 per cent of firms invested less than they would have liked to, and 11.87 per cent reported not investing despite their perceived inadequate capacity. Further details on the latter group of firms are provided below.

The fifth column in Table 2 reports the percentage of firms reported to be unsatisfied with their capital levels (i.e. a combination of firms that perceived they have inadequate capacity and those that were dissatisfied with the investment levels). Approximately one-in-five SMEs were unhappy with their

capacity or investment activities. This finding is broadly in line with the findings in Lawless et al. (2018). Differences can be explained by the definition of investment and the fact that the empirical model in Lawless et al. (2018) takes into account both the extensive and intensive margins of investment.

These attitudes are also explored across a selection of firm categories in Table 2. A higher percentage of micro firms claimed to be satisfied with their current capacity, while most small and medium enterprises reported that they had invested adequately. Only 21 per cent of exporting firms reported that they were satisfied with their capacity, however most firms in this category said they were satisfied with their investment activities. Less variation is observed for firms across age categories and sectors. The majority of firms in these categories reported that they had invested adequately.

FIGURE 8   INVESTING FIRMS' ATTITUDES BY ASSET
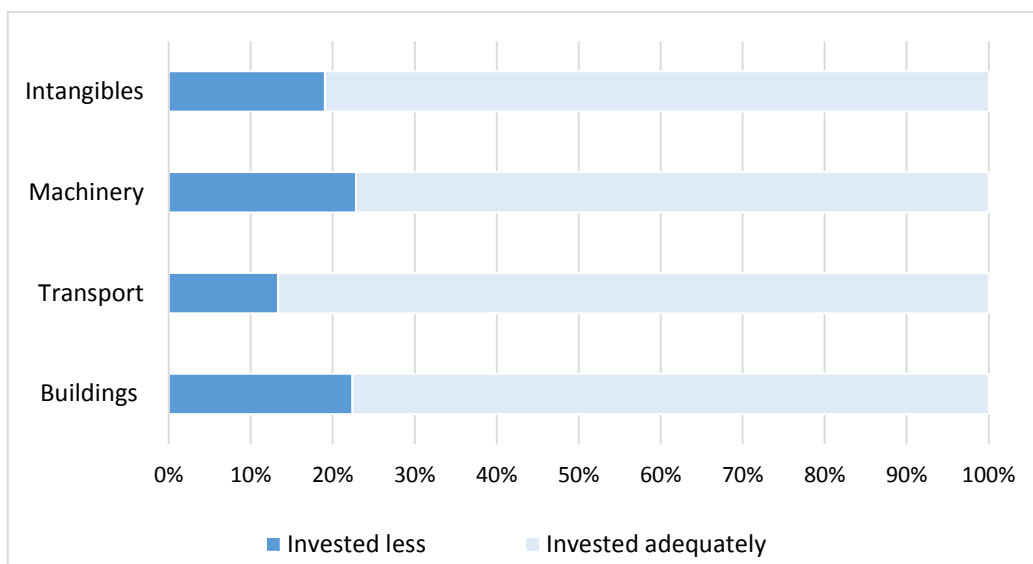
Figure 8 displays the percentages of firms which were satisfied or dissatisfied with the investment made for each type of asset (i.e. the percentages reported in each bar are built using information only for firms which invested in any type of asset).[12] In general, most investing firms reported adequate investment regardless of the asset type. Buildings and machinery are the two types of assets where higher percentages of firms reported unsatisfactory investment, followed by intangibles.

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[12]   Note that it could be the case that a given firm invested in more than one type of asset and reported different attitudes (satisfied/dissatisfied) for each type of asset.

FIGURE 9   INVESTING FIRMS' ATTITUDES BY ASSET AND CATEGORY
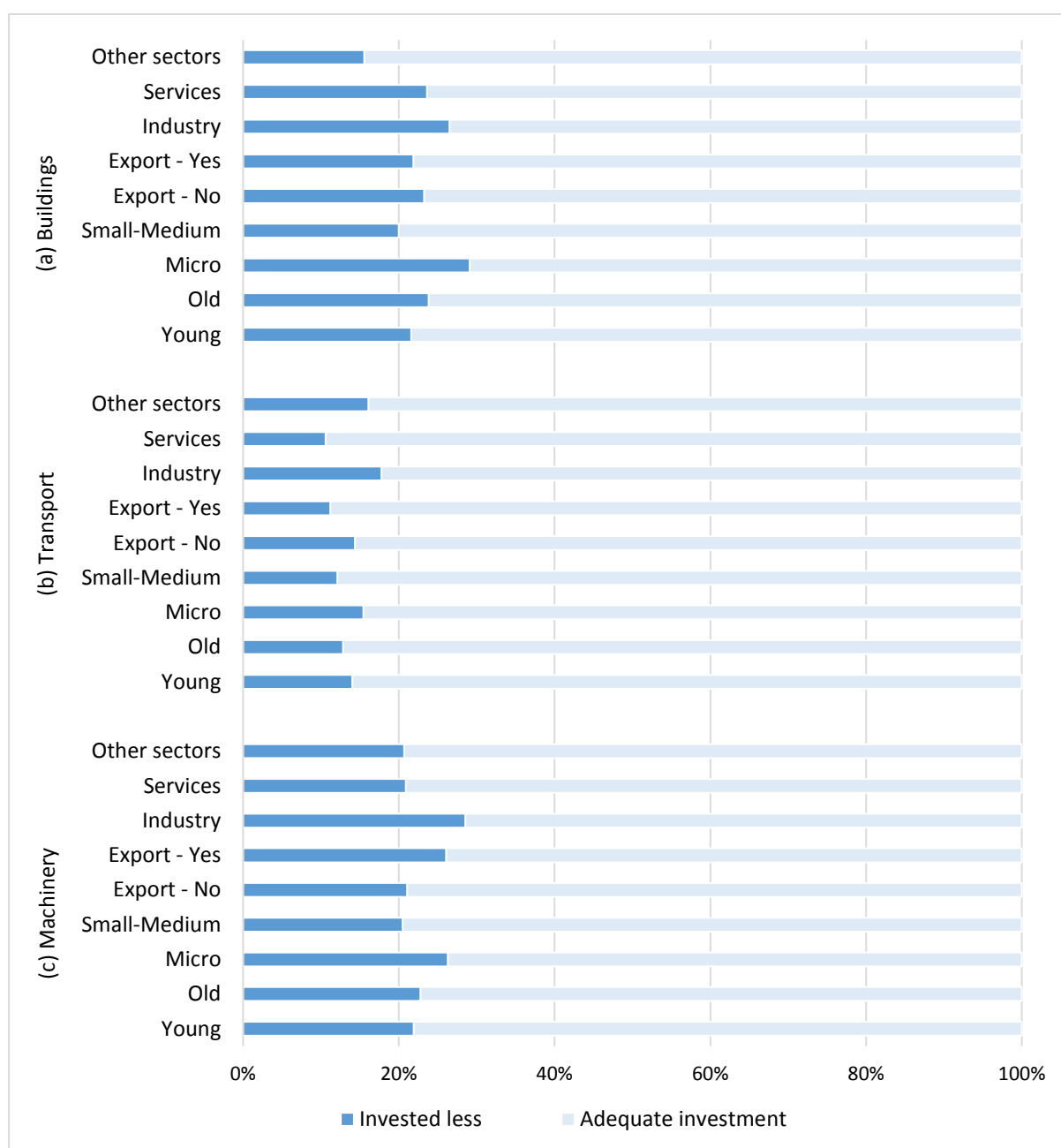
Figure 9 displays reported firms' attitudes towards investment made by asset and also by selected firm categories.[13]

Again, the majority of firms reported adequate levels of investment across all firm categories and assets. Despite this general pattern, larger shares of firms

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[13]   Intangible assets are not included in Figure 9 due to the low number of observations preventing further breakdown into categories.

operating in the industry sector reported unsatisfactory levels of investment when compared to the other sectors, regardless of t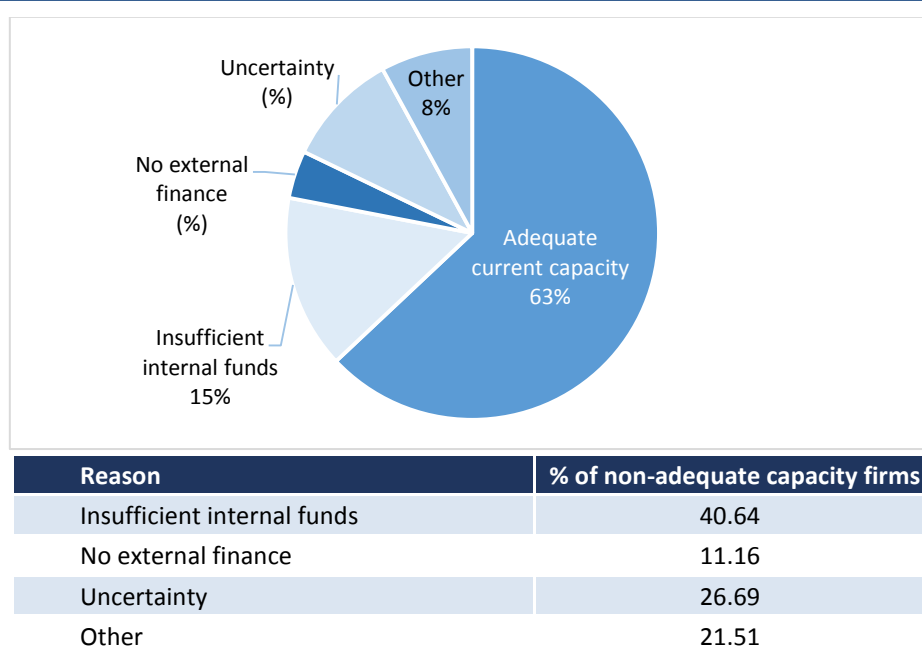he type of asset considered. Dissatisfaction with the level of investment affected higher shares of micro firms, again for all three types of assets considered. A larger share of exporting and older firms reported unsatisfactory investment when compared to non-exporting and younger firms respectively, for machinery, but not for transport and buildings.

Reason	% of non-adequate capacity firms
Insufficient internal funds	40.64
No external finance	11.16
Uncertainty	26.69
Other	21.51

Source: ESRI.

Figure 10 explores the motives of the sub-sample of Irish SMEs which did not invest and those SMEs which were unsatisfied with the level of investment performed. The majority of firms, 63 per cent, stated that their current capacity was adequate and therefore no investment was deemed necessary. Out of the remaining 37 per cent of firms, the main reason for the unsatisfactory investment (or lack of) was the unavailability of sufficient internal funds, followed by uncertain economic or sector prospects. Only a very small percentage of SMEs, 11.2 per cent, reported the unavailability of external finance as the reason behind their unsatisfactory investment activities.

FIGURE 11   NON-INVESTING AND UNSATISFIED INVESTING FIRMS' ATTITUDES

(a) Non-investing firms

Reason	% of non-adequate capacity firms
Insufficient internal funds	34.72
No external finance	9.72
Uncertainty	30.56
Other	25.00

(b) Unsatisfied investing firms

Reason	% of non-adequate capacity firms
Insufficient internal funds	46.59
No external finance	12.50
Uncertainty	25.00
Other	15.91
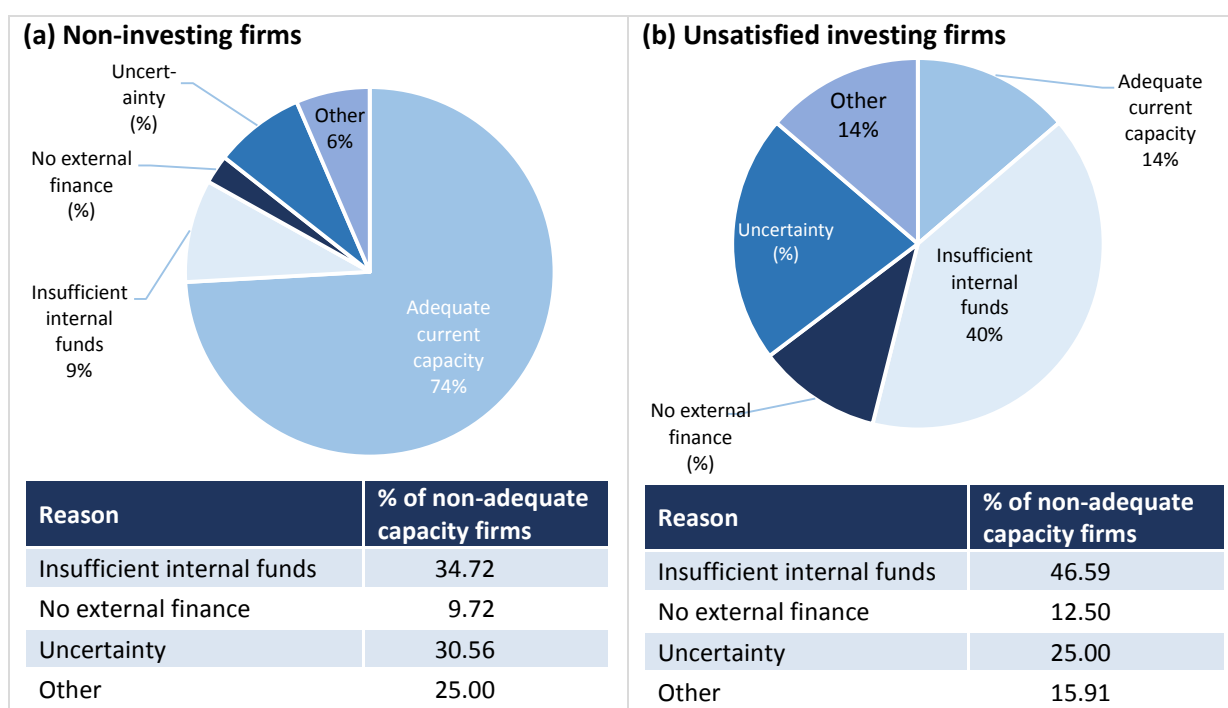
Source: ESRI.

In Figure 11, the statistics previously discussed in Figure 10 are presented for non-investing (Chart (a)) and unsatisfied investing firms (Chart (b)) separately. The percentage of firms that despite having an unsatisfactory capacity did not invest was 26 per cent. Again, the unavailability of internal resources emerged as the main explanatory factor, as for non-investing firms this was main reason behind the lack of investment. In addition, most investing firms reported insufficient internal funds as the motive for their unsatisfactory investment level. An uncertain economic prospect was the next reason in importance for both sub-samples of firms. Difficulties accessing eternal finance appear to be again the least important factor for either not investing or not reaching a satisfactory investment level.

5. EXPLORING INVESTMENT FINANCING AND INVESTMENT PLANNING

After identifying the investment profiles and constraints of Irish SMEs in the previous sections, this section is concerned with the sources firms are using in order to fund investment. The main objective is to identify whether factors such as the costs or the accessibility of the different funding sources might be preventing investment.

The main novelty of the statistics reported in this section is that they provide separated information on the financing sources across different types of assets,

from large (i.e. buildings) to smaller fixed assets. This section also examines the liquidity levels of Irish SMEs in 2016.

FIGURE 12   FIXED ASSETS FUNDING SOURCES
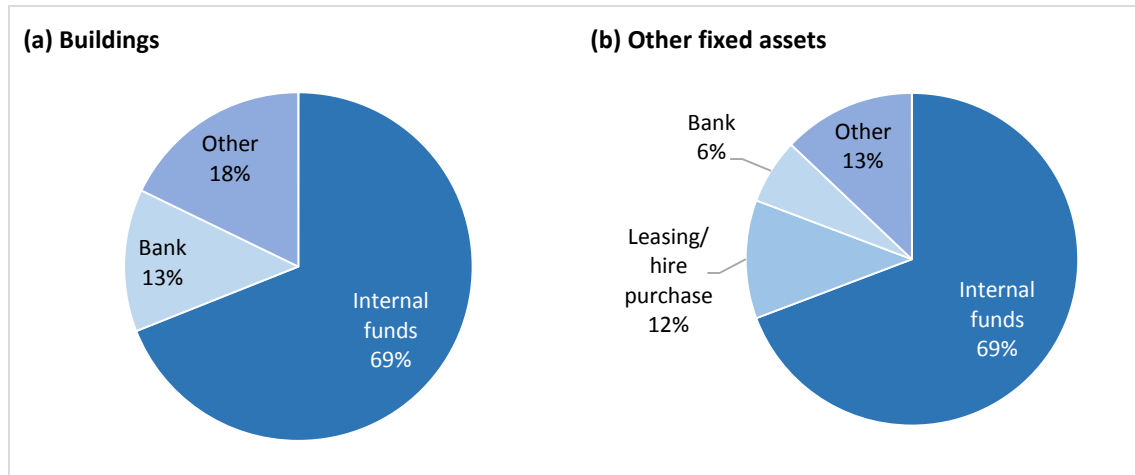
(a) Buildings

- Other 18%
- Bank 13%
- Internal funds 69%

(b) Other fixed assets

- Bank 6%
- Other 13%
- Leasing/hire purchase 12%
- Internal funds 69%

Source: ESRI.
Note: 'Other' category includes owners' contribution, supplier credit or external equity, and leasing-hire purchases for building investment.

Figure 12 displays the percentage of investing firms using different funding sources to cover the costs of investing in large and smaller fixed assets. The majority of firms used internal funds, regardless of the asset type. Larger differences emerge when looking at the use of external financing provided by banks, since 13 per cent of firms resorted to this source of finance to fund building investment as opposed to a much smaller 6 per cent of firms that used this source of finance to fund investment in other types of assets. Overall, Figure 12 suggests that SMEs do not seem to match funding sources and asset nature.

Again, the percentages displayed in Figure 12 for all investing firms are further analysed by different categories in Figure 13. Despite the further breakdown, it is clear that internal funds are the main source of investment funding regardless of the firm category and type of asset.

FIGURE 13   FIXED ASSETS FUNDING SOURCES BY CATEGORY

(a) Buildings

(b) Other fixed assets

■ Internal funds   ■ Leasing/hire purchase   ■ Bank   ■ Other
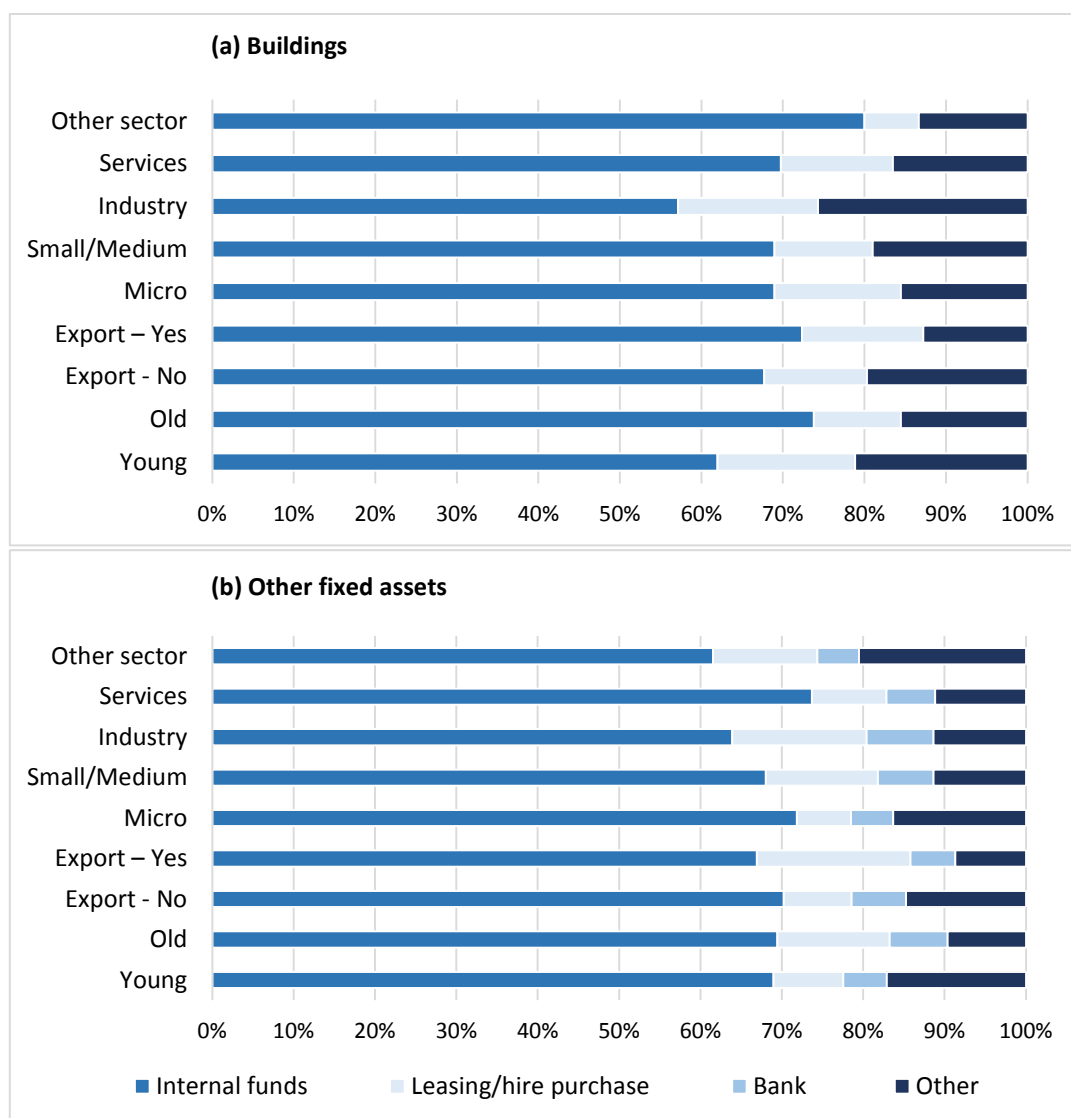
Source: ESRI.
Note: 'Other' category includes owners' contribution, supplier credit or external equity and leasing-hire purchases for building investment. Young firms are defined as those with less than 20 years of operation, and old firms are those with over 20 years of operation.

The largest variation in funding sources for building investment emerges across sectors and age. Bank borrowing was used by larger shares of young and industry sector firms in order to fund investment in buildings. Fewer firms operating in the industry sector used internal funds than in any other category for this type of asset.

Sector categories present again the most variation in funding sources for the case of other fixed assets. Bank borrowing and leasing and hire purchases were used by larger shares of firms operating in the industry sector in order to fund investment in smaller fixed assets.

Given the importance of internal funds as a source of investment financing identified in Figures 12 and 13, the liquidity of SMEs is explored in Figures 14 to 16 and Tables 3 and 4 below.
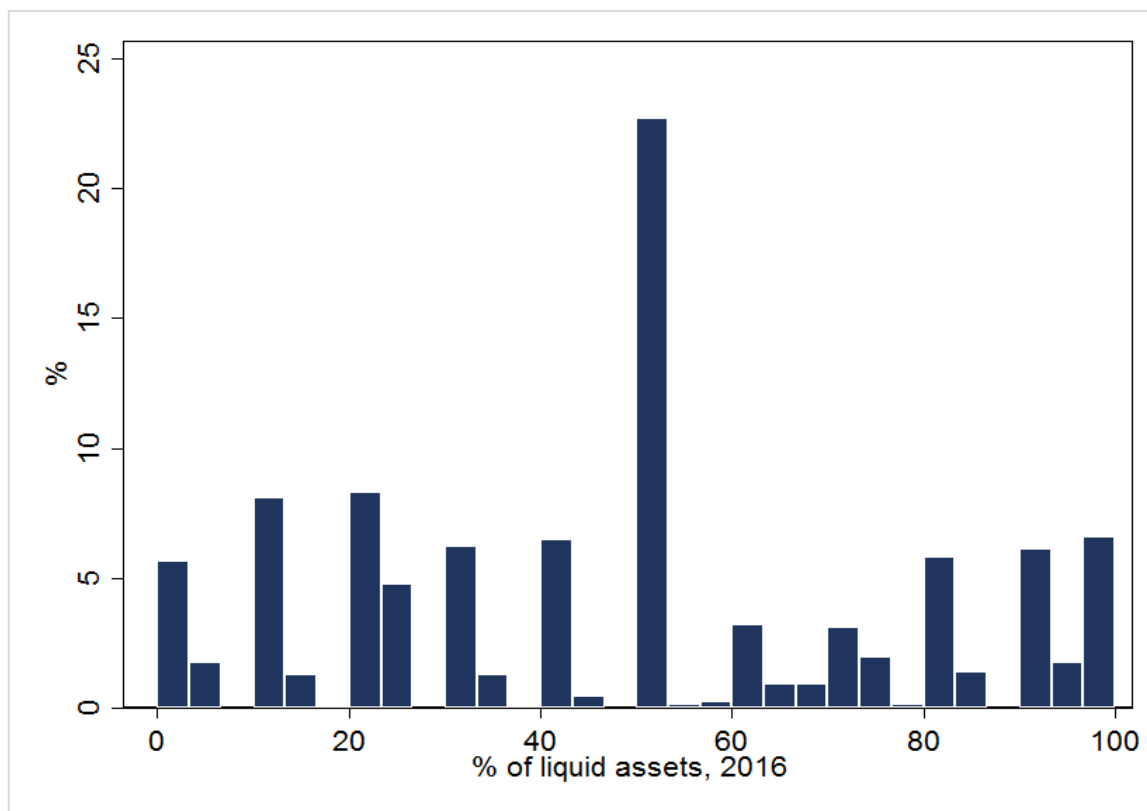
Source: ESRI.

Figure 14 displays the histogram of the distribution of the percentage of liquid assets on total firm assets for all firms. Most firms reported to have at least 50 per cent of assets in the form of liquid assets. A slightly higher concentration of observations below the 50 per cent value can be observed.

According to Table 3, the vast majority of firms, nearly 95 per cent, reported availability of liquid assets in 2016. The average level of liquid assets was €765,493; however the median was €225,000, again much lower than the mean. The distribution of the value of liquid assets across all firms, displayed in Figure 15, is highly skewed to the left indicating a higher concentration of firms around the lower values of liquid assets.

The percentage of firms with liquid assets, and mean and median value of liquid assets, are all higher when considering investing firms only.

FIGURE 15   LIQUID ASSETS LEVEL
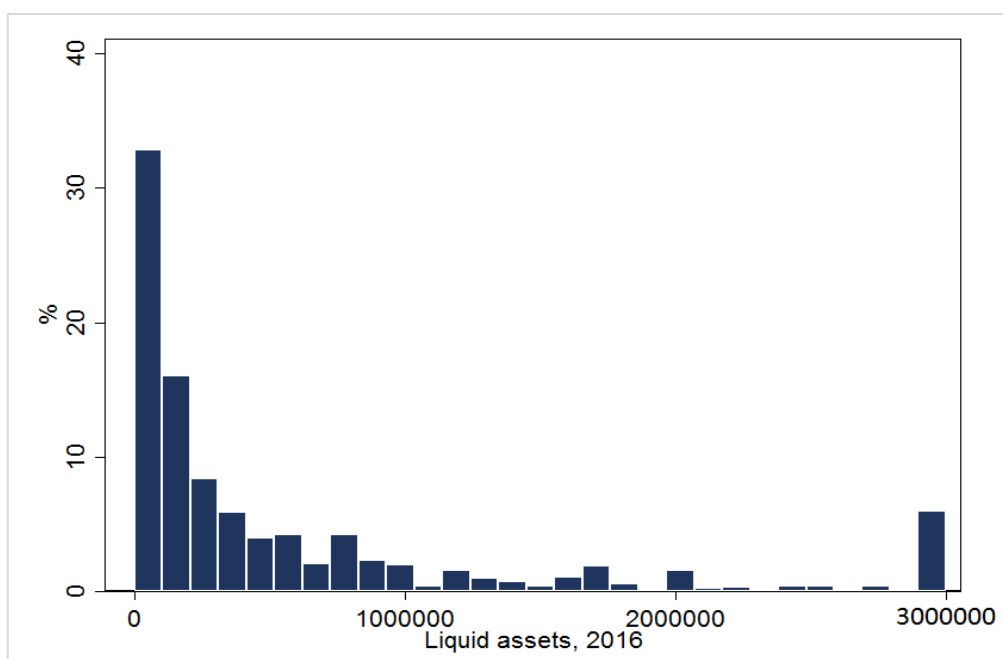
The average values of two different ratios are also reported in the last two columns of Table 3. The first one is the investment-to-liquid assets ratio, which gives an indication of the availability of liquid assets relative to the investments made by investing firms. On average, the value of investments represented roughly 40 per cent of the liquid asset level of both the total sample and investing firms in 2016.

TABLE 3   FIRM LIQUIDITY

	% firms with liquid assets	Liquidity levels		Ratios	
	Mean	Mean	Median	Investment/ Liquid assets	Liquid assets/ Turnover
Total	94.82	765,493	225,000	-	0.35
Investing firms	97.50	897,498	269,000	0.40	0.32

The second ratio is the level of liquid assets over the level of firm turnover in 2016. This can be interpreted as the 'saving' capacity of firms. The average value of this ratio for all firms was 0.35, indicating that liquid assets represented on average about one-third of total turnover in 2016. Unsurprisingly, the ratio is lower on average for investing firms. This ratio is reported by firm category in Table 4 and the distribution for all firms is displayed in Figure 16.

TABLE 4   **LIQUID ASSETS/TURNOVER RATIO BY CATEGORY**

	Liquid assets/Turnover	
	Total	Investing firms
Age category 1	0.28	0.26
Age category 2	0.35	0.30
Age category 3	0.38	0.35
Export – UK	0.39	0.46
Export – Other	0.37	0.34
Export – No	0.34	0.28
Micro	0.38	0.34
Small	0.32	0.30
Medium	0.36	0.33
Industry	0.31	0.29
Services	0.37	0.33
Other sectors	0.34	0.28

Source: ESRI.

The ratio is higher on average for older and more established firms, exporting firms, micro firms and firms operating in the services sector. When investing firms are considered separately, all ratios are on average lower, except for UK exporting firms. For this category of firms, the average ratio of investing firms is higher than for all firms. The distribution of the liquid assets-to-turnover ratio is again skewed to the left.

FIGURE 16   LIQUID ASSETS/TURNOVER RATIO
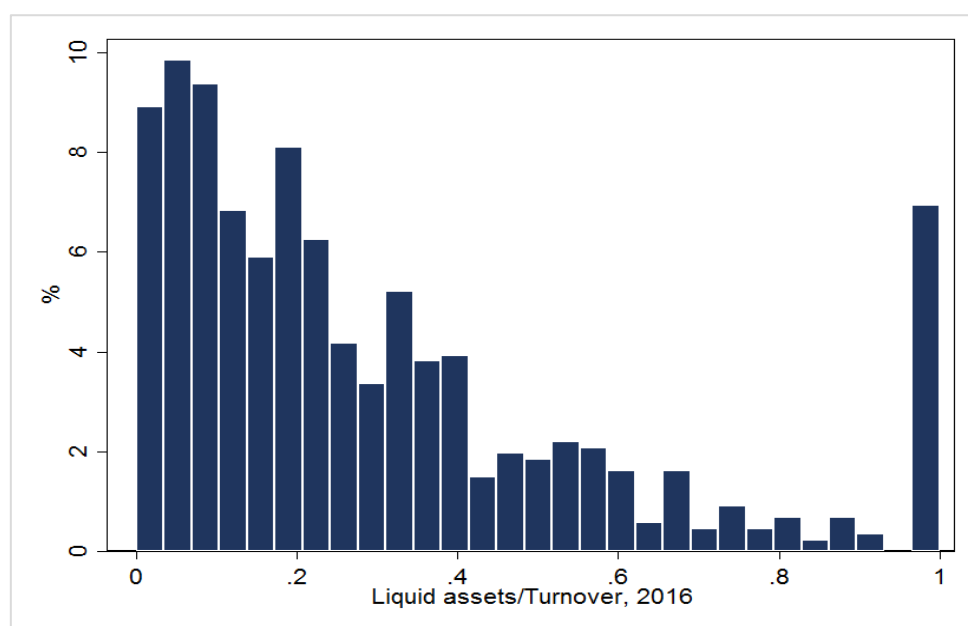
Source: ESRI.
Note: Ratio capped at 1.

The ratio of total investment level to the level of liquid assets in 2016 is also explored in more detail in Table 5. The first two columns display the percentage of firms classified above or below 0.5 ratio value, respectively. The third column displays the percentage of observations for which the value of the ratio is 1 or above.

TABLE 5   INVESTMENT/LIQUID ASSETS RATIO

	0 < Ratio < 0.50	0.50 ≤ Ratio < 1	Ratio ≥ 1
Total	**75.32**	**12.98**	**11.70**
Age category 1	64.79	19.72	15.49
Age category 2	72.53	14.84	12.64
Age category 3	81.11	9.22	9.68
Export – UK	80	11.67	8.33
Export – Other	82.14	4.76	13.10
Export – No	72.7	15.34	11.96
Micro	64.85	18.18	16.97
Small	81	11.31	7.69
Medium	80.95	7.14	11.9
Industry	68.32	14.85	16.83
Services	76.45	12.63	10.92
Other sectors	80.26	11.84	7.89

Source: ESRI.
Note: Age category 1, less than ten years; age category 2, ten to 25 years; age category 3, more than 25 years.

Three-quarters of investing firms had an investment-to-liquid assets ratio lower than 0.50, which indicates that the value of investments made in 2016 represented less than half of their level of liquid assets in the same year. For some firm categories however even higher percentages of firms (above 80 per cent) had a ratio below 0.50, such as for firms operating for over 25 years, exporting firms or small and medium sized firms. This finding suggests a low need for external funds in order to invest.

The third column provides a rough indication of the percentage of investing firms that would not be able to fund their 2016 investments solely resorting to internal resources, therefore requiring external finance sources to cover the level of investment. This is the case for about 12 per cent of all investing firms. Some variation exists however when this figure is disaggregated by firm category. Almost 18 per cent of firms in the micro and industry sector categories have a ratio above 1, suggesting that these types of firms may have higher need for external finance.

TABLE 6   LENGTH OF LONG-TERM DEBT

	Mean	Median	Min.	Max.
Total	**8.59**	**7**	**3**	**60**
Less 10 years	7.74	5	3	60
10-25 years	7.44	6	3	20
More 25 years	9.60	8	3	30
Micro	8.48	6	3	25
Small	8.49	6	3	60
Medium	8.92	7	3	30

Source: ESRI.
Note: Age category 1, less than ten years; age category 2, ten to 25 years; age category 3, more than 25 years.

The low use of external funds is reflected in the prevalence of long-term debt uptake for SMEs in the sample. Almost three-quarters of firms (73.6 per cent) did not have any long-term debt in 2016. Notably, the percentage of firms without long-term debt was slightly higher (76.2 per cent) for firms operating for less than ten years. These firms would have been established predominantly after the financial crisis, and therefore they would not have had debt overhang originating from before the crisis. Table 6 provides an overview of the average length of the long-term debt for the remaining one-quarter of SMEs which had incurred debt. The median debt term was seven years, although variation across selected firm categories can be noted. The median is the lowest for firms operating for less than ten years. It increases with firm age, as well as with firm size.

6. CONCLUSIONS AND POLICY IMPLICATIONS

The new investment and assets module on the credit demand survey was developed to address clear data gaps in our understanding of Irish SME investment activity. A number of important conclusions emerge that provide insight for policy but also suggest additional avenues for future research.

In terms of the patterns of investment across Irish SMEs, it is clear there are considerable differences by the type of asset. Overall 80 per cent of SMEs invested in either staff or other assets. However, this was mainly driven by staff investment which was undertaken by nearly 70 per cent of small and medium companies. The share of companies investing in fixed assets (building, machinery, equipment) was 50 per cent. Only 7 per cent of SMEs invested in intangible assets. The median investment level was €22,000 which represented 20 per cent of the size of total assets of the firm on average. Investment levels were higher for fixed assets (€45,000 median) than for staff or intangibles. Indeed, the median investment level was 4.5 times higher for fixed assets than intangible assets.

A critical element in understanding the SME sector in Ireland is to capture the heterogeneous nature of enterprises. We explore the differences across firms by focusing on a number of characteristics including age, size, exporting status and sector. We summarise some of the key highlights which document these differences (provided in Figures 4 to 7). While older firms invest, the rate of investment (how much the firm invests relative to its total assets) is higher for young firms and micro enterprises. This reflects the fact that while larger firms tend to invest greater volumes in absolute terms, the investments do not represent as large a commitment relative to their existing asset base. Industrial firms invest more than in other sectors, in particular in transport assets. In terms of the trading status of firms, non-exporters displayed higher average investment rates in transport and machinery, but not for buildings. Exporting firms invested on average more in intangibles.

Having profiled investment activity across SMEs, of particular importance from a policy perspective is to ascertain whether or not SMEs are investing sufficiently. We find that just under 80 per cent of Irish firms indicate they are satisfied either with the level of investment they undertook or the capacity they currently have if they didn't invest. This finding holds in general across different asset types and firm characteristics. This suggests a capital gap exists for one-in-five enterprises. Some differences across firms exist with exporters to the UK indicating a lower level of satisfaction. Medium-sized enterprises are the most satisfied with their own capacity.

For those firms that did face a capital gap, the main reasons given were a lack of internal funds (40.6 per cent), uncertainty (26.7 per cent) and other reasons (21.5 per cent). Access to external finance was only suggested as a barrier by 11.2 per cent of the firms with a capital gap. This finding accords with the information we collated on how firms finance their investment. For both building assets and non-building assets, nearly 70 per cent of firms reported the use of internal funds as the main source to fund investment regardless of the asset type. Although external funding provided by banks was found to be used by more firms to fund investment in buildings as opposed to smaller fixed assets, the reliance on internal funds is widespread.

Finally, for the first time using survey data, we collected information on liquid assets. We found a high level of liquid asset holdings amongst Irish corporates with a median of €225,000 representing 35 per cent of turnover on average. Furthermore, we found that taking the average level of investment by firms as a share of liquid assets, only one-in-ten investing firms did not have sufficient liquid assets to cover their investments.

To reflect on where this leaves our understanding of SME investment from a policy perspective, a number of points are noteworthy. It is clear very different patterns of investment exist across types of assets and Irish firms are more focused on investments in staff and fixed assets than intangibles. While intangible assets may reflect a very important component of the Irish economy, in particular for the vibrant multinational sector, they are less of a focus for small Irish companies. Policies to foster investment activity for domestic firms in such assets, where these assets are complementary to their production structure, would be welcome.

Irish firms are funding a high share of investment using internal funds. They also appear to have considerable liquid assets at their disposal. Coupled with the fact that for firms with sub-optimal investment, very few indicate external financing is a barrier; this would suggest any perceived sluggishness in investment appetite may be originating on the demand side rather than the supply side. Indeed, using internal funds for large fixed asset investments is traditionally used as an indicator of constrainedness and evidence of a supply-side market failure. However, in an Irish context, such a perceived lack of investment demand and a low level of borrowing appetite may be down to legacy crisis effects including risk aversion or an unwillingness to become indebted, as opposed to (or in conjunction with) supply-side tightness. In addition, the crisis may have also resulted in reduced consumer confidence in the banking system, and in increased difficulties in the application process such as high application costs and imperfect screening of applicants (Brown and Lee, 2014). It could also be due to the unsuitable nature of the financing products available in the market such as long-term debt finance. Alternatively, recent research in the UK found that some SMEs were 'reluctant borrowers' rather than 'discouraged borrowers' (Brown and Lee, 2014), due to an unwillingness to borrow arising from factors such as a resistance to any outside intervention that might come from banks or other types of lenders.

However, detailed exploration of the issues raised is outside the scope of the analysis performed in this paper and further research is required to identify the nature of these effects. It is clear that given their liquidity levels, Irish firms would have the scope to increase investment if they so wished.

Finally, while our analysis focuses on Irish SMEs, another topic that merits further research is a comparison of our findings with other EU Member States, through the use of alternative data sources such as the Survey on the Access to Finance of Enterprises (SAFE). In addition, a regression analysis would also provide interesting insights in future empirical research on this topic.

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APPENDIX I

The table below contains a list of the variables obtained from the 'Investment activity and company assets' module in the CDS. The variables used to obtain the statistics presented in this article are in bold.

TABLE A.1   VARIABLE DESCRIPTION

Survey variables	Derived variables
Value of total assets, 2016	
% of fixed assets, 2016	Value of fixed assets, 2016
% of liquid assets, 2016	**Value of liquid assets, 2016**
% change in value of total assets from 2015 to 2016	Value of total assets, 2015
Value of turnover, 2016	
% change in value of turnover from 2015 to 2016	Value of turnover, 2015
% of turnover that corresponded to profit/loss in 2016	Value of profit/loss, 2016
% of turnover that corresponded to profit/loss in 2015	Value of profit/loss, 2015
Number of employees, 2016	
Number of employees, 2015	
Value of outstanding debt, 2016	
% change in value of outstanding debt from 2015 to 2016	Value of outstanding debt, 2015
Average interest rate paid, 2016	
Average interest rate paid, 2015	
Average term for long-term outstanding debt	
Value of investment in buildings, 2016	
Value of investment in transport equipment, 2016	
Value of investment in machinery/other equipment, 2016	
Value of investment in intangible assets, 2016	
% change in value of building investment from 2015 to 2016	Value of investment in buildings, 2015
% change in value of transport investment from 2015 to 2016	Value of investment in transport equipment, 2015
% change in value of machinery investment from 2015 to 2016	Value of investment in machinery/other equipment, 2015
% change in value of intangibles investment from 2015 to 2016	Value of investment in intangible assets, 2015
% of building investment related to expansion/growth, 2016	
% of transport investment related to expansion/growth, 2016	
% of machinery investment related to expansion/growth, 2016	
% of intangibles investment related to expansion/growth, 2016	
% of building investment related to expansion/growth, 2015	
% of transport investment related to expansion/growth, 2015	
% of machinery investment related to expansion/growth, 2015	
% of intangibles investment related to expansion/growth, 2015	

Contd.

Building investment satisfaction, 2016	
Transport investment satisfaction, 2016	
Machinery investment satisfaction, 2016	
Intangibles investment satisfaction, 2016	
No investment/Invested less than desired – Reasons, 2016	
Building investment – Funding sources, 2016	
Other fixed assets investment – Funding sources, 2016	
Value of staff training, 2016	
Value of staff training, 2015	
Internal rate of return calculation dummy	
Hurdle rate calculation dummy	
Investment uncertainty level	

Source: ESRI.

APPENDIX II

TABLE A.2A   PERCENTAGES OF INVESTING FIRMS BY CATEGORY

	Total assets	Buildings	Transport	Machinery	Intangibles	Staff
Export – UK	63.39	17.24	39.66	41.74	11.30	74.55
Export – Other	70.00	16.67	32.48	50.96	10.69	74.15
Export – No	46.40	13.94	22.60	32.62	5.83	63.96
Age category 1	45.79	12.31	16.75	40.40	8.63	72.25
Age category 2	50.54	12.16	26.74	31.87	7.26	64.63
Age category 3	53.36	17.55	27.75	37.48	6.01	65.77
Micro	42.25	11.64	22.53	26.71	5.65	43.68
Small	59.40	15.80	30.67	41.60	8.73	80.32
Medium	53.30	18.61	21.59	44.00	5.98	92.34
Industry	54.58	13.89	37.05	39.44	9.06	75.11
Services	49.66	14.68	24.15	33.55	6.35	62.10
Other	51.83	15.23	16.33	39.59	6.44	73.14

Source: ESRI.

TABLE A.2B   INVESTMENT LEVEL AND RATES BY CATEGORY

		Total assets	Buildings	Transport	Machinery	Intangibles	Staff
Export – UK	Mean	105,268	109,250	52,065	64,052	17,385	10,845
	Median	52,000	30,000	30,000	20,000	10,000	5,000
	Rate	0.20	0.23	0.09	0.11	0.07	0.02
Export – Other	Mean	160,718	242,308	62,351	100,318	33,767	22,243
	Median	70,000	200,000	50,000	30,000	20,000	10,000
	Rate	0.18	0.14	0.14	0.08	0.06	0.01
Export – No	Mean	91,850	103,000	49,390	46,330	19,402	9,550
	Median	37,000	35,000	30,000	15,000	10,000	4,270
	Rate	0.23	0.13	0.19	0.11	0.05	0.02
Age category 1	Mean	87,223	89,083	65,546	39,610	23,153	7,693
	Median	45,000	55,000	50,000	15,000	5,000	400
	Rate	0.31	0.25	0.22	0.18	0.06	0.03
Age category 2	Mean	96,530	114,903	49,232	60,622	22,601	11,594
	Median	35,000	25,000	30,000	19,000	10,000	4,270
	Rate	0.25	0.13	0.17	0.11	0.07	0.02
Age category 3	Mean	118,528	137,455	51,057	64,095	20,682	12,876
	Median	50,000	42,500	30,000	20,000	10,000	500
	Rate	0.16	0.11	0.16	0.07	0.04	0.01
Micro	Mean	54,671	66,659	39,022	22,324	9,383	3,441
	Median	20,000	15,000	25,000	8,000	5,000	2,000
	Rate	0.34	0.20	0.28	0.15	0.06	0.03
Small	Mean	101,712	118,395	55,485	52,179	28,095	10,063
	Median	50,000	42,500	40,000	20,000	20,000	5,000
	Rate	0.17	0.12	0.12	0.09	0.06	0.02
Medium	Mean	208,662	210,864	70,888	120,612	29,645	23,197
	Median	120,000	112,000	50,000	50,000	15,000	12,600
	Rate	0.09	0.09	0.03	0.06		0.01
Industry	Mean	119,618	88,143	42,672	93,944	21,152	11,220
	Median	63,000	40,000	30,000	25,000	10,000	5,000
	Rate	0.37	0.23	0.25	0.13	0.05	0.02
Services	Mean	99,962	126,107	57,573	45,428	19,592	10,131
	Median	35,500	30,000	30,000	15,000	6,000	4,000
	Rate	0.18	0.12	0.14	0.09	0.06	0.02
Other sector	Mean	106,814	155,433	45,656	55,833	32,354	16,605
	Median	45,000	55,000	40,000	19,500	20,000	6,000
	Rate	0.17	0.12	0.14	0.10	0.04	0.02

Source: ESRI.

APPENDIX III

The two tables in this Appendix provide information on the characteristics of the sample by sector. In the statistics reported, construction and manufacturing sectors have been grouped in the *Industry* category; and wholesale and retail (W&R), hotels and restaurants (H&R) and professional and scientific (P&S) have been grouped in the *Services* category.

TABLE A.3A   FREQUENCY (NUMBER OF OBSERVATIONS – UNWEIGHTED)

Frequency (no. observations) – Unweighted						
	Construction	Manufacturing	W&R	H&R	P&S	Other
Less than 10 years	22	21	65	44	52	44
10 to 25 years	53	69	167	54	87	103
More than 25 years	63	94	225	50	117	89
Micro	61	60	191	26	128	125
Small	56	81	216	71	83	63
Medium	21	43	50	51	45	48
Export – UK	6	31	52	0	25	14
Export – Other	9	61	38	1	48	28
Export – No	123	88	365	147	181	192
Total	138	184	457	148	256	236

Source: ESRI.

TABLE A.3B   PERCENTAGE OF OBSERVATIONS (UNWEIGHTED)

% of observations – Unweighted						
	Construction	Manufacturing	W&R	H&R	P&S	Other
Less than 10 years	1.55	1.48	4.58	3.1	3.66	3.1
10 to 25 years	3.74	4.86	11.77	3.81	6.13	7.26
More than 25 years	4.44	6.62	15.86	3.52	8.25	6.27
Micro	4.3	4.23	13.46	1.83	9.02	8.81
Small	3.95	5.71	15.22	5	5.85	4.44
Medium	1.48	3.03	3.52	3.59	3.17	3.38
Export – UK	0.43	2.2	3.69	0	1.77	0.99
Export – Other	0.64	4.33	2.7	0.07	3.41	1.99
Export – No	8.73	6.25	25.9	10.43	12.85	13.63
Total	9.73	12.97	32.21	10.43	18.04	16.63

Source: ESRI.