Small shop survival – the financial response to a global financial crisis

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Abstract

Small and medium-sized enterprises (SMEs), many of which are small retail shops, remain the largest employer in the western world. Yet the financing of their fixed and working capital investments remains under-researched. This study focuses on this topic by examining Eurozone

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wholesale and retail SMEs enterprises at the peak of the 2008 financial credit crisis. In order to do this, an innovative analysis of existing theories in retail finance and policy research using generalized multilevel structural equation modelling is performed to establish how retail SMEs sourced capital during this period. This analysis, a first of its kind in wholesale and retail SME research, finds that pecking order theory, the independence of investment and financing, as well as the contest for financial resources between fixed and working capital do not hold for wholesale and retail SMEs. Moreover, it is found that government grants and subsidized loans were not used by SMEs in this sector of the Eurozone as primary sources of finance during the aftermath of the 2008 global credit crisis. Crucially, it is posited that a business environment characterized by stronger legal rights and deeper credit information did not improve SMEs' access to external finance. The authors recommend that further research should be pursued in this field in order to improve current understanding of the resilience of retail SMEs for future global financial crises.

Keywords: SME retail; global financial crisis; European Union.

Introduction

Here we consider the financial adjustments made by Small and Medium-sized Enterprises (SMEs) after the global financial downturn commencing in 2008 – hereinafter financial crisis. The latter initiated a period of policy-making centered on austerity throughout our study area, the European Union (EU), particularly the Eurozone. One response by the financial sector, as experienced in every recession of the last 80 years, was one of much closer examination of loans requested by weaker sectors of the economy. For most countries in our sample, retail SMEs constituted just such a sector. Nor was the financial crisis the sole pressure on retail

SMEs (of which more below). A move to larger store formats from the 1960s, led by the French hypermarché restructured retailing to the detriment of these smaller, especially independent, rivals. That said, as Howe (1992) demonstrated, tens of thousands of retail SMEs had already been lost since World War Two. Whilst a number of European countries enacted protective (Planning) regulations these too, have become less effective (Hallsworth and Evers, 2002; Hallsworth, 2010; Hallsworth and Coca-Stefaniak, 2018). Furthermore, trade lost to the Internet and often to larger rivals with home delivery systems) has further eroded trade in a sector where available statistics are notably poor. Accordingly, one of the first sectors to suffer financially from this economic downturn was retailing, as consumer confidence and spending entered a downward spiral of decline. What we can be sure about is that the above trading pressures will continue and that there will be future recessions. What the financial crisis of 2008 onwards has offered is the chance to look at financing in a recession in order to learn lessons for future recessions. This study focuses on the financial mechanisms adopted by Wholesale and Retail (W&R) SMEs as they sought to remain in business during economic recession. This at a time when they were already under severe pressure from larger rivals. The findings of this study illustrate how public policy affects the financing of SMEs during a major financial crisis. Indeed, it may also carry implications for the present state of the world's economy, particularly given recent concerns voiced about the possibility of further financial turmoil (Wolf, 2018; Elliott, 2018).

The following research objectives were established for this study:

1. To analyze the investment and financing of SMEs in W&R during the most algid period of the global financial crisis in the Eurozone.

2. To evaluate the role of public entities and the existing regulatory framework (including key business regulations) in the financing of fixed and working capital among SMEs during this period in this region, and consequently,

3. To comprehend the influence of country-level differences on the financing of fixed and working capital among SMEs in W&R within the Eurozone.

Literature Review

Evolution in retail research

Over past decades the dominant agenda for many retail researchers has been store format evolution and change (Hallsworth *et al.*, 2006) and attendant policy agendas (e.g. Guy, 1998). The rise of larger store formats such as the hypermarket, superstore or supercenter is also often linked to vastly increased market concentration in western retail markets. Indeed, Serpkenci and Tigert (2010; p61) have suggested that "'there will be but just two retailers remaining in many product-market spaces in North America". Such a duopoly already exists in the Australian grocery retail market, for example. Much large format growth, into which all the then leading operators had rushed (Hallsworth, 1996), has stalled post-2008 and, as a measure to scale back its operations in Britain, WalMart announced in 2018 a proposed merger with rival Sainsburys, which was refused by UK Competition Authorities in 2019. Recent change can also be explained, as noted above, by the rise of the internet retailers and their highly cost-efficient operations. Indeed, a vast range of technology-related innovations, together with their implications, are listed by Grewal *et al.*, (2017).

However, we focus on that 2008 - onwards sub-prime crisis because innovation in retailing carries a basic requirement - to still be in business. Indeed, not all formats have suffered – a climate of austerity has benefited price-focused 'hard discounters' such as Aldi and Lidl. The financial crisis highlighted the fact that many previously-efficient retail corporations struggled for a variety of financial rather than operational reasons. One classic victim of format change has been the smaller (typically sole-proprietor, possibly "mom & pop") retail store – as

evidenced by vacancy rates on many traditional shopping streets. We cannot further pursue wider retail change at this point but instead focus on: how has the smaller format retailer survived financial pressures?

We approach this question by examining various competing theories on how retail SME financing might be obtained. Reliable data on small retail enterprises is, however, extremely difficult to find – and more so when comparing cross-nationally as we do here. Indeed, a UK investigation into the groceries market was seen by many to have elided into a study of supermarkets precisely because data on smaller shops were so poor (Hallsworth, 2010).

Retail and wholesale in the EU

We study W&R SMEs in the Eurozone with the European Union as its wider context. Transparently, the SME sector has developed differently in different parts of the EU. In most EU countries the small shop has for many decades been the most familiar format in fixed-store/non-peripatetic retailing. The dominance of the format, by sheer numbers at least, was largely unchallenged until the 1960s. However, we should note the rise of the *multiple* small shop retailer, in Britain the archetype being J. Sainsbury, founded in the nineteenth century. Multiples came to own many small shops in the UK a pattern repeated across much of the EU. That said, outcomes vary noticeably in different parts of the EU; including the history of support for the small shops that found both multiples and large formats to be powerful competitors. Contextually, discounters such as Aldi and Lidl were nurtured by a German home base that actively sought to promote its SME sector (Wortmann, 2004). Concomitantly, Burt and Sparks asserted (2003; p. 148) "there is insufficient understanding of (…) national differences (…) it would seem that the cultural dimension in company operation is very important in explaining margin and profitability levels (…) market norms (…) condition the capabilities of firms (…) to remain in business". Other studies have contrasted retailing

systems cross-nationally (see, for example, Hallsworth and Evers (2002) and Reynolds and Howard (1993)). Coca-Stefaniak *et al.* (2005) explicitly focused on retail SMEs in a comparative analysis with Spain suggesting that many problems, including poor quality of official data, have been common across Europe. Yet, although employment dropped dramatically between 2008 and 2013, SMEs today still employ 67 in every 100 employees in non-financial economic activities, accounting for 70 per cent of 'retail and wholesale trade' employment (European Commission, 2017).

As noted, Germany has a longstanding pro-SME philosophy that also aided smaller retail firms. In Italy, a strong tradition of support for local shops has only in recent years been eroded. However, where does Brussels fit in this puzzle? The EC's 2017 report seeks a "more efficient and fairer" EU, setting the tone and, unsurprisingly, reflecting Brussels' over-riding desire for integration, with a particular protagonist role for the Eurozone. Yet, the traditional single-unit retailer SME could do little to assist, since it often serves local markets with local products only; reflecting the fact that, for many, retail remains inherently local (Clarke *et al.*, 2006).

France, Germany, Italy and Spain share a common trait in the EU: They belong to the common currency area – the Eurozone. As shown in Figure 1, between 2009 and 2013 wholesale and retail predominated when compared to other relevant sectors in the industrial fabric of the Eurozone. Nonetheless, the larger the turnover, the fewer firms were found to operate in wholesale and retail sector. In fact, 83.56% of companies in the Eurozone in this period had an annual turnover lower than 50 million. Of these, 32.96% were in the wholesale and retail sector, which was central to the economy of the Eurozone region during the financial crisis – a key rationale for this study.

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Insert Figure 1 about here

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The financing of Eurozone W&R SMEs

Against this background, nonetheless, this study focuses on how W&R SMEs in the Eurozone financed their activities to survive one the most significant and global financial downturns in recent history, with a legacy that still lingers today. This research compares the use of internal funds by Eurozone W&R SMEs against a range of external finance possibilities as well as government lending, and their interplay with financial regulations affecting the business environment, including the Strength of Legal Rights and the Depth of Credit Information. We also analyze how fixed capital was financed by Eurozone W&R SMEs in comparison with working capital and inventories (working capital, for short). The time period chosen for this analysis corresponds to a critical stage of the global financial crisis – from the first half of 2009 to the end of 2013. Generalized Multilevel Structural Equation models were developed as part of this analysis drawing from a sample of 21,212 companies grouped at country level. The originality of this study in terms of its contribution to current knowledge in SME financing stems from the analysis carried out of internal versus external financing and investment.

Historically, SMEs have been regarded as drivers of economic development in the EU. Today, 98 out of every 100 non-financial businesses in the EU's twenty eight states (EU28) are SMEs, of which the majority - 93 per cent - are microenterprises. Not surprisingly, the financial crisis created a myriad of problems for the sector. Though many SMEs survived despite limited resources, one of the biggest pressures they faced was access to finance. Scholarly inquiry on the financing of economic activity in the retail SMEs sector has been rather sparse in

comparison with research focusing on large companies (though see Beck & Demirgue-Kunt, 2006).

The general literature on retail change through time is too extensive to cover here. Nevertheless, we have outlined briefly earlier some familiar general trends and influences. Hence, our analysis of published scholarly research focuses instead on less familiar, but relevant, works in capital structure theory. Traditionally, capital structure theory has either assumed size-neutrality or explicitly focused on the financing of larger, publicly-traded, companies; inevitably under-representing SMEs. We apply the agency costs strand of this literature as managers have been generally found to award higher levels of priority to sources of finance that reveal the least amount of information to shareholders (Myers and Majluf, 1984). Hence this agency-principal hypothesis better exemplifies the financing of SMEs because such a separation of roles, where it applies, it is often unclear.

In line with this, pecking order theory postulates that companies tend to favor self-financing internally through profits at the earlier stages of their development. Once this source of financing is no longer viable, companies tend to issue debt. Issuing equity tends to be adopted as a last resort option (Brealey *et al.*, 2017). The theoretical framework adopted in this study, which combines pecking order theory and agency theory, seeks to contrast internal and external financing. Similarly, the study assumes that capital market imperfections reflect the informational opacity of SMEs, which makes access to financing difficult, even through 'main street' banking. The importance of informational opacity in this context was first investigated by Berger and Udell (1998).

Furthermore, our main line of enquiry links to the 'size-blind' stream of the literature, in particular from Almeida and Campello (2010), who found contrasting evidence on pecking order theory. Essentially, low-pay-out, small, and unlisted firms tended to complement internal funding with external funding rather than relying solely on the latter. Conversely, larger firms tend to rely more heavily on external funding with internal funding seldom used as the chief mode of financing development. Effectively, Almeida and Campello's (2010) findings support that that SME investment and financing are not independent, contrary to evidence found by other studies (e.g., Lemmon and Zender, 2010). However, lending to SMEs tends to be different to lending provided to publicly traded businesses. Moreover, in the case of SMEs there is less clear cut separation between ownership and management of the company as owners often run the business. This lack of separation between management and business ownership means that, pecking order theory would easily fall at the first hurdle when applied to SMEs.

Sources of finance for smaller firms are bounded by choices between investment and other finance requirements, such as working capital and inventories. This is of crucial importance in our case as W&R SMEs are particularly susceptible to how working capital is financed. Indeed, studies have shown that working capital has often been used to smooth out fixed investment by offsetting internal funding shortages (Fazzari & Petersen, 1993). In effect, this renders this requirement as a 'competitor' for the same pool of finance. The complexity in this relationship increases when it is considered that working capital and inventories could also complement fixed investment due to hungrier than expected consumer markets (Baños-Caballero *et al.*, 2012). Consequently, we suggest that if fixed investment and working capital were to compete for the same pool of resources, then these would be effectively substitute options, not parallel or complimentary ones.

Nonetheless, the focus of this study remains on gaining a better understanding of if and how government lending and financial regulations affected the financing of fixed investment, working capital and inventories in Eurozone W&R SMEs during the financial financial crisis of 2009-2013. In this respect, this research builds on Beck *et al.'s* (2008) work with a focus on the European Union's Eurozone with relevant country-level variances within this region. More specifically, we seek to understand how financial regulations, under the form of Strength of Legal Rights (SLR) and Depth of Credit Information (DOCI), affected the use of internal funds, and subsequently of external funding sources by wholesale and retail SMEs during the crisis that ensued from the global credit crunch of 2008.

We note (with Steen, 2013), that the financial crisis called for government interventions regarding access to external financing (European Commission, 2013). We also consider how access to government lending (GLD) fared against other sources of finance, including retail banking, investment banking, asset-based financing, and non-intermediated financing (family and/or similar loans). In line with the above, it is posited that a higher than average SLR and DOCI should translate into better access to external finance, thereby diminishing the need for internal funds. Given that access to government funds is meant to be frictionless (Bach, 2014), we also argue that due to the crisis GLD filled the lack of private finance: a substitution effect.

Methodology

The aim of this study is to analyze the investment and financing of SMEs in W&R during the credit crisis, evaluating the role of public entities and the existing regulatory framework (including key business regulations) in the financing of fixed and working capital, as country-level differences within the Eurozone are accounted for. Hence, the following hypotheses will

be tested, seeking to capture relationships between capital structure and business environment in the case of Eurozone W&R SMEs between 2009 and 2013:

Hypothesis 1 (H1): In line with pecking order theory, retail banking, investment banking, asset-based financing and non-intermediated financing were all substitutes of internal financing for wholesale and retail SMEs in the Eurozone, meaning that the odds of using internal financing decreased when these were used.

Hypothesis 2 (H2): Since these are substitutes for internal financing in line with pecking order theory, this means that both fixed and working capital are exogenous to retail banking, investment banking, asset-based financing and non-intermediated financing.

Hypothesis 3 (H3): Fixed capital competed with working capital investment for the same pool of financial sources available to wholesale and retail SMEs, showing therefore inverse likelihood of occurrence.

Hypothesis 4 (H4): Borrowing from external sources was more likely in countries where the Strength of Legal Rights (SLR) was on average higher.

Hypothesis 5 (H5): Borrowing from external sources by wholesale and retail SMEs in the Eurozone was higher in countries where the Depth of Credit Information (DOCI) was on average higher.

Hypothesis 6 (H6): Government lending (GLD) during the financial credit crisis acted as a substitute for private lending in the case of wholesale and retail SMEs in the Eurozone, showing therefore inverse likelihood of occurrence.

To test them, we apply an innovative method in microdata analysis: Correlated random effects in generalised multilevel structural equation modelling. This allows handling of endogeneity

problems when dealing with multiple dependent variables, which is not possible with classic cross-sectional model. A detailed explanation of this methodology is offered below.

Survey Data

This study has used the Survey on Access to Finance of Enterprises (SAFE) database by the European Commission (EC) and the European Central Bank (ECB). The data was drawn from a period starting in the first half of 2009 and ending in the second half of 2013. In addition to this period coinciding with the deepest impact of the 2008 global credit crisis in Europe, the period chosen also avoids the substantial technical changes introduced by the European Commission in the collection of the SAFE from 2014.

This survey sampling was stratified first by country, then by enterprise size class and finally by economic activity (European Central Bank, 2015), which influences the econometric analysis of the data in that the sampling probability was variable and therefore the application of constant sampling probability models would have generated biased estimators. As a result of this, in order to deliver consistent and asymptotically normal estimators, the data is randomised in the econometric modelling by weighting the estimators (Wooldridge, 2007). These weights were applied at both company and country levels.

The company-level data in the SAFE is anonymised using weight values where company size, economic activity, and country macroeconomic performance in the Eurozone were factored in (European Central Bank, 2015). Country-level weights were obtained taking into account the number of firms per country. For this analysis, ten waves were used, though these were treated as independently pooled cross-sections as the core panel data in the SAFE rotates.

The sample included the following countries: Austria, Belgium, Cyprus, Estonia, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Malta, the Netherlands, Portugal, Slovakia, Slovenia and Spain. Latvia and Lithuania were excluded for internal consistency, as these countries joined the Eurozone after 2013. The selection criteria for enterprise size were in line with the definition of SMEs given by the European Commission (European Commission, 2015). Accordingly, three groups were identified: Micro, small and medium-sized enterprises, which enabled further scrutiny of the data by class size.

The main economic activities covered in the SAFE database, as shown in Figure 1, are mining, construction, manufacturing and wholesale and retail. This study focused on wholesale and retail, which represents the largest sector of the economy in the database: 36.62% of GDP compared to manufacturing (27.94%), mining (24.20%) and construction (11.24%). Due to the nature of the data gathering process used for the SAFE database, this breakdown is considered representative of the industrial fabric of the Eurozone, which implies that the wholesale and retail sample used is also representative.

Note that the SAFE database sought to provide evidence of the financing conditions faced by European enterprises regarding demographics and business conditions during the preceding six months (European Central Bank, 2015). For the purposes of this study, the Eurozone was selected instead of the whole European Union, mainly because the data selected provided institutional homogeneity, as Eurozone countries use the *Euro* as common currency and legal tender. Additionally, in terms of regulation, the Eurozone follows a common monetary policy that impacts directly on financial intermediaries governed by the ECB and the European System of Central Banks (the so called "Euro system") (European Central Bank, 2008).

The variables analysed were all categorical, implemented as binaries to denote the occurrence of the response variable, i.e. internal funding (IF), fixed capital (FC), working capital and inventories (WC&I), as well as the occurrence of the covariates, i.e., the four categories and ten subcategories of external finance shown in Figure 2. Other relevant categorical covariates related to the business environment were strength of legal rights (SLR) and depth of credit information (DOCI). Government lending (GLD) is also considered part of external finance.

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Insert Figure 2 about here

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Econometric Models

Building on the research objectives and hypotheses outlined earlier, the overall aim of this study was to understand how wholesale and retail SMEs financed their productive activities during the Eurozone's financial crisis period spanning the second half of 2009 to the end of 2013. Given the nature of the data used for this purpose, the main advantage of applying the econometric method employed here compared to other more traditional statistical methods is that company-level and country-level heterogeneities could be controlled simultaneously.

Correlated random effects were then estimated using hierarchical (multilevel) structural equation models (SEMs) for the following models: Logit, probit, multilogit and multiprobit (generalised multilevel structural equation models - CRE-GMSEMs). The inclusion of country-level estimates in pooled-cross sections was equivalent to estimating the effect of any

variable remaining constant within the clusters, which holds for all second-level variables (Schunck, 2013). This justified the use of correlated random effects (Wooldridge, 2010).

The models were based on the literature on structural equation modelling (Schumacker, 2004; Kline, 2011; Raykov *et al.*, 2011; Rabe-Hesketh and Skrondal, 2006 and Rabe-Hesketh *et al.*, 2004), multilevel analysis (Galwey, 2006; Snijders & Bosker, 2012; Gelman, 2012) and survey sampling (Barnett, 2002; Lohr, 2010; Gerow, 2011). The Stata 15.0 software was used to run a set of models backed up by a merger of these sets of literature. Nonetheless, we mainly applied Rabe-Hesketh and Skrondal (2006) and Rabe-Hesketh *et al.* (2004) to develop the CRE-GMGSEMs.

The rationale behind this choice of methodology rests mainly with the nature of the data, as we worked with independently pooled cross-sections and thus, statistically, with very unbalanced data (Rabe-Hesketh and Skrondal, 2006; Rabe-Hesketh *et al.*, 2004). Secondly, as a result of this decision, and given that the response variables evaluated were qualitative, a generalised framework had to be employed to allow for non-normality assumptions (Rabe-Hesketh *et al.*, 2004). This methodological decision was in line with earlier studies of SME finance using qualitative dependent variable models (e.g. see Degryse *et al.*, 2016; Beck *et al.*, 2008; 2005; Grilo and Irigoyen, 2006; Ou and Haynes, 2006, Levenson and Willard, 2000; Binks and Ennew; 1996; Petersen and Rajan, 1994).

Last but not least, given that endogeneity problems tend to emerge because internal and external financing tend to occur simultaneously, latent variables were employed along other instrumental variables to correct for this, using a SEM technique used by Castro *et al.* (2012),

Folmer and Out (2008) and Kirby and Bollen (2005), where these studies considered time/spatial dependence and specification problems. As regards multilevel analysis carried out, only random intercept models were fitted (Snijders & Bosker, 2012), as it was sought to control mainly country-level differences within the Eurozone, which were parametrised in the variability of the dependent variables. It is precisely this enhancement of multilevel modelling that makes CRE-GMSEMs innovative in the analysis of SME financing, which we consider ground-breaking in the area of SME financing research, and unique in wholesale and retail.

Based on the conceptual framework developed in the literature review, twelve models were fitted as part of this analysis: Three models of internal funding versus external funding, three models of fixed capital versus external funding, three models of working capital and inventories versus external funding and three substitution effect models. Except for the substitution effect models, the remaining models were specified in terms of external funding, which basically stood for two groups of financial sources: Intermediated and non-intermediated financing, as shown in Figure 2. The study also analysed the influence on the financing of W&R SMEs of the strength of legal rights (SLR), depth of credit information (DOCI) and government lending (GLD), along with stand-alone firm-size (micro, small and medium), and the interactions of these with relevant covariates to control for size effects.

The CRE-GMSEMs displayed in Tables 3 to 6 were based on the following functions (Drukker, 2014; Snijders & Bosker, 2012):

$$E[Y_{ij}|\mathbf{X}, \mathbf{Z}] = F\big(\alpha_{00} + \beta_{0j} + \alpha_{10}x_{1ij} + \cdots + \alpha_{p0}x_{pij} + \beta_{10}z_{1ij} + \cdots + \beta_{p0}z_{pij} + \gamma_{01}v_{1j} + \eta_{ij} + \varphi_{ij}\pi_{ij} + \mu_{1j} + \xi_{ij}\big) > 0$$

$$E[z_{ij}|\mathbf{W}] = G\big(\delta_{00} + \delta_{10}w_{1ij} + \cdots + \delta_{p0}w_{pij} + \lambda_{ij}\eta_{ij} + \pi_{ij} + \epsilon_{ij}\big) > 0$$

where

E[ ]: Expected value

F( ) and G( ): Non-linear functions

Y_{ij}: Response variable at firm level

$x_{1ij} + \cdots + x_{pij}$: Exogenous covariates (**X**) at firm level

$z_{1ij} + \cdots + z_{pij}$: Endogenous covariates (**Z**) at firm level

$w_{1ij} + \cdots + w_{pij}$: Instrumental variables (**W**) at firm level

v_{1j}: Country-level variable

η_{ij}: Latent variable

π_{ij}: Correlated Random Effects term

ξ_{ij} and ϵ_{ij}: Firm-level error terms

μ_{1j}: Country-level error term

$\alpha, \beta, \gamma, \varphi, \delta, \lambda$: Coefficients

$\eta_{ij} \sim N(0,1)$

$\pi_{ij} \sim N(0,1)$

ξ_{ij}, $\epsilon_{ij}, \eta_{ij}, \pi_{ij}, \mu_{1j}$ are all mutually independent

Analysis of results

General features

In line with the external finance classification outlined in Figure 2, Table 1 shows a range of indicators for the whole Eurozone. In line with Figure 2, micro, small and medium-sized enterprises tended to use retail banking more often than non-intermediated financing, as both categories accounted for over a half of the total SMEs' financial sources. Remarkably internal

funding was used less than these two categories, though more than asset-based financing, government funding, or investment banking. Table 1 itemizes and ranks by deciles the sources of finance into the ten subcategories described above in the methodology. Here it becomes evident that internal funding was never the first source of finance. In fact, it was at best the third choice in line for micro firms and fourth for small and medium-sized enterprises. Note that the median clearly divides the ranking into two groups: The first five subcategories, in which trade credit consistently ranks fifth across the three SME size groups, and the rest of subcategories. The analysis also shows that for all SME groups studied government financing was consistently ranked sixth across all 17 countries evaluated.

Multilogit intercept models were also run applying company-level (not country-level) GMSEMs in table 2, which corroborated the descriptive ranking results in Table 1, where coefficients are the log of the odds. When this is considered as a whole, Model 1 in table 2 mirrors the decile results for the entire sector outlined in Table 1, whereas in Models 2 to 4 for micro, small and medium-sized enterprises, respectively, minor discrepancies are found between the second, third and fourth places. Interestingly, in table 2, internal funds dropped to fourth place for micro firms, remained in fourth place for small firms, and rose to third place for medium-sized firms. Consequently, pecking order theory did not seem to apply throughout the period considered here.

More Econometric Results

Importantly, the asset-based financing model did not converge for the internal funding model. As a result of this, it was not possible to determine H1, which by default implies that testing H2 was not feasible either for asset-based financing. This could be interpreted as a stylized fact, bearing in mind that SME-level W&R activity tends to be less capital-intensive than in

other sectors of the economy. As a result, this study excluded asset-based financing from the final outcomes. Tests related to the endogeneity and country-level statistical significance of models 5 to 13 are presented in the Appendix.

Models 5 to 14 are all logit models, except for Model 9, which is a probit model. Model 15 is a multi-probit and model 16 is a multi-logit. As part of this analysis, it must be noted that Tables 3 to 6 report all but the intercept and stand-alone firm size parameters. In Models 5-14 we show the estimated coefficients, while Models 15 and 16 report the F-statistic of the joint tests. Due to the presence of interaction effects in these three tables, only the predicted probabilities of significant estimates were analyzed. In terms of goodness of fit, according to the adjusted Wald tests, all models were significant at 5%.

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Insert Table 1 about here

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Insert Table 2 about here

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With respect to H1, in Models 5 to 7 (Table 3) the evidence is mixed. According to these results, SMEs that used bank loans (Model 5) were approximately 23% less likely to use internal funding. Instead, they chose to employ both as substitute sources of finance. On the other hand, all SMEs were found to use equity (Model 6) and trade credit (Model 7) as complements to internal funding. They were approximately seven times more likely to apply equity (Model 6) and up to 2.62 times more likely to employ trade credit (Model 7), when employing internal funds. Consequently, H1 does not hold, which means that during the period of time analyzed

in this study, W&R SMEs in the Eurozone tended to use internal and external financing both as complements and substitutes.

With regard to H2, there is evidence (see Models 8 to 10 in Table 4) that fixed investment was likely to be financed through the use of bank loans, bank overdrafts/credit lines, equity, mezzanine financing, trade credit (particularly prevalent among microenterprises) and private loans from friends and/or family. In Models 11 to 13 (Table 5), there is also evidence that working capital was more likely to be financed mainly by trade credit (also particularly prevalent among microenterprises) and private loans from friends and/or family, but less likely through mezzanine financing. Therefore, H2 did not hold either because either fixed or working capitals were sensitive to external financing, making them endogenous to financing decisions. Therefore, the results obtained for H1 and H2 did not lend support to the conceptual underpinnings of pecking order theory.

Insert Table 3 about here

Insert Table 4 about here

H3 did not hold either because according to Model 14 (Table 6), fixed capital did not compete for the same pool of sources of finance with working capital during the period of time considered in this study. In fact, there was a rising probability - of up to three times - of making

working capital disbursements as fixed capital investments were carried out. This result reveals that working capital was not used to smooth fixed investment during this period.

According to Model 15 (Table 6), in countries where the SLR was above average, evidence was also mixed, since micro enterprises were likely to employ fewer external sources, with up to approximately 35% chance, whereas SMEs as a whole were in average up to 37% more likely to use external sources. Hence, H4 does not hold. However, this study found that Eurozone W&R micro enterprises were less prone to borrow from external sources even in countries where collateral and bankruptcy laws were relatively more solid, which could be due to the inertia of the financial credit crisis or other underlying institutional factors.

Predicted probabilities in Model 15 show that, for countries where the DOCI was above average, evidence was mixed too, since even though all Eurozone W&R SMEs did not use external sources with a 30% higher probability (in particular, medium-sized enterprises), evidence for micro and small firms was inconclusive. Therefore, there is no support for H5 either, so when these companies borrowed money, they were less prone to borrow from external sources even in countries where credit information systems were relatively sound, potentially due to the same reasons outlined earlier for H4.

H6 failed to hold too, as can be induced from Model 16's predicted probabilities. The analysis showed that government and private lending were complementary for all SMEs studied here, except when small firms were considered in isolation. During this period of the financial credit crisis, government financing tended to be a complement rather than a substitute for external financing. Nevertheless, it is curious to see how smaller firms collectively were generally more prone to use it as a substitute.

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Insert Table 5 about here

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Insert Table 6 about here

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Apart from testing these six hypotheses, the analysis outlined in Tables 3 to 6 also took into account country differences across the Eurozone. After controlling for country level differences in Eurozone W&R SMEs in Table 3, we found that there were significant differences between countries in this trade area regarding the use of internal financing when retail banking (Model 5) and non-intermediated financing (Model 7) were also considered. In Table 4, there were also significant differences between Eurozone countries with respect to fixed capital investments when these were financed with either Investment Banking (Model 9) or Non-Intermediated Financing (Model 10). A similar issue arose with regards to working capital (Models 12 and 13) in Table 5, where SMEs in these countries also applied investment banking or non-intermediated financing differently. Non-intermediated financing was consistently differentiated across the Eurozone W&R SMEs when it came to the application of internal funds, working and fixed investment.

Analytical Implications

The rejection of hypothesis 1 translates into the existence of no priority sources in the capital structure of these firms, because complementarity implies that internal and external finance could be applied simultaneously. On the other hand, the rejection of hypothesis 2 means that

both fixed and working capital could not be funded entirely internally. Therefore, complementarity of internal with external financing was sought after at this stage of the crisis.

Furthermore, we have found evidence that capital investment was endogenous to capital structure decisions, thereby weakening pecking order theory as an explanation of how these W&R SMEs financed their activities during the period under study. In fact, we have shown that fixed investments depended on financing decisions. These results are at odds with Lemmon & Zender (2010) and Lopez-Gracia & Sogorb-Mira (2014), but lend straightforward support to Almeida and Campello (2010).

On the other hand, according to this data fixed and working capital did not compete for limited financial sources during the crisis. This differs from Fazzari & Petersen (1993), getting us closer to Baños-Caballero et al (2012; 2010), since we have already discarded H1 and H2, which means that the complementarity of internal and external funding may explain the complementarity of working and fixed capital, highlighting so the lack of profitability, at least during recession periods. It is also noticeable that, in contrast to Intermediated Financing, non-intermediated financing categories, namely trade credit and family/friend loans, were used by all W&R SMEs to finance working and fixed investment along with internal funding. In some respects this also underlines the secondary role of the banking system during the period and the fact that non-intermediated financing was differentiated but employed across the Eurozone consistently, lending this way support to the results of McGuiness and Hogan (2016), who found that trade credit acted as a substitute of bank credit in the aftermath of the crisis.

In terms of business regulations, when we analysed the impact of SLR and DOCI on capital structure, we discovered that the access to external finance tended to decline even in countries where these were in average more effective. This can be seen in light of the credit crisis as an instance of how, in general during periods of recession, credit is less accessible to SMEs even in countries where collateral and bankruptcy laws are better designed to protect lenders and better credit information is available. This relates to the SME's informational opacity in section 2 typified, which negatively feedbacks due to the firm's lack of access to credit and thus resources to gain informational clarity, subsequently creating a vicious circle more difficult to overcome during recession periods. In this respect, ours results highlight Mac and Bhaird *et al.*'s (2016) results, but within the wider context of capital structure analysis.

During the deepest of the credit crisis, when governments throughout the Eurozone intervened by supplying grants and/or subsidised bank loans to W&R SMEs, according to our results these were seen as complementary to external financing and complementary to internal funding when investment banking and non-intermediated financing were also applied. In fact, government lending tended to be used when retail banking and investment banking were employed to finance fixed investments. Our unique contribution to the literature through this paper then resides on having shed some light on how this type of governmental interventions influenced financing and investment in SMEs during this period in Eurozone W&R.

Conclusions

This study has established that during the financial crisis the capital structure of wholesale and retail SMEs depended on both fixed investment and working capital as well as inventory investments. This flows from an analysis of three key streams of external sources of finance, namely retail banking, investment banking and non-intermediated financing. A comparison of

the use of these sources with internal funding revealed that pecking order theory does not hold as a capital structure strategy for SMEs in the wholesale and retail sector. The analysis carried out in this study also showed that fixed capital, working capital and inventories were all simultaneously financed by SMEs internally and externally. This reflects the ambiguities of managerial and shareholding functions that typify SMEs. Coincidentally, non-intermediated financing tended to be more successful among these firms.

That said, a major finding of this study was that in countries where better lender protection legislation and sounder credit informational systems existed, W&R SMEs did not benefit from better access to finance. In fact, government grants and subsidized bank loans were used by SMEs to carry out fixed capital, working capital and inventory investments and complement existing internal funding. Hence, on the basis of the findings of this study, it is recommended that governments in the Eurozone and elsewhere should support the financial resilience of SMEs more effectively by developing business regulations that encourage longer-term business planning and incentives, not just by supplying short-term credit to SMEs via grants or subsidized loans. One way of achieving this would be by linking any form of government lending to information systems and national policies that actively assist entrepreneurs to strengthen their financial profiles by assisting corporate value enhancement.

In spite of this, we are aware that inter-sectoral differences in the sourcing of finance do exist and may have introduced a certain element of bias into the data set used for this study. For instance, in the United Kingdom - which was not part of this analysis -, there is a very significant sector of small retail (and wholesale) run by entrepreneurs of south Asian ethnic origin. As a result of their specific business culture, these SMEs will tend to consistently prioritize private sources of finance from friends, family and personal contacts to a much higher

degree than other SME businesses in the UK. However, no research exists to date to show whether this funding strategy endured the period of post-sub-prime austerity policies, so it is recommended that further studies should address this in the UK and elsewhere for this special demographic group of SME business owners.

A further limitation affecting this study was the fact that the SAFE data, conceived as a homogeneous body, was constrained to the 10 waves run between the first half of 2009 and the end of 2013. As the data collection method employed similar sampling and compilation methodologies only during that period, the analysis had to be constrained to that period only. Furthermore, the type of econometric modelling carried out as part of this study tends to be highly resource intensive, so even though Structural Equation Modelling has almost limitless possibilities, we have used here it merely to control for endogeneity problems in the multilevel context; therefore, more complete specifications did not converge and had to be discarded. So even though the application of CRE-GMSEMs is useful, there are power constraints to it.

Although the analysis performed as part of this study focused on wholesale and retail SMEs - the largest economic sector in the SAFE data set -, future research should aim to attain a wider understanding of the phenomena investigated here and expand the analysis to countries outside the Eurozone and beyond. Similarly, a cross-sectoral analysis of the same issues with SMEs from different economic sectors of the Eurozone would also help to shed light on the generalizability of these results beyond the wholesale and retail sector and help to formulate relevant comparisons between key sectors of the economy where SMEs remain a key source of private sector employment.

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IDGE

Turnover per Economic Activity in the Eurozone 2009-2013
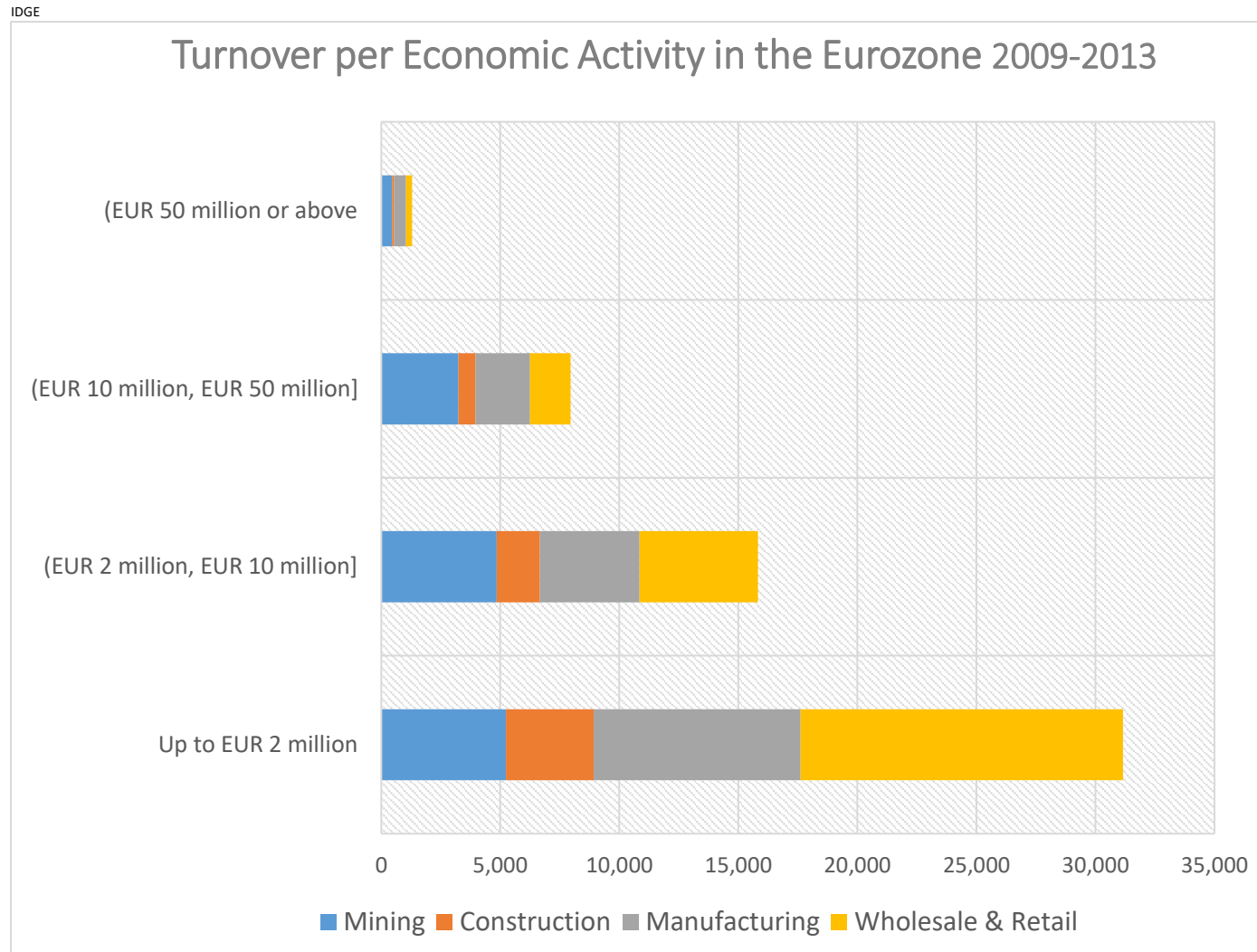
Figure 1. Turnover per Economic Activity in the Eurozone between 2009 and 2013.

Source: SAFE data

$$
\textit{External Finance}
\begin{cases}
\textit{Intermediated}
\begin{cases}
\text{Retail banking (RB)}
\begin{cases}
\quad\text{Bank Loans} \\
\text{Bank Overdrafts/Credit Lines}
\end{cases} \\[2em]
\text{Investment banking (IB)}
\begin{cases}
\qquad \textit{Equity} \\
\textit{Debt Securities} \\
\textit{'mezzanine' financing} \\
\textit{(intermediate between} \\
\textit{Equity and Debt})
\end{cases} \\[3em]
\text{Asset} - \text{Based Financing (ABF)}
\begin{cases}
\text{Leasing} \\
\text{Hire Purchase} \\
\text{Factoring}
\end{cases}
\end{cases} \\[6em]
\text{Non} - \text{intermediated Financing (NIF)}
\begin{cases}
\quad\text{Trade Credit} \\
\text{Family/friend Loans}
\end{cases}
\end{cases}
$$

Figure 2. External business finance classification

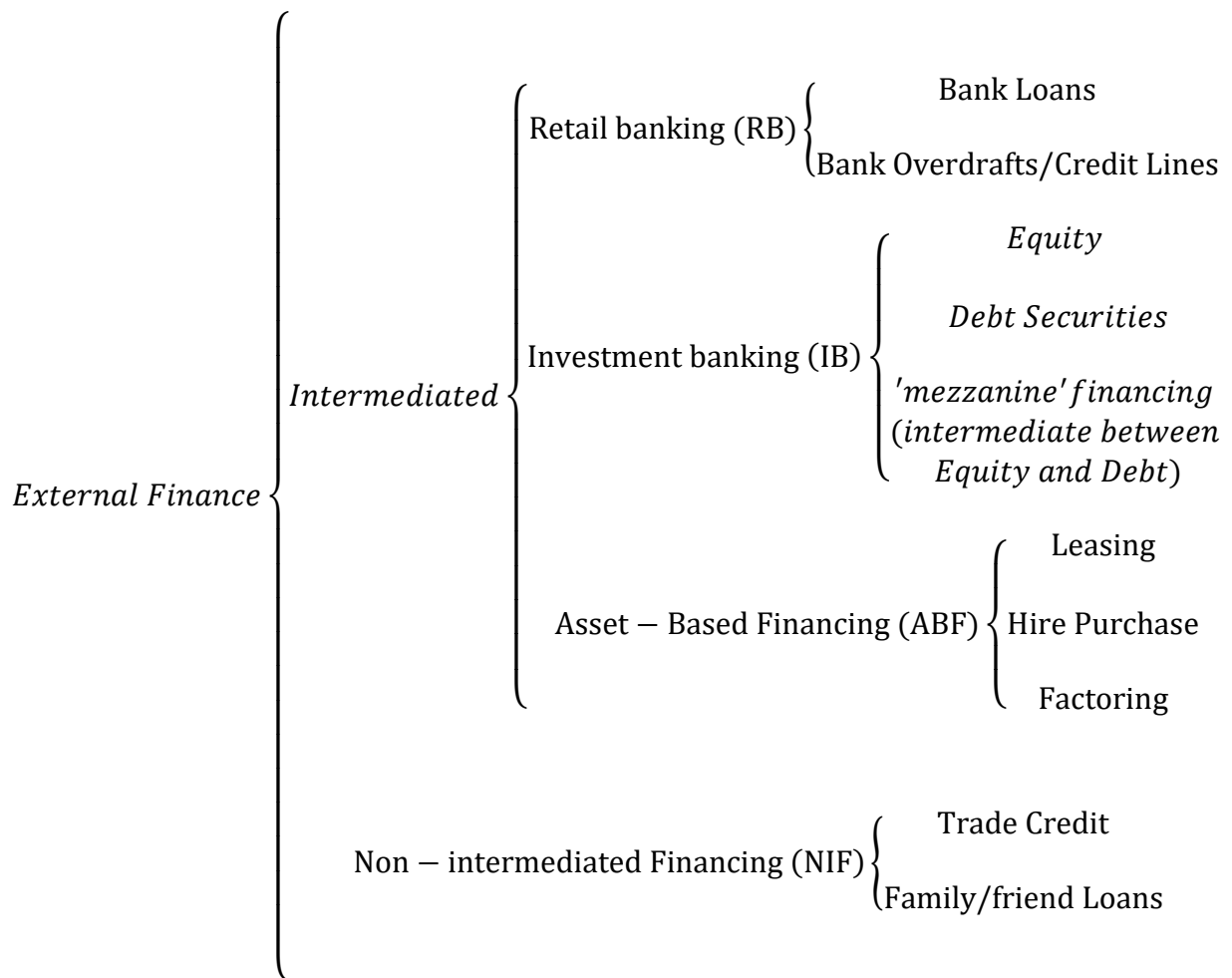| Decile Rank	Micro firms	Total	Small firms	Total	Medium-sized firms	Total	All SMEs	Great Total
1	Bank overdraft and similar	5176	Leasing, hire-purchase or factoring	2345	Leasing, hire-purchase or factoring	914	Bank overdraft and similar	7942
2	Bank loan (new and renewal)	3899	Bank overdraft and similar	2029	Bank loan (new and renewal)	820	Leasing, hire-purchase or factoring	6824
3	Internal Funds	3807	Bank loan (new and renewal)	2022	Bank overdraft and similar	737	Bank loan (new and renewal)	6741
4	Leasing, hire-purchase or factoring	3565	Internal Funds	1672	Internal Funds	711	Internal Funds	6190
5	Trade Credit	3129	Trade Credit	1615	Trade Credit	646	Trade Credit	5390
6	Grants and subsidised bank loans	1694	Grants and subsidised bank loans	961	Grants and subsidised bank loans	370	Grants and subsidised bank loans	3025
7	Non-intermediated financing (eg. , loans from family and friends)	1398	Non-intermediated financing (eg. , loans from family and friends)	732	Non-intermediated financing (eg. , loans from family and friends)	269	Non-intermediated financing (eg. , loans from family and friends)	2399
8	Equity	679	Equity	317	Equity	127	Equity	1123
9	Mezzanine financing	239	Mezzanine financing	170	Mezzanine financing	64	Mezzanine financing	473
10	Debt securities	156	Debt securities	109	Debt securities	46	Debt securities	311
Median		2412		1288		508		4208

Table 1. Decile ranking of financial source usage in Eurozone SMEs between H1 2009 and H2 2013

Table 2

Financial source rankings multilogit firm-level results at 1.00% significance

	Financial sources	Model 1: $Micro_i$	Model 2: $Small_i$	Model 3: $Medium_i$	Model 4: All $SMEs_i$
ALLEXFIN	Internal funds$_i$	3rd	4th	3rd	4th
$EXFIN_i^1$	Bank loans$_i$	2nd	2nd	2nd	3rd
$EXFIN_i^2$	Bank overdrafts$_i$	1st	3rd	4th	1st
$EXFIN_i^1$	Equity$_i$	8th	8th	8th	9th
$EXFIN_i^2$	Debt securities$_i$	10th	10th	10th	10th
$EXFIN_i^3$	Mezzanine financing	9th	9th	9th	9th
$EXFIN_i^1$	Trade credit$_i$	5th	5th	5th	5th
$EXFIN_i^2$	Family and/or friend loans$_i$	7th	7th	7th	7th
	Grants and subsidised loans$_i$	6th	6th	6th	6th
	Leasing, hire, purchase or factoring$_i$ [a]	4th	1st	1st	2nd

[a] Excluded from tables 3 to 6

Table 3

CRE-GMSEMs: Internal funding vs. External funding - Firm-level results

	$EXFIN_i^1$	$EXFIN_i^2$	$EXFIN_i^3$	$EXFIN_i^2 x Mic_i$	$EXFIN_i^2 x Sml_i$	$EXFIN_i^2 x Med_i$	SLR_i	$SLR_i x Mic_i$	$SLR_i x Sml_i$	$SLR_i x Med_i$	$DOCI_i$	$DOCI_i x Mic_i$	$DOCI_i x Sml_i$	$DOCI_i x Med_i$	GLD_i	$GLD_i x Mic_i$	$GLD_i x Sml_i$	$GLD_i x Med_i$	Adj-Wald test
Model 5: $INFINRB_i$	0.1503***	0.1998	___	-0.1647	-0.2601	-0.1310	0.8127***	-0.5144***	-0.2427**	0.1583	-0.2774	0.4518*	0.4248**	0.0518	0.5694	-0.1791	-0.1746	-0.1432	75819***
Model 6: $INFINIB_i$	1.7314***	0.0750	0.1515	-1.3359***	-1.2510***	-0.7839***	0.6649***	-0.4165*	-0.1183	0.2613*	-0.3393**	0.5199**	0.4772***	0.0532	0.8503***	-0.4319	-0.4293	-0.3764	5.6×10^7***
Model 7: $INFINNIF_i$	3.1472***	1.5412***	___	0.6906*	0.7995	0.7587	2.1302***	0.5282***	0.7536*	1.0768	0.6228***	1.9473***	1.6733***	1.1638	1.8893**	0.8461	0.8008	0.8700	150532***

*10.00% significance; **5.00% significance; ***1.00% significance

Table 4

CRE-GMSEMs: Fixed Capital vs External Funding - Firm-level results

	$EXFIN_i^1$	$EXFIN_i^2$	$EXFIN_i^3$	$EXFIN_i^1 x Mic_i$	$EXFIN_i^1 x Sml_i$	$EXFIN_i^1 x Med_i$	SLR_i	$SLR_i x Mic_i$	$SLR_i x Sml_i$	$SLR_i x Med_i$	$DOCI_i$	$DOCI_i x Mic_i$	$DOCI_i x Sml_i$	$DOCI_i x Med_i$	GLD_i	$GLD_i x Mic_i$	$GLD_i x Sml_i$	$GLD_i x Med_i$	Adj-Wald test
Model 8 $FCRB_i$	1.1222***	0.9995	___	2.4685***	2.1569***	2.5610***	-0.1967	0.0269	-0.0338	-0.3441	-0.8643	0.4018	0.5325	1.0549	1.1787*	-0.6312	-0.0224	-0.1836	40.11***
Model 9 $FCIB_i$	1.9848***	0.1981	0.5085***	0.3129***	0.1099	-0.0176	-0.0301	0.0269	0.0362	-0.1757	-0.7409*	0.3645	0.3760	0.6571	0.8192***	-0.3076	-0.0127	-0.0943	691,019***
Model 10 $FCNIF_i$	4.7714***	1.8662***	___	3.1109	2.9323	2.9689	0.5334	-0.6827	-0.6958	-1.4491	-2.7877	1.6068	1.5980	2.4311	1.9744	-0.2498	0.6727	0.6564	26508***

*10.00% significance; **5.00% significance; *** 1.00% significance

Table 5

CRE-GMSEMs: Working Capital vs External Funding - Firm-level results

	$EXFIN_i^1$	$EXFIN_i^2$	$EXFIN_i^3$	$EXFIN_i^1 x Mic_i$	$EXFIN_i^1 x Sml_i$	$EXFIN_i^1 x Med_i$	SLR_i	$SLR_i x Mic_i$	$SLR_i x Sml_i$	$SLR_i x Med_i$	$DOCI_i$	$DOCI_i x Mic_i$	$DOCI_i x Sml_i$	$DOCI_i x Med_i$	GLD_i	$GLD_i x Mic_i$	$GLD_i x Sml_i$	$GLD_i x Med_i$	Adj-Wald test
Model 11 $WCRB_i$	0.4000 ***	0.4263	___	0.4044	0.3613	0.5333	8.2635 *	-0.3029	-0.3716	-0.3321	-6.4813 *	0.6833 ***	0.8767 ***	1.1600 ***	0.1916	0.1297	0.1371	-0.0191	75265 ***
Model 12 $WCIB_i$	-0.4586	0.1882	0.4336 **	0.2556	0.6307	0.0843	0.6760	-0.4127	-0.5366 **	-0.5125	-2.0187 ***	0.7950 ***	1.1203 ***	1.3861 ***	0.2343	0.2740	0.3144	0.1383	1.8x10⁶ ***
Model 13 $WCNIF_i$	4.2350 **	1.4259 ***	___	2.8644 **	2.7152 **	3.2001 **	0.3244	-0.1087	-0.4780	-0.5582	-3.4718 ***	1.2497 **	1.9562 ***	2.3466 ***	0.8819	0.1003	0.1492	-0.3560	211,625 ***

* 10.00% significance; ** 5.00% significance; *** 1.00% significance

Table 6

CRE-GMSEMs: Substitution effect models - Firm-level results

	FC_i	FC_ixMic_i	FC_ixSml_i	FC_ixMed_i	SLR_i	SLR_ixMic_i	SLR_ixSml_i	SLR_ixMed_i	$DOCI_i$	$DOCI_ixMic_i$	$DOCI_ixSml_i$	$DOCI_ixMed_i$	GLD_i	GLD_ixMic_i	GLD_ixSml_i	GLD_ixMed_i	Adj-Wald test
Model 14: WC_i	0.9821 ***	0.3472	0.2604	-0.0866	0.2993	-0.3401	-0.4560 *	-0.4343	-0.0474	0.6746 **	1.0005 ***	1.2146 ***	0.2400	0.1756	0.0492	-0.0145	3392 **
Model 15 [a]: $AllEXFIN_i^1$	___	___	___	___	77.83 ***	650,000 ***	470,000 ***	$1.5x10^7$ ***	169.85 ***	$1.3x10^8$ ***	$2.2x10^6$ ***	$8.5x10^5$ ***	___	___	___	___	1559 **
Model 16 [b]: $AllEXFIN_i^2$	___	___	___	___	___	___	___	___	___	___	___	___	180.58 ***	$2.2x10^5$ ***	180.58 ***	$2.6x10^5$ ***	$8.5x10^5$ ***

[*] 10.00% significance; [**] 5.00% significance; [***] 1.00% significance

[a] Coefficients are the F-statistics of the joint tests of all external financing except for GLD (grants and subsidised bank loans)

[b] Coefficients are the F-statistics of the joint tests of all external financing