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SME's Credit Demand and Availability in the Euro Area

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Abstract
Small and Medium Size Enterprises (SMEs) have been known to face extensive financing barriers which hamper their ability to grow. This study builds on existing literature on the "SMEs credit reliance view" to investigate the determinants of Euro area SMEs credit conditions and how SMEs have survived in the face of these constraints. Based on a sample of 63,811 SME's survey by the European Central Bank (ECB), this study explores problems experienced by SMEs in gaining access to finance. A firm specific analysis with respect to SME characteristics and how they relate to the types of constrictions and in particular different demographics (country, size, financial autonomy and industry) which influence SME access to finance are used to investigate the subject area. The study drew conclusions that, despite country variations in SME access to finance, European Union SME's have gradually decreased their need for external credit. Furthermore, three major themes were revealed, that is; country variables have effect on external finance demand, negative perception on external outlook increases demand for external finance and lastly banks do not solely set interest rates based on firm operations.
Keywords: Credit; Financial crisis; Supply and demand; SME

1. Introduction

As the mortgage crisis continued to depress global economies following the 2007-08 financial turmoil, the free market ideology which guided the United States of America (USA) monetary policies was beginning to hit hard on the Federal Reserve chairman. Financial intermediaries were closing credit channels at unprecedented rates and the speed of credit decline in some Euro countries led to fears that firms, particularly SMEs were suffering a "credit crunch". It proved indispensable that some form of intervention was vital and in an attempt to end imminent recession, European member states embarked on a Keynesian economics approach to resolve the status quo (Cwik and Wieland, 2011, p. 496). But as some studies have suggested, the vigorous catastrophe was never going to succumb to an instantaneous fix. Irrespective of the fiscal stimulus, credit decline continued to be a dominant factor. Remarkably what has come to light is that county variations in credit availability have been striking feature of the Euro area. While credit supply has continually been a cause for concern after a financial crisis, the rate at which the recent financial crisis has led to lending disparities, with countries like Greece, Ireland and Portugal suffering the most has been rather alarming (Atkins, 2012). The unavailability of credit to businesses generally and SMEs particularly could be to the detriment of Euro economy and that gives importance to this study.

As reported by the European Commissions (2013), more than 99% of all European businesses are SMEs. SMEs provide two thirds of private sector jobs and contribute to more than 50% of the economic value created by businesses. SMEs are the backbone of the European economy and their existence is crucial for economic growth and job creation. The problem with SMEs going bankrupt can create systemic effect whereby lenders and credit suppliers will bear the burden of default. Hence, in a credit network, the loss of SME's due to financial constraints can lead to an avalanche of bankruptcies. This is even more problematic when its suppliers are unable to meet their debt covenant terms leading to bank finance deterioration. The decline of the creditor's finances (particularly bank) may be absorbed if their net worth is high and the defaulted loan is relatively low (Delli Gatti *et al.*, 2010, p. 1628). If this is not the case, it will increase the likelihood of the creditor also going insolvent. In cases where they survives they will either restrain credit supply and/or impose tougher credit conditions by raising the interest on loans across the board making it difficult for other firms to borrow. This means that a well-developed SME sector is likely to substantially contribute to the stabilisation of loan prices.

A predicament which appears to have a significant impact on SME financing in the Euro is the legal framework in which they operate. The framework in some Euro countries is rather punitive when SMEs face financial distress. A report by the Institute of International Finance, (2013, p. 11) stated that SMEs are required to liquidate instead of restructuring which most large enterprises do. Even SMEs can restructure, they have little access to finance as well as accounting and legal expertise from their banks to effectively execute this, consequently causing the needless failure of firms that could benefit from restructuring. Approximately 100,000 companies were liquidated in Italy alone in 2012 and most of them were not given a chance to restructure. Another issue is that new regulations that govern banks seem to leave banks in a catch twenty two type of

situation. Banks have to provide credit to the economy at the same time follow capital regulations as well as satisfy their shareholders. Furthermore, SME characteristics make banks more unconvinced about lending to them.

By considering the above mentioned points, the inquiry of this study is based on the theme of "What are the determinants of SME credit supply and has it become tougher for Euro SMEs to access finance?" The study's primary objective is to assess the current nature of credit supply to SMEs in the Euro area. As already noted, SMEs have suffered a severe drop in credit supply and this has potential to hamper their survival. The study uses SME anonymised micro-level financial data collected by the European Central Bank (ECB) between 2007 and 2013 to analyse trends in SME finance.

The study is structured as follows. The first part of the literature review (section 2) provides a theoretical outline of events that led to credit markets shocks in 2007 up to coordinated bailouts in 2008. It then moves on to give an insight of bank lending conditions by analysing bank balance sheet structures and further explores fundamentals of SME credit demand by examining the macro environment in which they exist. Section 3 describes methodology where we use notions drawn from the literature review and uses descriptive statistics and logistic regression and multinomial regression to empirically examine the relationship between SME characteristics and the demand for credit. In section 4, the study provides key findings from the analysis as well as references to related literature. In conclusion (section 5), a discussion of implications of the findings is provided as well as limitations of the methods and results established form this study. To close the section, an outline of how these findings will contribute to future studies are highlighted.

2. Literature review

According to Hull *et al.* (2005) cited by Murphy (2009, p. 775), for a greater part of the last century, credit demand often exceeded supply. Credit spreads provided financiers with considerable compensation for risks associated with lending funds and as a result credit was rationed. This was in contrast to the decades prior to 2007 when several key developments steered a shift into more generous lending patterns as well as increased risk taking. Undesirably, periods following 2008 saw a collapse of financial institutions and a rapid contraction in credit supply (Acharya and Schnabl, 2010, p. 6). As noted by Petersen (1999, p. 2), the principal purpose of financial markets is to transfer funds from investors, efficiently distributing risk by providing credit to borrowers with profitable investments. In the absence of market frictions, financial market structures do not fundamentally alter this process. Notably, the past crisis highlighted the importance of financial market stability in supporting a smooth transmission of credit to economies (Gambacorta and Marques-Ibanez, 2011, p. 137). Clearly, it is difficult to comprehend current Euro area events without understanding the 2007-08 turmoil and how it emerged from USA subprime mortgage markets.

2.1 Background of 2007/08 financial crisis

In addition to several speculations relating to the cause of the credit crisis, in his speech Bernanke (2007) identified fundamental changes that triggered the turmoil. The post 2002 era saw a momentous upsurge in current account surpluses of emerging Asian and oil exporting economies; transforming them from net borrowers to substantial net suppliers of capital to international markets and this caused imbalances in global economies. These nations were also saving more than they invested; the investment shortfall led to current account deficits for USA, United Kingdom (UK) and Euro economies and consequently this significantly influenced their monetary policies (Mayer-Foulkes, 2009, p. 5). Bracke and Fidora (2012, p. 186), postulate that the surplus capital fuelled into these economies caused an unrelenting decline of long term real interest rates as governments tried to control inflation. During this period, the US Federal Reserve considerably cut bond yield rates; 2004 saw treasury securities cut to average below 2% from 4% in 1999. In UK, inflation-indexed government bond yields fell from average of 3.6% in 1996 to below 2% in 2004 and similar patterns were observed in other western economies (Bernanke, 2007). This created a quandary for investors who endured effects of unattractive returns and required investments to alleviate the savings glut.

To address the financial conundrum, baskets of triple (AAA) rated asset-backed securities were created through US government funded enterprises like Freddie Mac and Fannie Mae (Murphy, 2009, p. 776). This led to a fall in credit risk allowing capital to flow from investors to mortgage borrowers and an uncontrolled credit boom took off. In late 2007, markets became concerned about securitised assets, and major participants in securities began to withdraw funds exposed to tentative US subprime mortgages. This triggered a bank run which destabilised repurchase agreement collateral markets (Gorton and Metrick, 2012, p. 426). Although securitisation was meant to remedy liquidity risk issues, investment in subprime markets had ruined it. Franke and Krahnen (2006) cited by Uhde and Michalak (2010, p. 3062), looked at 73 securities publications of 27 European banks between 1999 and 2002 and found that the securitisation based risk-reduction effect was undermined by reinvestments of capital in riskier projects. In analysing the state of affairs, a report by the Financial Crisis Inquiry Commission, (2011, p.7), stated that the level of financial integration of complex

international banking institutions and instruments, in addition to lack of interest alignment between credit extenders and risk holders augmented the issuance of subprime mortgages and triggered a financial crisis.

The scale of the financial crisis hit some Euro countries harder than others. Countries like Portugal, Ireland, Italy, Greece and Spain saw their sovereign bond rates downgraded to unrelenting levels making it difficult or impossible for them to repay or refinance sovereign debts without external support (Donnelly, 2008, p. 8). It proved indispensable for the European Commission to agree to emergency rescue packages for banks and financial institutions and the troubled countries. All European Union member states and the European Central Bank (ECB) embarked on monetary policy measures to restrain the crisis effects. The European Council also agreed on a European recovery plan to support industries which had experienced business decline due to low consumer demand for their products and services (The European Movement, 2009). However, even with rescue efforts in existence; the recovery was by no means instantaneous, banks continued to suffer losses on their balance sheet caused by further write downs of unpaid loans and this exacerbated the credit crunch. Since 2009, banks had been trying to repair their balance sheet aggressively and as a result unable to provide finance to businesses generally and small businesses particularly. Several studies have recently raised concerns that SMEs are increasingly finding it harder to access finance. The next part of the literature review attempts to understand the main drivers of bank lending channels alongside alternative debt instruments available to SMEs.

2.2 Banking business models

In the textbook world, traditional banking business models typically involve rather uncomplicated balance sheet (BS) transactions. A traditional bank has two types of customers, depositors who entrust the bank with their funds and borrowers who often require sizeable loans to finance purchases and investments (Board and Santos, 2002, p. 21). The bank acts as an intermediary between the two, using short-term maturity deposits to finance less liquid long-term assets, yielding returns by charging transaction fees and higher interest rates to debtors than their repayment rates to depositors. This maturity transformation is thus essential in a traditional bank (Shin, 2009, p. 110). Over time, global economic forces have undercut the traditional bank's position in loan markets and competition and liquidity concerns have further altered banking models. Financial innovation has become increasingly valuable with banks now placing greater percentages of funds into more diversified portfolios like derivatives and securities. Consistent with this transformation, a study of the banking sector by Cardone-Riportella *et al.*, (2010 p. 2640) found that an augmented need for liquidity was a key determinant of securitisation growth. Consequently, to the detriment of such financial advances, securitisation led to bank capital deterioration which then triggered credit curtailing.

Following the crisis, Kapan and Minoui, (2013, p. 3) revealed that there was a considerable disparity in the ability of banks to sustain lending during a crisis which was principally determined by their balance sheet strength. What came to light during the course of the crisis was the importance of ensuring that banks effectively manage the composition of their balance sheets. For banks to be able to lend they need well-funded balance sheets, these include short-term certificates, demand deposits and sovereign bonds. Regrettably, volatile markets have altered the makeup of bank funding and investment portfolios causing them to rethink their asset allocations (Sadjadi, *et al.*, 2011, p. 3822). Another pressing concern with bank funding is the existence of external determinants which are often outside the bank's control. For instance, sovereign risk played a major part in bank's access to funding following the crisis and this led to lending disparities.

Financial market fragmentation and lending disparities have been mainly detrimental for banks located in vulnerable Euro countries (such as PIIGS) as they have found it progressively challenging to acquire finance from their peers (Institute of International Finance, 2013, p. 11). Following the crisis private lenders became unwilling to accept sovereign debt of countries whose bond ratings had rapidly deteriorated making it difficult for some countries to obtain loans and this further exacerbate the funding problem. A study by Hempell and Sorensen (2010, p. 6) also provided evidence of constrained Euro area wholesale markets largely due to high sovereign debt which made uncollateralised bank funding more costly and scarce. Moreover, as collateral bond values of troubled countries plunged, so did returns of banks which had marked to market (MTM) sovereign bonds on their BS, thus asset value falls coupled with high bond yield rates compelled banks to mitigate risk through increased loan rates. A study of Italian banks by Bofondi, *et al.*, (2013, p. 5) found that banks tightened credit and increased interest rates after sovereign debt crisis. Firms were also unable to compensate for credit decline from local banks by borrowing from foreign ones indicating that sovereign debt has aggregate impact on credit.

Furthermore, banks do not set base interest rates and the maturity transformation between their assets and liabilities exposes them to interest rate risk. This is even more prominent in banks which operate in weak economies. Each financial transaction a bank completes has the potential to distress their interest rate risk profile. A study of US banks from 1986 to 2011 by Landier *et al.* (2013 p. 3) found that banks suffered intensive cash flow impact of interest rate fluctuations. This is because of the financing yield curve risk which arises from disparities in interest rates movements across the debt maturity spectrum.

The relationship between interest rates of short and long term debt maturities changes whenever the yield curve for a given market alters during an interest rate cycle and this can heighten the risk of a bank's position. Ultimately these fluctuations prompts banks to adjust their interest rate risk exposure by changing funding, reducing lending or altering loan pricing structures thereby making loans pricier for firms. On the other hand, some studies have postulated that lower than optimum interest rates led to excessive risk taking by banks. The financial crisis was preceded by a period of low interest rates which may have given financial intermediaries incentives to seek high returns in riskier assets leading to poor performance which ultimately led to a collapse in financial markets (Cociuba, *et al.*, 2012, p. 1-52). Considering bank funding challenges, it is not surprising that they have now sought to ensure they do not invest in portfolios that compromise their risk profile and austerely this also led to credit curtailing for SMEs. Another important factor to consider is the role of regulatory bodies in the bank funding equation and how they impact banks decisions to lend.

2.3 The bank capital structures conundrum

According to Modigliani and Miller theorem (MM) (1958, 1961) cited by Huertas, (2010) firms operate in perfect markets where capital structures are irrelevant. They state that firm values are independent of financing decisions but reliant on invested asset values, and amplified leverage has no influence on firm value increase since debt reduction will flawlessly offset equity growth. In contrast to MM theorem, just like all business sectors; banks face institutional obstacles across business lines. In periods of financial uncertainty, successful banks are those that are able to identify portfolios which can withstand market volatility and deliver suitable risk/reward hence effectively managing capital structures is essential to mitigate liquidity risk. Market frictions and imperfections, which cause financing constraint, will also have influence on firm's investment decisions. Subsequent to departures from MM irrelevance theory, traditionally corporate finance has always pursued to investigate the non-financial firm's capital structures, but the question is what defines bank capital structures (Gropp and Heider, 2010, p. 588), hence recent debates concerning banks have been primarily centred on their leverage ratios.

A previous study by Gropp and Heider, (2009, p 7) stated that; "Because of the high costs of holding capital […], bank managers often want to hold less bank capital than is required by the regulatory authorities," This creates an impasse between banks and regulators. Banking regulators state that banks should maintain high capital because it is the buffer of liquid assets held in the event of liquidation (Farag, 2013, p. 201). Following the crisis, a major advance was renewed with Base III Capital Adequacy Requirements (CAR) which incorporates leverage ratio requirements (LRR). The new standard states that banks must have minimum capital of 3% of non-risk net assets including off-BS items among other requirements (Basel Committee on Banking Supervision, 2011, p. 61) cited by (Kiema and Jokivuolle, 20124, p. 240) because it makes banks resistant to systemic shocks and less likely to transmit shocks to economy (Kapan and Minoui, 2013, p. 3). Critics to the renewed CAR have mainly been against enforcing stringent LRR in a financial crisis. However, the precise analysis of this subject matter is not under the scope of this study. A notable element is that, regardless of whether LLR requirements reduce bank lending or not; banks need to monitor relationships with debtors unsettled loans should not be ignored. Views against LRR are therefore invalidated by a need for banks to reduce credit risk. Following discussion on bank lending influences, this study recognises that banks are not the sole source of credit. SME access to credit extends to other debt instruments like trade credit and these creditors also have an incentive to monitor their relationships with SMEs. The next part of the literature review thus incorporates other lenders into the SME financing puzzle.

2.4 Financing – creditor and SME's relations

One characteristic that distinguishes banks from other institutions is the role of bank-customer relations; and central to this relationship is information. Bank survival depends on their capacity to issue revenue generating liabilities. To properly navigate credit markets, banks always seek to understand firm operations and their capacity to fulfil debt obligations by engaging in appraisals to establish financial soundness. Yet despite growing SMEs having lower default rates; obtaining finance is one of their key obstacles (European Commission, 2013). Previous research suggests that there continues to be a systematic barrier for SMEs to access finance due to lack of information. Generally creditors have less awareness about SME fundamentals than the owners. Creditors need to make evidence based decisions on debt issuance, and it is often difficult for them to access the required information. Firstly, the financial accounts audit threshold in most Euro countries is usually higher than SME net revenues hence they have more leeway on what they publicly disclose (European Commission, nd). Secondly, due to the nature of most SMEs, owners are likely to have little financial knowledge, making it harder for creditors to establish whether they are making erroneous decisions or adequately understand the business to make lending decisions.

On the decision making note, information asymmetry problems are not just limited to the conditions of parties in credit relationship but also their incentives and this gives rise to potential principal-agent problems. In

a credit relationship, the creditors will require the firm to act in a way that maximises profitability in order to repay the loan, while the firm may seek to undertake higher profitable yet excessively risky projects (European Commission, 2008, p. 22). This is more so with SMEs because of the information obscuring line and could easily make creditors believe that the SMEs choices are cynical. Evidently, this risk makes some creditors choose to only provide credit to firms they have long standing relations with (relationship lending). Under relationship lending, the creditors primarily rely on data gathered through contractual relationships with the SMEs over time to address asymmetric information. Information is gathered through observations of the firm's performance on all dimensions of its credit relations and may include valuations of firm's future prospects. Consistent with this, a study of small US firms by Cole (1998, p. 961), found that lenders are more likely to extend credit to customers they have pre-existing relationships with. To address relationship lending over time, creditors have involved credit rating agencies (CRA) in aggregating borrower risk information.

CRAs provide creditors with valuable information they have no immediate access to, including the firms other credit relations. Conversely according to Baker and Mansi, (2002) cited by Duff and Einig, (2009, p. 109) CRA criticism centers on their opinion's reliability. During the rapid expansion of leveraged loans, investors' main goal was to quickly build portfolios, putting less emphasis on credit analysis. They only sought matters which met the criterion set by CRAs for inclusion in loan applications and consequently invested in poorly structured loans. However, even with CRA inclusion, an issue that also looms large for creditors is the cost and accessibility of material information to evaluate SMEs creditworthiness. This is problematic when SMEs require relatively low financing. The Institute of International Finance, (2013, p. 11) surveyed creditors in the Euro area and noted that high fixed costs of evaluating SME creditworthiness made it difficult for them to issue relatively small short-term debts, for the reason that loan margins may be insufficient to cover fixed costs to conduct due diligence. If information asymmetry is resolved, SMEs with viable investments should be able to acquire finance. However, other studies have also noted that fundamental characteristics of a firm should be the determining factor for lending decisions. This indicates that information is asymmetric such that CRA assessment is at best incomplete, especially considering the existence of macro-economic variables which influence firm characteristics like net worth and how they impact lending decisions.

2.5 SME's external financing - demand and supply side influences

According to Jimenez, *et al.*, (2012, p. 2) a sign of borrower credit worthiness is captured by their net worth. The credit channel of monetary policy theory offers alternate explanations by focusing on the borrower's side of financial contracts. Related to this is the balance-sheet channel (BSC) stating that external finance premiums must correlate borrower's net worth and in that way creditors assume relatively low risk by lending to higher net worth firms, (Angelopoulos and Gibson, 2007, p. 676). Since the crisis, net worth of most SMEs has been affected by debt overhang so even firms having profitable investment opportunities have been unable to capture the opportunity of funding those investments (Holton, *et al.*, 2013, p. 193). Debt overhang has also led to increased rejection rates as creditors became wary of providing credit to SMEs who were highly leveraged and lacked collateral. A survey by Experian (2009, p. 1-8) looked at credit markets in over a 12 month period from 2008 and found that credit supply did not match demand for any credit quality bands, showing lack of demand at least from borrower with decent credit scores.

Additionally, although credit scores can be useful in aggregating loan information, the legal framework and business environment in which SMEs operate creates problems for them to access finance. For instance, while financial troubled listed firms may be able to raise finance or get government bail outs in order to restructure their operations, it is harder for SMEs to get the same service from creditors. This is because when large firms identify growth or restructuring opportunities, the information is quickly spread and also portrayed by increases in their stock values. However creditors will find it challenging to ascertain the same growth prospects in SMEs since their inherent financial strength is usually if not only assessed by looking at historical financial statements (FS). The problem is FS are not only historical but also subjective (European Commission, 2008). This makes it unclear whether financial statements provide sufficient information to properly allocate economic assets. One could conclude that the reason why SMEs find it harder to access finance is because of a failure issues with FS which prevents them from accurately valuing firms. Firm values rather go beyond historical values and the inability of FS to value intangible assets is an obstacle to finance for SMEs. As noted by Kaplan and Norton, (2004), measuring intangible asset values is a vital basis of accounts because they are worth far more to firms than their tangible assets. Nonetheless, asset values used in aggregating loans are also determined by the environment in which SMEs operate.

Euro SMEs have different financing structures which are not merely determined by firm specific characteristics but also the restrictions posed by the economic environment. As noted by Burgstaller and Scharler (2010, p. 778), market frictions tend to make borrowing pricier and this usually reduces loans with attractive terms to borrowers. Adverse economic changes that affect income prospects and will inevitably impact firm collateral values, consequently negative firm values will prompt banks to increase the firm's cost of capital. This

mainly affects SMEs because of their size, as increased cost of capital will erode their profitability (European Commission, 2008). On the non-monetary side, in principle, effects of a real shock (such as a shock to productivity) on financial conditions could lead to persistent fluctuations in the economy, even if the originating shock had minute or no intrinsic persistence (Bernanke and Gertler, 1989) cited by Jimenez *et al.* (2012, p. 2). As a consequence, the Financial Accelerator (FA) works its way through the macro economy by means of fluctuations in a proxy of economy-wide financial robustness aggregate cash flow or net worth. Though the FA seems intuitive, unquestionably financial and credit conditions are often pro-cyclical and this is useful in understanding the nature of monetary transmission processes.

Government strategies for instance contractionary policies which are used to shrink money supply in order to control inflation could also affect credit conditions and some studies have hypothesised this as one of the causes of the credit crunch. According to Borio and Fritz (1995), Burgstaller and Scharler (2010, p. 778-779), retail rates set in response to monetary policies are major determinants of lending/borrowing conditions. A study of UK listed firms by Huang (2003, p. 495) found that interest rate bearings on firm collateral values distresses lending as banks become sensitive to constrained balance sheets and borrowers will also stop borrowing to reduce cost of capital. To stabilise loan prices, central banks depend on the pass through of retail interest rates as building blocks of monetary policy transmission mechanisms. Conversely, empirical evidence from a study of UK firms by Burgstaller and Scharler (2010, p. 778-779) found that banks do not entirely transmit reductions in market interest rates to borrowers, showing banks extend loan supply only at higher rates. A study by Marotta (2009, p. 200) found that European central banks cannot fully pursue financial market stabilisation through monetary policy impulses due to the incomplete pass through of market rates and unfortunately this incomplete pass through can only lead to more SMEs collapsing. Evidence of these shortfalls is thus given in the following discussion.

Previous studies have shown that interest rates, sovereign risk and profitability were key determining factors in SMEs access to finance. A study of UK small medium enterprises (SME) by Kitching, *et al.*, (2009) found considerable evidence that SMEs experienced difficulties in accessing finance during 2008-9. According to The UK Department for Business Innovation and Skills bi-monthly 'business barometer' June 2009, 44% of SMEs reported difficulties in accessing finance, 33% were unable to access and 71% offering credit reported late repayment of debts. Holton, *et al.*, (2013, p. 210) looked at SMEs operating in the European Union and stated that rejection rates were more prominent in newer SMEs. The study also found that having other sources of finance increased chances of an SME getting credit from banks. Similarly, Ferrando and Mulier, (2013, p. 26) found that SMEs paying higher debt interest rates were more likely to perceive access to finance as very challenging and likely to face financing constraints. Maudos, (2013, p. 39) also noted that high finance costs were one of the most negative issues affecting Greek, Italian and Spanish SMEs in 2012. More than 78.5% of Spanish SMEs said that interest rates had increased over the six previous months, in comparison to a 47.3% average of European SMEs. In conclusion, this literature review has shown that lending has various dimensions and it is rather difficult to pin point an exact reason why SMEs have struggled to acquire finance.

3. Methodology and data

To investigate the impact of financial crisis on SMEs credit constraints, empirical examination of the SMEs survey data was done through descriptive statistics and hypotheses testing using logistic regression and multinomial regression in STATA 12. Two methodologies were elected for the reason that although descriptive analysis could aid in understanding data patterns, regression extended the analysis by modelling the relationship between variables as well as test the significance of the variables being modelled. While the survey included several questions, to facilitate a linkage between the methodologies, scope of the study and the literature review, for the firm situation and firm financing categories; empirical examination was only conducted on questions which were within the scope of the study. The firm growth and obstacles category was excluded from the analysis as it was unrelated to the scope. This choice was also beneficial for the study to deliver a comprehensive explanation of findings.

3.1 Data

To empirically examine the research question, this study uses firm-level data from the survey on access to finance of small and medium-sized enterprises (SAFE). The data was collected on behalf of the European Commission and the ECB. Firms included in the survey were randomly selected from the Dun and Bradstreet database between the first half of 2009 and 2013. This data was suitable because it provided a timely, comparable, and frequent substantiation of SME financing in the Euro Area as well as a representation across diverse demographics which included different industries and all SMEs sizes (micro, small and medium). Descriptive analysis used in the survey also provided a multifaceted approach which was valuable in eliminating barriers presented by strict academic methods. For instance, the survey gave statistical information about specific occurrences as well as an indication on how SMEs perceived these experiences, thus providing an unimpeded

understanding of Euro area SME credit conditions.

The survey was conducted through a four part questionnaire and the categories included; firm characteristics, firm situation, firm financing, and future growth and obstacles. The firm characteristic category contained information about firm size, economic activity, financial autonomy, annual turnover, owner and gender of owner. To improve accuracy of the survey the sample was stratified by country, economic activity and firm size. Sample sizes in different countries were selected on the basis of a compromise between survey costs at the Euro area level and representatively at the country level. The sample was therefore representative of the four largest Euro area countries, which are France, Germany, Italy and Spain. Although the unabridged survey contained 37 countries, because the research aim was to discern SME credit conditions in the Euro area; it was imperative to limit the analysis to countries using the Euro currency. This provided 63,811 samples as shown in Table 1.

Table 1: Total sample firms by euro country and wave

Code	Country	2009 H1	2009 H2	2010 H1	2010 H2	2011 H1	2011 H2	2012 H1	2012 H2	2013 H1	Total
AT	Austria	224	203	200	500	502	500	506	500	501	3636
BE	Belgium	220	202	203	517	500	503	500	500	500	3645
CY	Cyprus	110	0	0	0	100	0	0	0	100	310
DE	Germany	1003	1001	1000	1000	1006	1000	1006	1002	1000	9018
EE	Estonia	0	0	0	0	100	0	0	0	100	200
ES	Spain	1012	1004	1000	1000	1001	1000	1001	1003	1001	9022
FI	Finland	111	100	100	500	500	500	500	500	501	3312
FR	France	1000	1001	1003	1004	1002	1005	1001	1002	1002	9020
GR	Greece	220	200	200	500	500	500	500	500	500	3620
IE	Ireland	110	101	100	500	502	500	500	500	500	3313
IT	Italy	1006	1004	1000	1000	1001	1000	1000	1003	1000	9014
LU	Luxembourg	103	0	0	0	100	0	0	0	100	303
LV	Latvia	0	0	0	0	200	0	0	0	200	400
MT	Malta	100	0	0	0	100	0	0	0	100	300
NL	Netherlands	323	252	256	502	500	500	500	500	500	3833
PT	Portugal	327	252	250	509	502	503	500	500	500	3843
SI	Slovenia	110	0	0	0	100	0	0	0	100	310
SK	Slovakia	112	0	0	0	300	0	0	0	300	712
Total		6091	5320	5312	7532	8516	7511	7514	7510	8505	63811

Source: Survey on access to finance of small and medium-sized enterprises (SAFE)

Sample sizes for each economic activity were selected to ensure they sufficiently represented all four largest activities: industry, construction, trade and services and results were as shown in Table 2. For firm size, the proportion of small firms in the sample was higher than their economic weight; hence the firm size sample was purposely modified. Suitable samples were reached by the use of appropriate weights (number of employees used as proxy).

Table 2: Total sample by industry type

Main activity	2009 H1	2009 H2	2010 H1	2010 H2	2011 H1	2011 H2	2012 H1	2012 H2	2013 H1	Total
Mining	1145	1060	1410	1731	1972	1798	1720	1681	2051	14568
Construction	749	576	489	726	828	739	713	773	818	6411
Manufacturing	1587	1150	1272	1968	2306	1986	1896	1899	2203	16267
Wholesale or retail	2161	2000	1735	2516	2764	2446	2630	2607	2782	21641
Public Admin	449	534	406	591	646	542	555	550	651	4924
Total	6091	5320	5312	7532	8516	7511	7514	7510	8505	63811

Source: Survey on access to finance of small and medium-sized enterprises (SAFE)

3.2.1 Descriptive statistics (firm financing and firm situation)

In the following we examined the existence of possible developments in SME finance. Two questions identified firms which applied for external finance in the previous six months and their success rates. Firms stated whether they had applied or not and said reasons for their decision (first half of Table 3). Firms which applied for external finance were asked the successive question (second half of Table 3). One issue with this data was that questions within this category included four debt instruments (bank loans, trade credit, other and bank overdraft credit line or credit line) and to make the analysis smoother, all financing mechanisms were aggregated and analysed as external financing. Thus examination was done to understand trends for external financing applications as well as outcomes. This analysis was essential to disentangle the supply and demand factors and understand if there is sufficient demand for external finance from SMEs and if external finance providers meeting that demand.

Table 3: External financing applications and outcome

	2009 H1	2009 H2	2010 H1	2010 H2	2011 H1	2011 H2	2012 H1	2012 H2	2013 H1
External financing application									
Applied	2963	3018	3948	5375	5915	5701	5686	6156	6753
Did not apply due to possible rejection	812	750	867	1407	1490	1708	1347	1264	1472
Did not apply due to sufficient funds	7113	5992	10450	14698	16491	13676	13298	12441	15096
Did not apply due to other reasons	6908	5853	5728	8097	9386	8479	9086	9562	9919
Total	17796	15613	20993	29577	33282	29564	29417	29423	33240
External financing outcome									
Got everything	1786	1884	2480	3381	3715	3478	3397	3930	4370
Got most (75% - 99%)	0	0	370	594	553	541	548	667	697
Lot limited part (1% - 74%)	0	0	449	561	712	694	757	690	727
Refused because cost too high	76	55	87	87	151	120	67	102	81
Rejected	344	373	343	439	490	594	613	473	570
DK/NA	224	151	219	313	294	274	304	294	308
Total	2430	2463	3948	5375	5915	5701	5686	6156	6753

Source: Survey on access to finance of small and medium-sized enterprises (SAFE)

3.2.2 Firm characteristics and external financing needs

To see the impact of different factors, we started with demand for external finance and set our mull hypotheses one - *"There is no relationship between firm characteristics and external financing demand (exfdem)."* The relationship between firm characteristics and external financing needs has been a major part of SME finance literature. From literature review, notions were drawn that country variations (Holton, *et al.*, 2013), could determine the supply of credit to Euro SMEs. Artola and Genre, (2011) also stated that smaller SMEs tended to suffer more from financing constraints, Hence the purpose of this analysis was to test these notions. The study also looked at how perception on external outlook in terms of access to public finance and guarantees influenced external finance demand. To model this analysis, all firm characteristics and external outlook questions were included in the independent variables. The following conditions were also set. As seen in Table 4, the dependent variable had six debt instruments therefore a composite variable (exfdem) was formed to represent all financing instruments. Secondly, the question relating to external finance demand had three responses hence the study elected to use increase in external finance demand as proxy for demand.

Table 4: Depended variable - external financing demand

Hypotheses	Dependent Variable	Description	Responses
H 1	External finance demand	a. Bank loans b. Trade credit c. Equity investments in firm d. Debt securities issued e. Other f. Bank overdraft, credit line or credit cards	1. Increased 2. Remain unchanged 3. Decreased

Testing of hypotheses one was done using logistic regression because dependent variable was binary (only two categories), which were "need for external finance" and "no need for external finance". Logistic regression is in some ways similar to ordinary linear regression, but unlike the latter which predicts precise numerical values of dependent variables, logistic regression is an estimation of the probability of an event occurring (p) that it is 1 (happening) instead of 0 (not happening). Similarly, this study tested for 1 (SME external finance demand) instead of 0 (no external finance demand). While the relationship tested in linear regression is linear; logistic regression does not make this assumption but uses the logistic regression function as in the formula.

$$p = \frac{e^{a+\beta x}}{1 + e^{a+\beta x}}$$

In the above equation, p is probability, e is the base of the natural logarithm and a and β are the model parameters. The value of a will yield p when x is zero. Since the relationship between x and p is nonlinear, β does not have a straightforward interpretation in logistic model as it does in ordinary linear regression. However, logistic regression, being based on the probability of an event happening, enables the calculation of odds, which are defined as the ratio of the odds of an event happening to it not happening. In logistic regression, the dependent variable is thus a logit, which is basically a log of odds.

$$logit(p) = In\left(\frac{p}{1-p}\right)$$

As

$$\frac{p}{1-p} = e^{a+\beta x}$$

We can get back to the original logistic regression of

$$p = \frac{e^{a+\beta x}}{1 + e^{a+\beta x}}$$

Thus showing the relationship between the dependent and independent variables and how the odds ratios to probabilities are derived and vice versa. All qualitative predictors were assigned a dummy variable in STATA (Table 5). Results were analysed using the regression coefficient, to test the predictor effect on the dependent variables. A positive coefficient indicated that the independent variable had a positive effect on the dependent variable and negative meant the opposite applied. The next consideration was to ascertain whether predictor variables were statistically significant at the 5% and 10% significance test level drawn from probability values. Thus the test was modelled to see if there was a relationship between SME characteristics and external finance demand (exfdem) and to check if relations were statistically significant.

Table 5: Hypotheses one - independent variables

Category	Descriptive Characteristics	Variable	Base Category
Firm characteristic			
	Firm size	1 - 9 Employees 10 - 49 Employees 50 - 249 Employees 250 Employees or more	Base
	Financial Autonomy of the frim	Subsidiary of profit oriented company Autonomous profit oriented company	Base
	Main activity of the firm	Mining Construction Manufacturing Wholesale or retail	Base
Firm situation	Profit	Increased Remain unchanged Decreased	Base
Firm financing	Other influences of external finance in last six, access to public financial support including guarantees, your firm-specific outlook with respect to your sales and profitability, your firm's own capital	Improved Remain unchanged Deteriorated	Base

3.2.3 Income generation indicators and firm financing

In our effort to understand the impact of firms' income on the probability of bank loan granting and related interest rates, we test our second null hypotheses - *"There is no relationship between income (profit or turnover) and bank loans terms and conditions"*. According to Jimenez, *et al.*, (2012, p. 2) a sign of borrower credit worthiness is captured by their net worth. If income, particularly profit is a determining factor for access to finance, firms with high income were expected to get favorable bank terms and conditions (TandC) than low income firms. However, with most governments encouraging banks to lend (The European Movement, 2009), the study sought to understand if an increase or decrease in these income variables still had an impact on bank finance. For this part of the study, bank TandC were the dependent variables (Table 6) and turnover and profit were independent variables (Table 7). The firms whose income had unchanged gave least implication to the study and were thus omitted.

Table 6: Hypotheses two - dependant variables

Hypotheses	Dependent variable	Description	Responses
H 2	Bank terms and conditions	a. Level of interest rates c. Available size of loan	1. Was increased by bank 2. Remain unchanged 3. Was decreased by bank

Table 7: Hypotheses two - independent Variables

Descriptive characteristics	Variable	Base category
Turnover / profit as an income generation indicator	Increased Decreased	Unchanged

Testing of the hypotheses was done using multinomial regression. While logistic regression works with binary dependent variables, there are instances where the data in question has nominal variables with more than two categories, hence multinomial regression is basically a classification model that simplifies logistic regression

to multiclass problems Thus to model this type of dependent variable; logistic regression model can be extended using multinomial logistic regression. A logistic regression for these dichotomous dependent variables is referred to as binary logistic regression. For this study, the regression was done in STATA 12, but the multinomial logistic regression formula is,

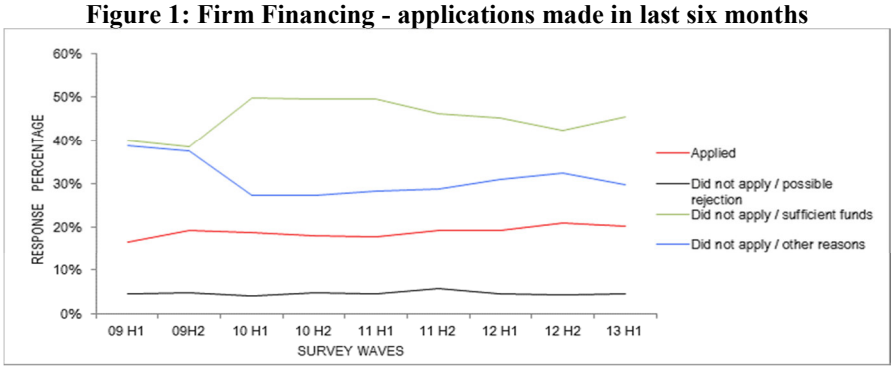
$$Pr(yi = j) = \frac{exp(Xi\beta j)}{\sum_j^J exp(xi\beta j)}$$

Pr (yi=j) is the probability of belonging to the group j, xi is a vector of explanatory variables and βj are the coefficients, which are estimated using the maximum likelihood estimation. The coefficient and p values were used in the same way as in logistic regression. The basic principles of multinomial regression model are similar to that for binomial logistic regression, in that it is based on the probability of relationship of each category of the dependent variables with explanatory variable. So, in the hypotheses test; the study was testing the probability of SMEs with increased/decreased income to get superior bank TandC, inferior bank TandC or not unaffected bank TandC. In this scenario, the way multinomial logistic regression deals with the variables is to a certain degree similar to the concept of dummy variables used in logistic regression in that the model compares probabilities of being in each of n-1 categories compared to a base category. The study was fitting n-1 separate binary logistic models, where the study compared category 1 (increased bank terms) to the base category, then category 2 (decreased bank terms) to the base category.

3.2.4 Descriptive statistics

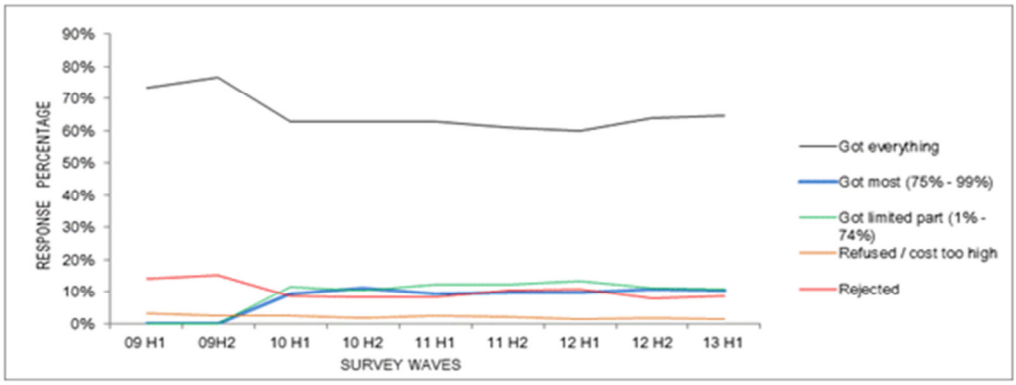
The first part of descriptive statistics looked at firm financing. One suggestion by previous literature was that SMEs had great demand for external finance and information asymmetry issue was one of the most pressing barriers in SMEs raising external finance. This study therefore expected to see high demand for finance coupled with high rejection rates. Converse to these views, the study observed that an average of 45% of firms did not apply for finance because they had sufficient funds in comparison to an average of 19% who applied. This was a noteworthy observation consistent with Lee, (2013, p.1) who also found insufficient demand for loans from Euro SMEs. Looking at Figure 1, the running average of firms who did not apply for other reason is the second highest. This was a limitation to the data as it was difficult to compute what the reasons are. However a report by International Business Times, (2013) further reinforced this observation; their analysis stated that the existing macro-economic climate continued to be a significant barrier for businesses. It has already been noted that macro-economic variables can influence a decline in finance demand and possibly they were incorporated into "other reasons". On a separate note, the trend line in Figure 1 showed that firms who opted not to apply for finance due to possible rejection had the lowest running average. It is important to note that as of October 2008, Euro area governments embarked on monetary intervention schemes which included capital injections in financial markets and liability guarantees (Diacon*, et al.*, 2013). From this, one could conclude that this may have made firms optimistic about the prospects of raising external finance.

Figure 1: Firm Financing - applications made in last six months



Another evident factor was that despite diverging levels of firm financing in the Euro area, empirical results showed that an average of 65% of finance applications were successful across the region. This was also coupled with a decline in rejection rates from 14% in 2009 H1 to 8% in 2013 H1, signifying a positive advance in SME financing (Figure 2). Notably, this analysis pooled all Euro countries and does not essentially reflect individual country experiences. Lawless and McCann, (2012) studied SME financing in Ireland and established a temperate weakening in credit applications, coupled with an upsurge in credit rejection, supporting the ideas of country variations in SME financing.

Figure 2: Firm financing - application success in last six months



Further examination was also made to understand the varying situations in SME operations by looking at trends in income generation indicators (profit and turnover). In this section, firms were requested to state whether profit and turnover had augmented, diminished or unmoved. Results showed that the difference in average turnover decrease and increase was an absolute value of 3%, yet in terms of average profitability, only 28% or firm had improved profits and 48% reduced (see Figure 3).

Figure 3: Firm situation - turnover

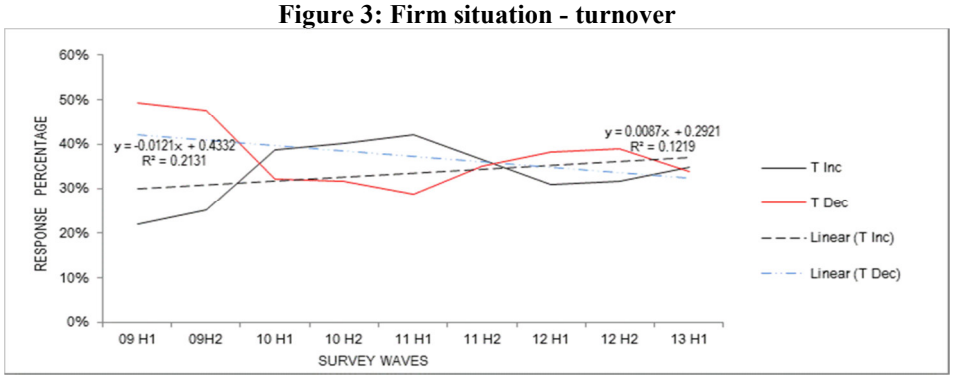
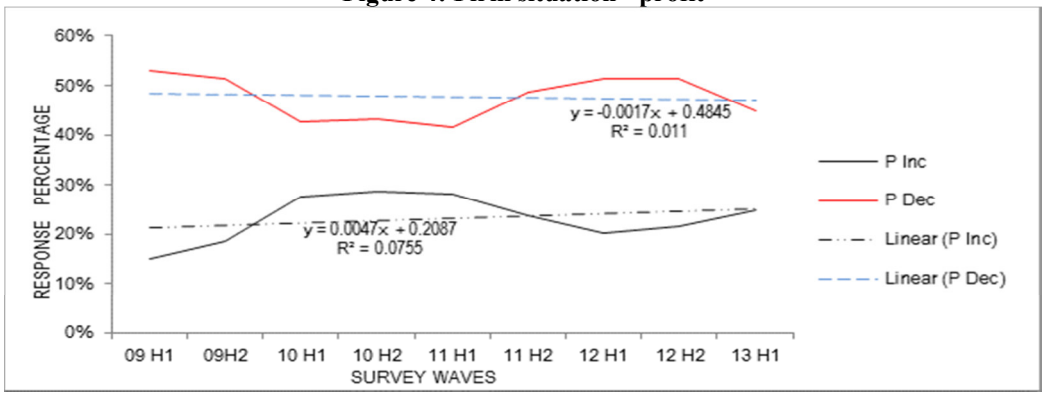


Figure 4: Firm situation - profit



Looking at the trend in Figure 3 and 4, although the net percentage of firms reporting improved turnover was progressively improving over the duration of the survey, the marginal gap between profit and turnover instigated concern. For instance, the 2013 H1 wave, 35% reported turnover increase whereas only 25% stated profits had increased. Profit is a vital measure of whether firms can sustain business activities and is most significant in ensuring SME maintain liquidity. Findings could be linked to high operational costs, and lower capital investments likely caused by to tough economic conditions noted by the International Business Times, (2013). An analysis by the Munich Strategy Group, (2012) also noted that 60% of SMEs in Germany were barely making a profit. Considering that Germany is one of the Euro countries that have recovered after the financial crisis (Diacon, *et al.*, 2013), yet their SMEs are struggling. This revealed that Euro SMEs continued to suffer cash flow impact and, low consumer demand could be an additional cause (European Central Bank, 2013). Most importantly, findings from this section proved that although turnover is an efficiency ratio showing how firms utilise assets to generate revenue, its failure to account for operational expenses means turnover does not truly reflect the firm's risk profile and it is difficult to use it if attempting to understand firm cash flows.

4. Estimation and explanation – testing of null hypotheses

Further from the annotations depicted in that last section; by unravelling firm variables to establish relationships between SME financing and their macro/micro fundamentals, this section stretched the enquiry further. This was imperative in order to provide an enhanced comprehension of SME credit supply and demand under varying conditions.

Hypotheses one: Hypotheses one was intended to test the relationship between SME characteristics and external finance demand. The study expected firms operating in the most vulnerable Euro states to require more external finance. As pointed out before, country variations have been dominant factor in the SME financing. Findings in Table 8 demonstrated that this was indeed largely the case; results showed strong positive relation between countries like Italy, Spain, Greece and Ireland and higher external finance demand compared to base category. This finding was consistent with a study by Concha and Genre, (2011) and Holton, et al (2013, p. 210). The P>|z| values were also indicative of a strong statistical significance of these countries logistic regression model coefficients.

Table 8: Country and other effects on external finance demand

Sub-category	Variable	Coefficients	z	P>|z|
Country	Belgium	-0.1401275	-2.82	0.005
	Cyprus	-0.0063206	-0.05	0.959
	Germany	-0.1162211	-2.81	0.005
	Estonia	-0.9369035	-5.25	0.000
	Spain	0.3465404	8.24	0.000
	Finland	-0.2918627	-5.64	0.000
	France	0.1809862	4.38	0.000
	Greece	0.1155731	2.31	0.021
	Ireland	0.1798236	3.56	0.000
	Italy	0.591475	14.20	0.000
	Luxembourg	-0.1589073	-1.25	0.211
	Latvia	-0.4475047	-3.78	0.000
	Malta	-0.4947732	-3.65	0.000
	Netherlands	-0.7894063	-15.29	0.000
	Portugal	-0.303747	-6.09	0.000
	Slovenia	0.3684824	3.00	0.003
	Slovakia	0.0496521	0.58	0.561
Firm size	10 - 49 employees	0.3761634	16.12	0.000
	50 - 249 employees	0.5252634	16.41	0.000
	+ 250 employees	0.5776887	11.32	0.000
Financial autonomy	Autonomous	0.5474305	20.80	0.000
Main activity	Construction	-0.067977	-2.13	0.034
	Manufacturing	-0.1030133	-4.10	0.000
	Wholesale or retail	-0.2006152	-8.54	0.000
Annual turnover	2 > < 10 million	0.2471367	10.15	0.000
	10 > < 50 million	0.2843043	8.58	0.000
	< 50 million	0.2894116	6.17	0.000
Age of firm	5 or more, less than 10	0.0901151	3.55	0.000
	2 or more, less than 5	0.0676048	2.03	0.043
	less than 2 years	0.1540078	2.59	0.010
Gender of owner	Female	-0.1190461	-4.38	0.000
Profit	Remain unchanged	-0.0854393	-3.53	0.000
	Decreased	-0.0079712	-0.34	0.737
Access to public finance including guarantees	Unchanged	0.1359307	6.77	0.000
	Deteriorated	0.4570823	20.16	0.000
Firm-specific outlook with respect to sales and profit	Unchanged	-0.2915546	-13.08	0.000
	Deteriorated	0.0162269	0.61	0.540
Firm-specific outlook with respect to firm's own capital	Unchanged	-0.0802742	-3.62	0.000
	Deteriorated	0.1943343	6.73	0.000

Diacon, *et al*, (2013) stated that though gorvenments intervention was meant to ease the 2007-08 crisis effects, imperfectly implemented policies in countries like Greece and Spain had intensified problems. They sated that the most affected countries were those where there were serious structural problems before the crisis and the Keynesian solution had also exacerbated problems in countries like Ireland, which after joining the Eurozone had lost competitiveness relative to the Nordic countries (Denmark, Finland, Iceland, Norway and Sweden) states because of the country's increased consumption which extended their public deficit. Results in Table 8 also showed that Finland, one of the Nordics had less demand for external financing and findings were

statistically significant. As explained in the literature review, structural problems at the macro level have a significant impact on the business cycle and this possibly affected firm financing in these Euro countries.

Another significant observation was that Portugal showed negative relation, in contrast to notions made by the Institute Of International Finance, (2013). The model coefficients and related significance also showed that Slovenia and in particular France had high external finance demand. A previous study by Kremp and Sevestre (2013, p. 3764) identified France as better off in terms of access to finance. However, the hypotheses in question was whether country variables had effect on demand not supply thus it may be possible that high demand in France was being met by creditors.

This study also explored how other SME characteristics influence external finance demand. These variables have been a major part of SME finance literature and the study examined if smaller and autonomous SMEs found it harder to access finance. The study established that demand was broadly based across all SME sizes in comparison to the base category (0-9 Employees/micro firms). This result did not infer that micro SMEs were not in need of external finance. However it is also expected that smaller SMEs may not be interested in expanding or they may not consider external finance because of fear of rejection. However, autonomous and newer firms tended to have higher demand than the base category, consistent with a study by Holton, et al (2013, p. 210) which found that firm size did not seem to make a difference as all SME seemed to require more finance. When looking at effects of external outlook in terms of access to public finance and guarantees, external demand was high in firms whose outlook had diminished or unchanged in comparison to those who had better outlook. These findings were expected because negative perception or indifference can be a determinant of external finance demand as SMEs become more concerned about mitigating the risk of failing to fund operations. Canton, *et al*, (2012) studied Euro SME perception on external finance based on a multi-level binomial logit regression and found that the younger and smaller SMEs had the worst perception on access to bank loans. Hence, if the study had measured the relationship between variables by separation all firm characteristics as well as not compounding debt instruments; the analysis could have depicted different results.

Hypotheses two: Turnover and profit (income generation indicators) were tested to see if they had effect on bank terms and conditions (interest rates and loan amounts) using multinomial regression. Concepts drawn from the literature review stated that external finance premiums must correlate borrower's net worth (Angelopoulos and Gibson, 2007, p. 676) and credit risk plays a major part in lending decisions. Assuming that firms with high turnover and profit would likely cause credit risk; the study expected to see a positive relationship between high income and superior bank terms and conditions. When testing turnover effects on interest rates increase, results indicated that there was a positive relationship between turnover increase and interest rate increase, however effects of profit were insignificant (see Table 9).

The study then tested effects of these two independent variables on interest rate decrease and results only showed a positive relationship between turnover decrease and bank interest rates decrease, the rest were not statistically significant. These findings indicated that banks did not essentially set interest rates based on SME internal operations but rather on external influences like central bank interest rates, inflation and notably firm collateral values. Collateral values are vital because debt covenant agreements are often hampered by asymmetric information, moral hazard and adverse selection (Voordeckers and Steijvers, 2006, p. 3072). This result also supported views made in the literature review that it is difficult to use profitability for assessing credit decisions because it is a historical figure that is often too subjective and prone to misrepresentation.

Table 9: Effects of other SMEs characteristics on bank terms – interest rates

Sub-Category	**Variable**	**Coefficients**	**z**	**P>|z|**
Interest rates decrease				
Turnover	Remain unchanged	0.1590433	3.32	0.001
	Decreased	-0.0483661	-1.00	0.317
Profit	Remain unchanged	0.0624183	1.17	0.243
	Decreased	0.1901832	4.13	0.000
Interest rates decrease				
Turnover	Remain unchanged	-0.0241218	-0.42	0.676
	Decreased	0.1706888	2.83	0.005
Profit	Remain unchanged	0.0663477	1.07	0.286
	Decreased	0.0009185	0.02	0.987

When testing the effect of income generation indicators on loan amount increase, results in Table 10 indicated that increase or decrease of turnover and profit had a positive relationship with increased in bank loan amounts showing that whether turnover or profit increases or decreases loan sizes will still be increased by banks. Although the p values on loan size increase showed statistical significance, the results were not indicative of bank patterns meaning there are other variable that bank may consider before they grant loan amounts. This was expected because not only was this survey conducted when the European Central bank was encouraging banks to lend, evidence from other studies of other debt instruments showed the similar results. Martínez-Sola, *et al,*

(2014) also studied 11,337 Spanish SMEs and found that no empirical indication of the influence of granting trade credit based on profitability.

The study then tested the effect of turnover on loan size decrease, and found that whether turnover is high or low, banks reduced loan sizes. Similar tests were done to show the effect of profits and results for profit were not statistically significant but profit decreases showed that as profits dwindles; banks also reduced the loan amount available to SMEs. A study by Cornett et al, (2011, p. 228) found that banks that held liquid assets prior to the credit crisis tightened the criterion for loan granting. This last result showed a pattern of banks responding to negative firm news seemed to also be in existence and considering the credit crisis, it is probably safe to say that banks have become more concerned about their risk profiles.

Table 10: Effects of other SMEs characteristics on bank terms – loan amount

Sub-Category	**Variable**	**Coefficients**	**z**	**P>|z|**
Loan amount increase				
Turnover	Remain unchanged	0.2890611	5.4	0.000
	Decreased	0.1212928	2.16	0.030
Profit	Remain unchanged	0.1196109	2.09	0.037
	Decreased	0.1415467	2.68	0.007
Loan amount decrease				
Turnover	Remain unchanged	0.1751306	3.04	0.002
	Decreased	0.131883	2.43	0.015
Profit	Remain unchanged	-0.0314264	-0.47	0.636
	Decreased	0.2129205	3.95	0.000

To sum up, there were a number of interesting observations from the descriptive analysis and the regression exercise and shed light to some of the existing trends in SMEs financing. The analysis supports the literature notion that country disparities exist in the need for finance in Euro SMEs. The SME finance demand may be influenced by external factors. Autonomous profit oriented firms are more likely to demand more finance than subsidiary profit oriented. *B*ased on the overall picture, there is no real evidence of banks setting loan amounts on the basis of SME turnover or profit.

5. Conclusion

Using descriptive statistics and regression, the study analysed trends in SME finance and also attempted to understand trends in SME financing as well as test whether relationships existed between firm characteristics and external finance demand. The study also looked at how income generation indicators influence bank decisions in setting debt covenant terms and conditions. Three major themes were revealed, that is; country variables have effect on external finance demand, negative perception on external outlook increases demand for external finance and lastly banks do not solely set interest rates based on firm operations. Not only do these findings shed light on Euro area SME credit conditions, results can be seen as having significant ramifications for the overall Euro perspective especially when considering country variations. Supposing that SMEs in the most troubled countries (PIIGS) continue to be financially constrained, these effects will have a contagion effect on other Euro area states. With additional bailouts on countries like Greece coming into effect several years after the emergence of the credit shocks, other studies have begun to question whether the Euro zone was a failure.

A study by Grauwe, (2013) stated that the Euro monetary union perhaps worsened national booms and busts. The Euro member states were stripped of the country level stabilisers that existed prior to the formation of the union without being transposed at the monetary union level, leaving some states fragile and unable to deal with the imminent country level disturbances. Unfortunately, the burden of this fragility and massive debt lies not only on the rescued countries but on the whole Euro region. Considering the comments made by the European Central Bank, (2013) about SMEs continuing to suffer operational decline as well taking into account the contribution SMEs make to the Euro economy. This highlights that a failure in the part of the European Union to device fitting monetary policies which address imminent SME financing problems in troubled countries could be catastrophic to the Euro economy. On the other hand, there were some notable limitations to the analysis.

In terms of limitation of our study, the data used in this study may lack real context because of parameters relating to anonymity and random selection of data. It is problematic to test trends with such data as would be possible when testing specific SMEs over time. The data used also presented the likelihood for errors due to subjectivity. For instance, questionnaires are usually predetermined and prescriptive meaning they only allow the study to make summations about variables in question. Respondents can only answer given selections and if questions lack real context then results will also be distorted. Respondents may also not provide a true reflection of the firm's situation. The methodology used also posed some limitations. The main problem with descriptive statistics is that it only stated what raw data said and this is insufficient to establish cause and effect. The regression models were also tested on a large volume of data and this may in some cases cause false significance test. Nonetheless, it is felt that the study considered not only a wider range of SME specific variables but also

actively observed other studies that analysed the topic in context and this substantiated the findings.

Based on the limitations and results obtained, it is also possible to make several recommendations for future studies. These findings challenge data gathering models employed by the ECB. This is particularly the case with external finance applications made by firms. A crucial concern is whether key insights made by this study would be altered if extensive analysis was made on the survey. For instance, although success rates for external finance applications have gradually improved over time, the failure in the ECB data to provide sufficient information for those who have not applied external finance for "other reasons" gives reasons for one to conclude that there still is a long way to go in understanding drivers of SME credit demand. Over a quarter of the firms included in the survey gave that response and these unknown explanations may possibly help researchers in modelling studies that appropriately address SME credit conditions.

The uniqueness of this research is the identification of the vital variables for defining SME demand for external finance. An advantage over earlier work is the controllability of the descriptive statistics which delivered a simple insight with less complex analysis. Interpretations of notions drawn from this study also compliment previous academic work on SME lending. Finally, the framework presented by this study is well suited to take on additional characteristics relevant to understand the SME sector such as drivers of profits and turnover differences at country level. In future, combining different analysis models and data sources for instance using firm level as well as the ECB bank survey data might help to overcome some of the limitations presented in this study. In conclusion, the results offer a unique standpoint of research which is very valuable for understanding the determinants of SME credit conditions.

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