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## Regional financial system and the financial structure of small firms

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# JENA ECONOMIC RESEARCH PAPERS



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## **Regional Financial System and the Financial Structure of Small Firms**

by

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# Regional Financial System and the Financial Structure of Small Firms

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## **Abstract**

The capital structure of firms is known to be different not only due to firm characteristics but also to the sources of capital. Therefore, there is a need to understand the supply side effects on a firm's capital structure. A small firm's choice of financing sources may be limited by the supply-side financial endowment of the region. Small firms are known to be heavily reliant on internal finance and the quantity and price channels are expected to drive usage of debt. Our findings on 2000 small firms in England show that the quantity and price channels might work only for supply of very local capitals. Firms tend to prefer internal finance when semi-local or national institutions show higher commercial operational distance in their region. These results point out that semi-local and national institutions tend to drive away usage of debt due to monitoring costs or credit rationing, while very local institutions increase the usage of debt through quantity or price channels.

JEL-classification: G24, G32, E5, N2, O18

Keywords: capital structure, regional financial system, information asymmetries, geography

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## 1 Introduction

A large share of small business failures is attributed to financial structure mismanagement. Most of our knowledge on financial structure of small firms is from the streams of financial access and capital structure. The implications from capital structure stream are three fold; one- small firms are more debt based, two- small firms tend to bootstrap their finances and three- small firms are more credit rationed. Beyond that it is well known in capital structure<sup>1</sup> research that owner, firm and industry characteristics are important for these results. In the stream of financial access research from the policy angle has been toward financial institution availability, rules and regulations, time for application etc. The emphasis in this stream is mainly on banks and borrowers. The central message is that small borrowers have many problems in the access front mainly in developing economies. Until recently these two research streams have been distinct from each other. Faulkender and Petersen (2006) unite these two in an effort to show that supply of capital is as important as demand for capital in determining capital structure choice of firms. It is still an open issue whether this result is applicable to small firms.

Geography of firm finance is mostly a black-box in economic geography as well as finance literature. This paper contributes by empirically testing for the effect of regional presence of lending institutions on different financing options utilised by SMEs. Not just utilisation but how these are combined by SMEs is also analysed. In order to do so, we introduce a modified measure of lending operational distance- which we call the “Commercial Operational Distance”. This measure is calculated for both local as well as national lending institutions. Overall, we

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<sup>1</sup>for small businesses we use the term financial structure since capital structure is essentially measured on a long-term basis while small businesses have often short-term financing agreements. Hence by financial structure we mean long plus short-term financing

perform the analysis for two levels- rural and urban. The central question that we address is: how does regional commercial operational distance affect the usage and combination of finances.

Our results show that the presence of very local lending institutions affects the likelihood of urban small firms to combine retained earnings with either debt or debt and boot strap or debt, bootstrap and equity. These combinations are not utilised by small firms which are in the regions where banks and semi-local lending institutions exist. They would rather depend on internal financing. For rural small firms, the presence of lending institutions does not matter. In fact, high presence of any lending institution does not change the preference for internal finance. We also tested the effect of quantity channel that if all lending institutions are present in a region. High combined presence also does not deter small firms from using internal finance both in rural and urban areas. The two reasons for these are that small firms may rely on internal finance since the quantity and price channels of lending institutions do not seem to work and if they do work its only for very local lending institutions. The second reason might be that due to riskier firms approaching for debt, monitoring costs are pushed on to the borrower or credit rationing might trigger usage of internal finance only. In the case of small firms, Faulkender and Petersen (2006)'s proposition that usage of debt will increase with increase in suppliers of capital -stands true only with respect to increase in very local suppliers of finance and not with all.

In the following section we introduce the effect of source of capital on financial structure of small firms. In section 3 we put forward the concept of regional financial system and provide our measure of commercial operational distance. Section 4 presents the data collection strategy and some initial observations. We then present the results of the estimated the multinomial model for rural and

urban firms in section 5. We end this paper with discussion of results, conclusion and directions for future research in section 6.

## 2 Source of Capital and Financial Structure of Small Firms

*Yet even 40 years after the Modigliani and Miller research, our understanding of these firms' financing choices is limited.*

Stewart C. Myers<sup>2</sup>

While Stewart Myers makes a general remark on firm financing research one can say that specifically in the case of small firm financing this remains true to date. In small firm financing research, progress has been made in terms of identifying the differences between small and large firm financing patterns (Bates & Hally, 1982), evidence of bootstrap financing (Auken & Neeley, 1996) and a lot of country studies have put further light into the subject. Two main aspects have been the focus of research on financing of small firms: 1. bank credit availability (as in Petersen & Rajan, 2002, Patti & Gobbi, 2001, Black & Strahan, 2002 and Cowling & Mitchell, 2003 for example) and 2. capital structure and financing modes (as in Chaganti et al., 1995, Romano et al., 2001 and Hutchinson, 1995 for example). These two aspects have been dealt on both start-ups and already existing small and medium enterprises.

The bank credit availability research has come up with many useful observations. Small firms are more reliant on relationship banking but when there is lack of reliable information lending terms become tighter (Baas & Schrooten, 2006).

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<sup>2</sup>The Journal of Economic Perspectives 2001, Vol. 15 No. 2 p.82

Black and Strahan (2002) find that deregulation of banking sector in the United States and wide-spread branch activities actually helped increase the number of incorporations. This also means that reduced monitoring costs due to diversification tend to play more roles to large banks than small banks which rely on relationship lending. Does it mean that relationships do not matter? On the cost factor they certainly seem to. Berger and Udell (1995) find that banking relationships of small firms helped decrease interest rates on lines of credit. Petersen and Rajan (2002) observe that credit availability to small firms has increased since there has been a development in the financial sector.

While these results pin-point at the usage of mainly long-term sources of debt like bank loans, inherently they do not address the issue of other sources of financing. While failure of many small firms can be attributed to lack of credit availability, composition of firm's finances also plays a crucial role. The small firm capital structure research focuses on this point. Small firms need not respond to market assessments (Chaganti et al., 1995) and therefore could choose to finance themselves with the sources they deem to find useful or obtainable. In fact, since small firms are mainly owner-managed the choice of financing is strongly influenced by preferences and goals of the owner-managers (Barton & Matthews, 1989, Levin & Travis, 1987 and Chaganti et al., 1995). Why is therefore an immense usage of debt finance? Hutchinson (1995) shows that equity aversion and the desire to retain control of the firm tends to restrain owner-managers from issuing equity. While the finance perspective of explaining capital structure decisions on firm's asset tangibility (as in the trade-off theories and Chung, 1993) and other firm characteristics, the corporate strategy perspective deals with goals, preferences and motivations of entrepreneurs. Barton and Gordon (1988) and Barton and Gordon (1987) suggest that the corporate strategy perspective is

more efficient in explaining capital structure decisions of small firms. This might be true since the nature and operations of small firms are quite different from those of large firms.

Top management, in order to retain their share of earnings would always prefer to finance the small firm using retained earnings rather than external credit or new stock holders (Chaganti et al., 1995). If the small firm has managers, then they tend to prefer debt and only external sources of financing. These results may seem important to existing SMEs. When one considers start-ups the tendency towards financing is clearly equity mainly if the start-up is innovative (for example Audretsch & Weigand, 2005, Aghion et al., 2004) but at the same time younger firms perceive higher financial constraints (Binks & Ennew, 1996). Since small and young firms perceive financing constraints and retain control they have to limit themselves to using retained earnings. Bates and Hally (1982) finds that in the United Kingdom small firms tend to be more reliant on retained earnings and had lower liquidity and had rarely issued stock. If external financing was needed they would prefer bank loans through the director.

Thinking in terms of strategic management perspective, financing choices relate to the owner's characteristics such as education which are indicators of human capital which might be a substitute for financial capital but also helps in gaining financial capital mainly from sources of debt. In financial market literature it is well known that younger people are more risk taking and hence might often get rejected for loans or directly approach equity providers. Such cases are quite too often in these times with examples from YouTube, Google and ever increasing business plan competitions mainly targeting equity. Not just these characteristics, but also gender of the owner has also been found crucial in capital structure decisions.



While empirical evidence is disputed if women are more conservative and less-risk taking in terms of financing, some studies throw a different light. Women tend to face unfavourable financing conditions more often than men (Riding & Swift, 1990) which makes them seek either equity or rely on internal financing. While Chaganti et al. (1995) finds this to be true some contradictory evidence has shown up more recently. Orser et al. (2006) find that women business owners were as likely as men in seeking all types of financing except for equity capital which women sought less than men. This evidence again is contradicted by Constantinidis et al. (2006) that gender effect is still present in financing options. These contradictions mainly seem to be due to country differences since these studies referred to women in different countries with different cultures. Yet another important focus of small firm finance research is that small family businesses are less likely to opt for equity and would rather run the businesses with retained earnings (for more recent research and a good review see Romano et al., 2001 ).

As can be observed there are many factors that influence a small firms financing behaviour and these factors are complex. As Romano et al. (2001) rightly note, the dynamic interplay between business characteristics, behavioural characteristics is important in financing decisions. These results also hold true for bootstrap financing literature where small firms are found to bootstrap their financing needs with different types of financing like asset-based factoring, leasing and trade credit or by using credit cards (Auken & Neeley, 1996). As Berger and Udell (2006) suggest usage of these lending technologies by SMEs must be considered in order to avoid misleading conclusions that large lenders are disadvantaged in lending to SMEs and also this might help in understanding financial structure of more informationally opaque small firms. While there are other studies that

concentrate on other topic such as the growth related features of small firm financing (Chittenden et al., 1996), the central message of all the findings are that small firms are more financially constrained, rely more on retained earnings and combine bootstrap or short-term financing to their financial structure which is more debt oriented. Evidence on women's preference is disputed while family firms are considered to be more reliant on retained earnings or debt. Given these findings there is yet another important aspect that is to be analysed for SME financial structure which is the source of capital.

## **2.1 *Source of Capital***

Earlier work on capital structure concentrated mainly on owner, firm and industry characteristics in the premise of information asymmetries, agency costs and signalling. Only recently the concentration has shifted to the specific sources of capital. Faulkender and Petersen (2006, p.46) add that "The same type of market frictions that make capital structure relevant (information asymmetry and investment distortions) also imply that firms sometimes are rationed by their lenders". This indicates at the financial constraint the firms face and "thus, when estimating a firm's leverage it is important to include not on the determinants of its preferred leverage(the demand side) but also the variables that measure the constraints on a firm's ability to increase its leverage(the supply side)".

The supply of capital is as important as the demand factors on many fronts. Differentiated financial markets tend to originate when credit rationing is undertaken by banks. This also can be perceived as availability of bootstrap finance or financial innovation itself. The main competitive advantage of these new intermediaries is in collecting creditor information and decrease information asymmetry problems (Faulkender & Petersen, 2006). The one way that established inter-

mediaries can decrease information asymmetry is by interaction with borrowers, relationship lending etc. Small firms tend to rely mainly on short term debt and therefore would ease their capital constraints if these new intermediaries are accessible. These firms also tend to be riskier ones. The use of debt capital however shall decrease since monitoring costs increase towards these riskier firms and if monitoring does not help then banks will resort to credit rationing. In both cases firms tend to utilise lesser debt. Faulkender and Petersen (2006) shows that if debt levels are still found to be higher then it is due to the quantity channel where the number of lenders is higher or through the price channel where lenders compete on interest rates (mainly with local banks). Hence every new source of debt capital will increase the usage of debt. Faulkender and Petersen (2006) operationalise this argument in the following manner where  $Y_{ij}$  is the financing choice:

$$Y_{ij} = \alpha_1 demandfactors_{ij} + \alpha_2 supplyfactors_{ij} + \epsilon_{ij} \quad (1)$$

Faulkender and Petersen (2006)'s empirical strategy was to estimate leverage as a function of firm's capital market access (measured as having a debt rating). Given this measure is useful, it does not directly measure if the firm has direct access to capital markets. If financial markets are well integrated, that any firm could get money from any lender or any lender may provide credit to any firm in the economy, then this measure would suffice. In the following section we review the literature that this is not true and therefore we suggest using the source of capital as a regional measure. A small firm's capital structure composition may not just be a function of business and industry characteristics but also involves the supply of capital on the regional level. One must remember that small firms

are not as mobile and do not establish their branches all over the country. They are very local and are crucial for the local economies. While the demand factors may say that small firms resist equity and use mainly internal finance or combine with other financing choices, the supply factors such as availability of financial institutions in the region may in the first place determine the composition of capital structure. If the quantity channel on the regional level is true then firms will tend to combine more sources of finance that are debt based or utilise the services of a lending institution- *ceteris paribus*. The same effect may be possible from the price channel. Since we are talking of small firms the financial structure takes a wider form including bootstrap financing (asset based lending, factoring, leasing). Most of these are lending technologies and need a presence of a lending institution. Hence firms may tend to combine these with internal finance if the quantity or price channels are not in operation. We therefore address the question of financial structure in terms of what other sources do small firms combine with internal finance.

Pollard (2003) puts forward an impressive review of literature to show that the field of firm-finance especially the small firm finance is something of a 'black-box' in economic geography. Geography of finance on the other hand deals with the large international flows of finance and effects of monetary policies. Giving a geographical perspective to supply of capital would throw more light on capital structure decisions apart from only demand side determinants. In the next section we review literature on geography of finance and how it matters to small firms. We then formulate measures of commercial operational distance of lending. While the empirical evidence mainly concentrates on the effect of operational distance on credit availability, innovation (Benfratello et al., 2006), lending growth and household incomes (Shaffer, 1998), we focus the effect of operational distance on

financial structure of small firms.

### **3 Geography of Firm Finance: Conceptualising Regional Financial System**

The first question that appears in an economist's mind is that does geography really matter in financing firms? Klagge and Martin (2005) summarise the debate in this regard. The opposition to this notion is that good projects are always financed, no matter where they are, as long as risk-return profile is good. Also the problem is mainly considered as a demand but not supply based. Many banks were considered to view that regional demand is lacking. Finally, spillovers from other regions were considered to take care of the problem. Hence money flows irrespective of geography. While these arguments seem to be convincing, some of the market-failure elements seem to be forgotten. As is well known, neoclassical finance theory assumes perfect capital markets, complete information and rational agents, whereas in reality they aren't. Smaller regional financial centers tend to fulfill a complementary function on the client groups neglected by larger and international financial centers (Klagge & Martin, 2005). Also, financial capital usually gets attracted to an urban center rather than in the peripheries (Christensen, 2007).

Given that there are information problems between financiers and the financed, one might argue that financial intermediaries are necessary on the regional level for proper information flows, be it in the form of soft information or relationship based. This is certainly of importance to small firms since information costs and transaction costs are higher for small firms operating in regional level (Christensen, 2007). On the cost angle, monitoring and screening costs

lower if banks are geographically closer to the borrowing firms (Petersen & Rajan, 1995). What about access to capital markets? While historically countries like Germany have tried establishing capital markets for small firms (Neuer Markt) it has generally been difficult for SMEs to access these. One main reason is that high listing costs make centralised capital markets inaccessible. These arguments might reinforce the point that at least for small firms, geography does matter in their financial access.

Small firms face high costs attributed to monitoring, screening and information asymmetries from the lenders/investors. These costs increase with distance from the financial center (Pollard, 2003, Klagge & Martin, 2005, Chakravarty, 2006, (Christensen, 2007)). Therefore in order to decrease these costs regions have to be either closer to the center or make efforts to attract investors/lenders to their location. This situation gets even difficult in centralised financial systems (in this case, England) unlike in Germany where significant regional capital markets exist. Moreover it's a well-known fact that funding gaps are much more severe in economically lagging regions.

How does distance affect lending? First by reducing information asymmetries and second- banks resort to spatial price discrimination if they know the location of the borrower (Degryse & Ongena, 2005). Theoretically speaking a monopolist firm charges higher interest rates to closer borrowers since they incur lower transportation costs in travelling to the bank branch. On the other hand, in order to address information asymmetry problems lenders resort to costly verification through monitoring. Monitoring costs to the lender increase with the distance to the borrower. Hauswald and Marquez (2006) model that informed banks tend to charge higher interest rates to closer borrowers since the correctness of quality signals is lesser. Hence both positive and negative effects are possible due to

distance. Empirically, (Degryse & Ongena, 2005) find that loan rates tend to decrease with the distance between the borrower and the lender which confirms the information asymmetry. Small firms were found to be paying higher interest rates than large firms.

While these arguments are from the angle of information about the borrower, borrowers themselves tend to also have informational requirements. Convenience to reach the bank branch, reputation of the banks, quality preferences and personal/long-term relationships tend to shape the borrower's preference for a particular bank (Elliehausen & Wolken, 1990). While this might hint that borrowers might not have a regional preference for banks if their personal preferences are weighted higher. At the same time one might argue that the information about the above parameters actually increases when banks are located closer. Moreover, these preferences might be generalised to all kinds of banking relationships and may not apply for commercial lending. Lending systems tend to follow a cycle where each both lenders and borrowers' gather information about each other and transportation costs might actually limit the borrower's search space.

Given that a borrower's search space is geographically limited due to transportation costs the only way to obtain a loan is by increasing a large number of banks in that limited space. Petersen and Rajan (2002) observe that credit availability to small firms has increased since there has been a development in the financial sector. Banks tend to reach to the clients through their branch networks and hence it's the reach and not monitoring ability that might increase credit availability. Following their logic, it would mean that more branch networks in a region would increase credit availability. If banks compete over interest rates then more borrowers would compete for loans. The main problem with having many competitors is that lower-quality borrowers tend to obtain loans in a

highly competitive market. Banks then resort to credit rationing (Petersen & Rajan, 1995) or charge high interest rates. Financial constraints to small firms in the region would increase or decrease depending upon the number of sources of finance in the region and the type of competition between them. One way to understand the financial constraint situation is to concentrate on the financial structure of the small firms, which in a way, provides some inputs on how a region affects the combinations of different types of finance that are actually used.

### **3.1 *Regional Financial System***

Three arguments can be summarised for assessing a region's financial system (Klagge & Martin, 2005). Firstly, Local critical mass of financial institutions and agents enables local institutions, SMEs and investors to exploit the benefits of spatial proximity. Secondly, Existence of regional capital markets may help to keep capital within the regions and hence into local economic development. Finally, in an integrated financial system decentralised intermediaries increase the efficiency of allocation of investment (by fulfilling the information and networking function).

A Regional Financial System can be conceptualised as a network of suppliers and buyers of finance for commercial purposes in a region of a country. In order to examine the role of a region's supply of financial capital we first have to conceptualise it in terms of the actors involved. These actors are financial institutions/branches/agents active in the region, local/national Government financing initiatives, and initiatives from international bodies such as European commission, World bank focusing on flow of finance in the region. Since buyers of finance in the present case are firms, we consider only seekers of finance for



commercial purposes.

In this study, we focus on one element of the regional financial system which is the lending institutions. In a centralised financial system, lending institutions (of intermediaries, to be specific) operate mainly through branch activity while being headquartered in a location, generally a financial center. We distinguish two types of lending institutions- local and national. In England this trend can be clearly observed due to existence of building societies and credit unions on the local level and big banking groups on the national level. For matters of convenience we shall call these local and national banks. Due to increase in communication technologies, the geographical diffusion of banking technologies has increased which decreases the operational distance between banks and borrowers. The current view of bankers is that as long as the local credit markets are competitive and integrated, operational proximities should guarantee flow of funds to local borrowers. However is it really the case that utilisation of financing sources is independent of locational characteristics of operational distance? Alessandrini, Presbitero, and Zazzaro (n.d.) summarise the importance of operational distance. First, closeness to borrowers enables banks to complement hard data with soft data collected on informal basis which improves borrowers' screening. This leads to decrease in credit rationing (Williamson, 1984) and denial of credit (Zazzaro, 2002; Gehrig, 1998). Second, relationship based banking increases the likelihood of loan approval due to competition amongst market entrants. Empirically some of these arguments are supported. Patti and Gobbi (2001) find that density of branches (relative to population) in a province increases the credit availability for small firms. Apart from benefits the adverse effects that operational proximity poses is market power leading to high interest rates and negative externalities. Due to multiple banking relationships borrowers may reduce the hold-up problems

but at the same time increases adverse selection problems. This is supported by empirical evidence by Degryse and Ongena (2005) who find in line with the results of Petersen and Rajan (2002) that in Belgium, operational proximity led to higher interest rates. Increase in operational distance also gains importance since competition in local credit markets increases and as said before, transportation costs and information asymmetries explain why operational distance is important for financial constraints/credit availability in a region.

### 3.2 *Measuring Operational Distance*

One way of measuring operational proximity is in terms of operational distance. Though distance here does not mean kilometric distance, it means the distance of operations between banks and borrowers. Alessandrini et al. (n.d.) put forward the notion of operational distance as used in Patti and Gobbi (2001) by calculating the density of bank branches relative to the regional population. They use operational distance to show that share of smaller local banks in the region increases credit availability. Operational distance is measured by Patti and Gobbi (2001) as follows

$$OPD = \left( \frac{Branches_j}{Population_j} \right) \times 10,000$$

Where, *OPD* is operational distance that measures number of bank branches in region *j* per 10,000 population in that region. While this formulation measures the operational distance to general population, it is often used to measure financial constraints of firms as in Patti and Gobbi (2001). One problem with this is that banks' operations are aimed at providing services to all sections of the society and not exclusively for businesses. Population distribution might be not similar to the distribution of businesses in different regions. Therefore since our

motive is to consider the operational proximity to businesses in the region, we put forward our formulation based on number of businesses as the ‘Commercial Operational Distance (COD)’. Commercial operational distance calculates the branch density relative to 1000 VAT businesses given by:

$$COD = \left( \frac{Branches_j}{VatBusinesses_j} \right) \times 1000 \quad (2)$$

We calculate equation 2 for all the three types of lending institutions in the 9 regions of England namely: East of England, East Midlands, West Midlands, North West, North East, South West, South East, Yorkshire & Humber and London. Another issue is that, given that commercial operational distance is calculated separately for every type of lending institution, sometimes there might be competition between lending institutions leading to similar behaviour regarding branch location. Secondly, it is an interesting question to analyse what happens if a region exhibits high operational distance of all the lending institutions. While the COD formulation for each of the three presents commercial operational distance for each type of lending institution, we also inquire if COD of all the three together are required for improving credit availability and usage. Therefore we calculate ‘combined commercial operational distance (CCOD)’ as

$$COD = \left( \frac{BS.Br_j + Bank.Br_j + CU.Br_j}{VatBusinesses_j} \right) \times 1000 \quad (3)$$

Where  $BS.Br_j$ ,  $Bank.Br_j$  and  $CU.Br_j$  represent branches of building societies, banks and credit unions in the region  $j$ . In this manner access to debt can be measured on a regional scale unlike in Faulkender and Petersen (2006). The next section puts forward the data and initial statistics.

## 4 Data and Initial Observations

The data requirements for such a study as ours are vast. At the outset one needs firm-level data on financing which is sampled on a regional level. For this purpose we use the United Kingdom Survey of Small- and Medium-sized Enterprises' Finances (SMEF), 2004 sponsored by the Bank of England (Fraser, Trade, Industry, & Britain, 2005). This survey provides us with a sample of about 2000 small and medium enterprises in England. As Fraser et al. (2005) notes, this was the first representative survey of SMEs to offer a close analysis of businesses with fewer than 250 employees, their main owners and their access to external finance. SMEs were defined as firms having less than or equal to 250 employees. The main topics that were covered in the survey included owner's personal characteristics, firm demographics, providers of external finance mainly commercial loans, assets and asset-based finance, credit cards and equity finance. This survey allowed us to identify the specific combinations of finance that small firms used. This could be done by allowing the respondents to mark more than one option in the financing question. Hence specific combinations could be found as against having only internal finance. Firms had to answer if they had used internal finance (by using current/deposit accounts to run their business), equity finance (VC or friends, family, relatives), commercial loans and bootstrap finance (which includes leasing, factoring and asset-based finance- mainly short-term). Amongst 24 combinations that are possible we concentrate on six specific cases. Since our purpose is to identify the combinations of finance that are used as against having only internal finance our natural choice was to consider the case of internal and all the mutually-exclusive combinations that are used with internal finance. After removing the combinations that have less than 30 observations

we ended up with identifying firms that have only internal finance, internal and bootstrap, internal and debt, internal, debt and bootstrap, internal, equity and bootstrap and all four kinds. Figure 1 shows the distribution of usage of these combinations in our sample.

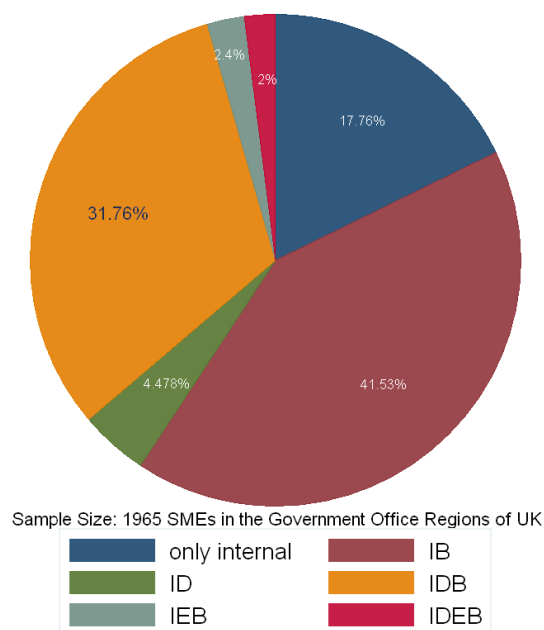


Figure 1: Combinations of Finance utilised by SMEs

As can be observed almost 42% of SMEs combined both internal and bootstrap finance while 31% used internal, debt and bootstrap. The next bigger share uses only internal (18%) followed by internal and debt (4.5%) and internal equity and debt (2.4%) and finally a very small share of firms combined all the four (2%). This hints that many firms have to limit themselves to using either internal and bootstrap finance. Also as observed in many countries, dependence on debt is higher. Only 7 firms had VC based equity and rest of the equity was from family or friends/relatives. Since we are looking at combinations every firm, theoretically speaking, can choose between combinations to be used. Inherently each element of every combination has its costs and benefits hence firms tend

to make combinations of the financing sources in terms of the best cost/benefit choice possible. Recall the equation to be estimated:

$$Y_{ij} = \alpha_1 demandfactor_{s_{ij}} + \alpha_2 supplyfactor_{s_{ij}} + \epsilon_{ij} \quad (4)$$

$Y_{ij}$  takes on values 0 to 6 depending on which of the 7 mutually exclusive (see figure 2 for the exact categories)<sup>3</sup> alternative combinations of finance- only internal, internal & bootstrap(IB), internal & debt (ID), internal, debt & bootstrap(IDB), internal, equity & bootstrap(IEB), All the four(IEDB)- is chosen. This indicates at the usage of a multinomial logistic model with the base category as ‘only internal finance’.

On the supply-side, our main focus is to calculate the operational distance of branches of lending institutions. Since this is a regional measure we consider 9 Government Office Regions (GOR) of England. GORs are standard statistical regions and administrative regions for policy purposes. Ideally we would have preferred smaller regions but due to lack of data we limited ourselves to administrative regions. In order to measure the already existing financial environment it will be ideal to gather data of at least a year before than the data on finances. In our case we therefore collected supply-side data for 2003 since the SMEF survey was conducted in 2004. As discussed earlier, we use a modified version of operational distance (operational distance to businesses) which is based on number of business rather than population. Data about number of businesses is taken from the online statistics section of the UK Statistics Authority.

There are three different type of lending institutions in England. Firstly, the national and widespread banking groups which operate all over England with

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<sup>3</sup>in terms of identification, once a respondent reports having internal and debt, that respondent is only counted for internal and debt and does not appear in other categories.

Figure 2: Categorisation of financing options: original questionnaire format

S12. And can I just check which of the following forms of finance you have used over the last 3 years for business purposes? **READ OUT – CODE ALL THAT APPLY**

	USER	NON-USER	DK
internal			
Debt			
Equity			

Bootstrap

Source:

UK Survey of small business finances 2004

more than 6000 branches all together. Secondly, the building societies which are semi-local in nature but have long standing history of mortgage lending, dating back to mid 19th century. Building societies operate through branches too but limit themselves to either the home-region (where the headquarters are located) or very nearby regions. The third type of institution is the credit unions. Credit unions are very local. They are very specific to serving members-only in terms of loans and deposits. Credit unions are very location specific and rarely have any branches at all. Given that the British banking system is very centralised, local lending institutions either tend to play a complementary role in far off regions or have a long-standing history and origins in the regions.

In order to calculate commercial operational distance we needed to have region-wise number of bank branches. It was difficult to obtain directly from each bank so we obtained a list of banks operational in the year 2003 from the Financial Services Authority <sup>4</sup>. We used this list, along with the post-code map of UK and traced the number of bank branches for each post-code from internet navigation and mapping sources such as [www.upmystreet.com](http://www.upmystreet.com) and [www.locallife.co.uk](http://www.locallife.co.uk). Since the branch details referred to 2008, we then we traced back bank branch closures and additions since 2003 using newspaper archives from internet and obtained the near-exact number of bank branches in for government office regions of England as of 2003.

In order to obtain the building societies branch statistics, we compiled aggregate branch statistics from the Annual reports of the British Building Societies Association<sup>5</sup> and then visited each building society's website and categorised the branch addresses into regions using the postcode map from the Royal Post. The

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<sup>4</sup><http://www.fsa.gov.uk/>

<sup>5</sup><http://www.bsa.org.uk> ; We thank some of the building societies that have provided us data directly



Financial Services Authority provided us with the aggregate annual reports of the credit unions in UK<sup>6</sup>. Regional information on number of credit unions was readily available through these reports. Figures 3 and 4 put forward maps of the composition of bank branches, building society branches and credit unions in 9 Government Office Regions of England. As expected London shares the highest number of bank branches followed by the North West and South East. The North East and East Midlands regions are the ones having relatively low number of bank branches. East Midlands fares the highest when it comes to Building societies bank branches perhaps due to the long-standing history that building societies originated mainly from this region. The North West and South East share similar patterns with East Midlands while the North East has the least number of branches. The highest number of credit unions is found in North West followed by North East and the lowest number of credit unions are in the South East and East Midlands. Overall marked differences can also be noted in terms of composition of different types of lending institutions in each region.

We calculated the commercial operational distance (COD) and combined commercial operational distance (CCOD) for each of the lending institutions for every region as in equations 2 and 3 respectively. Table 1 shows that, building societies are most proximate to businesses in East Midlands and the least proximate to businesses in London. Banks are most proximate to businesses in North East and least proximate to South East. Credit unions are most proximate in North East and least in the South East of England. When it comes to combined commercial operational distance, there are more lending institutions per 1000 business in North East than any area while the least are in South East.

Bankers might argue that it's the demand problem and not supply that is

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<sup>6</sup>[http://www.fsa.gov.uk/pages/Doing/small\\_firms/unions/](http://www.fsa.gov.uk/pages/Doing/small_firms/unions/)

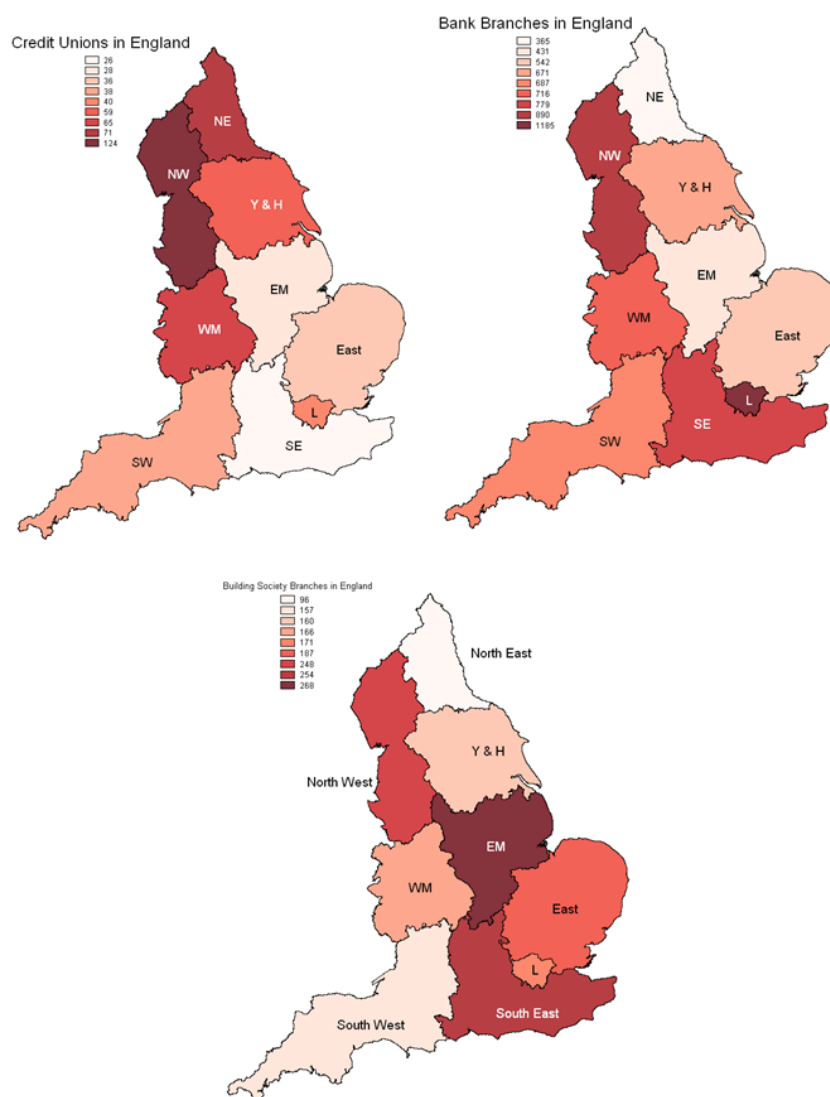


Figure 3: Composition of Lending Institutions' Branches in Government Office Regions of England

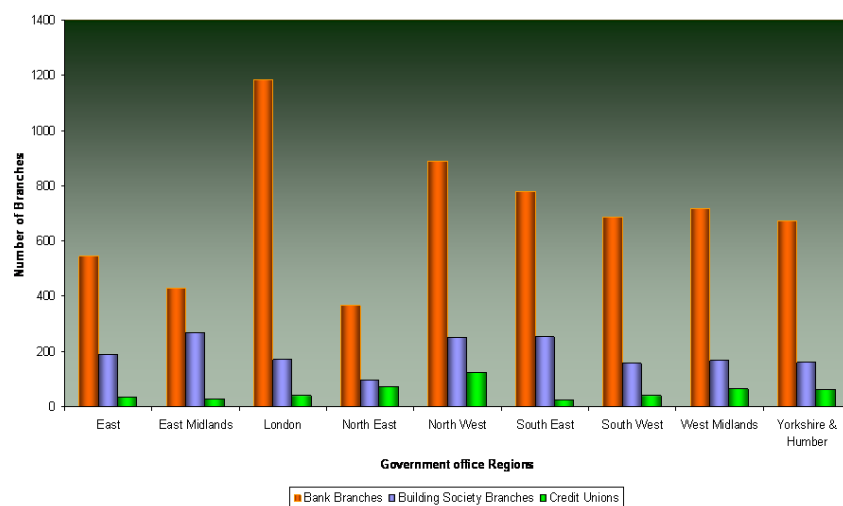


Figure 4: Bar-graph Showing Composition of Lending Institutions' Branches in Government Office Regions of England

Table 1: Commercial and Combined Commercial Operational Distance variations in regions of England

Region	BS-vatbus	Bank-vatbus	CU-vatbus	CCOD
East	1.03	3.00	0.20	4.22
East Midlands	2.19	3.52	0.23	5.94
London	0.60	4.16	0.14	4.90
North East	2.15	8.15	1.60	11.88
North West	1.46	5.24	0.73	7.43
South East	0.90	2.75	0.09	3.74
South West	0.94	4.10	0.23	5.26
West Midlands	1.10	4.76	0.43	6.29
Yorkshire and Humber	1.25	5.30	0.46	6.97

responsible for financial constraints. In order to control for the demand problem we use measures of financial literacy or capability. It might be possible that people in a particular region are more financially literate or attentive towards finance issues than other regions. This might be due to educational differences, significant economic events that happened in the region, motivations of people or might just reflect cultural differences. One case is that if people live in a region like London where financial activity is all pervasive they might follow the herd by being equally knowledgeable about finances or might rely on future availability of information and do not monitor financial markets frequently. People more distant to financial centers may monitor financial markets differently from the closer ones. Since firms are owned and managed by such people, any analysis on their usage of finances needs to account for the amount of financial information they collect. In order to account for this information collection behaviour we utilise another random survey of almost 5000 people in regions of UK. This survey is called the Financial Capabilities Survey conducted by the Financial Services Authority in the year 2004-05. The survey aimed at knowledge of people in terms of financial matters and issues. We use a simple measure of information collection where the respondents are asked on number of financial areas they monitor such as stock markets, inflation, interest rates etc. By obtaining average number for each region we get an approximate representative indicator of information gathering behaviour of the people in each region. Figure 5 shows the degree of information collection in different regions. Out of 11 areas on which financial information could be monitored by people of 9 regions, the highest average number of collection intensity was nearly 3 areas. While people in South East, East and South West were amongst the highest monitoring, London and the North East fared very low. This difference could affect the kind of financial combinations that

firms could choose. This measure also accounts for the demand-side argument of bankers.

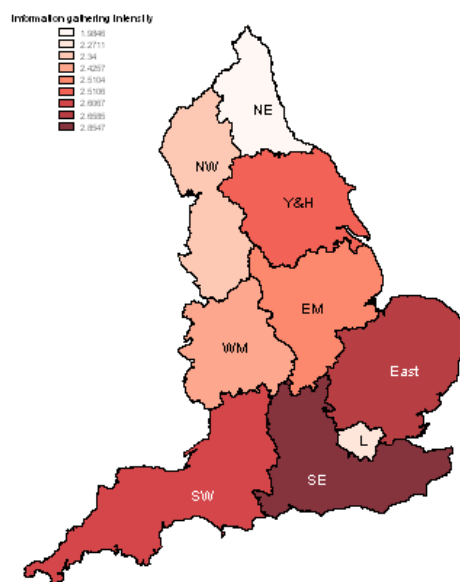


Figure 5: Degree of Financial Information collection in Government Office Regions of England

The demand side variables of capital structure that are considered in the section 2 are firm age, asset-value, if the firm is family owned (greater than 50% ownership), gender of the owner, owner's education, owner's experience and if owner participates in networking activities. Since industries differ in capital structure composition we also include industry dummies. In the banking and small firm literature it is well known that rural firms are fundamentally different from urban firms and the level of financial constraints also differ. Equally, the operational distance might be very crucial for rural firms' financial planning. On the empirical side, this issue can be addressed by taking an urban/rural dummy but in our dataset many of the variables like firm size, networking, assets were found to highly correlated to location. Hence the better way to analyse this is

to split the sample into urban and rural and then perform separate estimations for both. This has two advantages- one, rural-urban difference can be better investigated and two- special features affiliated to location come out very strongly without correlation problems. Hence we estimated equation 4 both on the rural and urban firms.

In tables 2 and 3 we present descriptive statistics of both the demand and supply based factors in the model for the sample of urban and rural small firms. While we discussed the supply side and information variables before, we shall now discuss the other demand side variables. The average value of assets of the SMEs in the urban sample is around 2 million pounds with a high variance amongst firms while it is around 780000 in rural firms. Both samples consists of youngest firms to very old firms<sup>7</sup> which might indicate that the combinations of finance might show large differences between old and young firms.

Table 2: Descriptive Statistics of Demand and Supply-Side Variables in Equation in Urban Firms Sample

Variable	Obs	Mean	Std. Dev.	Min	Max
<b>Supply Side</b>					
BS-vatbus	1392	1.242472	0.51232	0.600348	2.190795
Bank-vatbus	1392	4.51337	1.432872	2.750609	8.151871
CU-vatbus	1392	0.433389	0.416871	0.091805	1.585706
CCOD	1392	6.18923	2.152599	3.739275	11.88163
<b>Demand Side</b>					
Assets	1392	2327132	2.63E+07	0	7.96(million £)
firmage	1391	24.06614	32.89086	0	504
owneredu	1392	4.471983	2.895609	1	9
ownexp	1392	19.66056	11.15961	0	100
Info collection	1392	2.453266	0.224816	1.9846	2.8547

Amongst urban firms the average education of the owners is Higher National Diploma/certificate level which is equivalent to two years of university but less

<sup>7</sup>the oldest firms in both rural and urban sample were interestingly of equal age-504 years, one in services while the other was in construction

than bachelor's degree which is similar in the case of rural firms. Owners in rural areas are on an average higher experienced than urban firms. Out of 587 rural firms 22% were owned by female entrepreneurs while amongst urban firms 16% were women-owned. In rural areas almost 53% of entrepreneurs reported to be members of some networking organisation while in urban areas it was 49%. Entrepreneurs in rural areas seem to be taking more part in networking activities, are majority owned by women and are owned by much more experienced persons than in urban areas.

Table 3: Descriptive Statistics of Demand and Supply-Side Variables in Equation in Rural Firms Sample

Variable	Obs	Mean	Std. Dev.	Min	Max
<b>Supply Side</b>					
BS-vatbus	591	1.330701	0.493663	0.600348	2.190795
Bank-vatbus	591	4.263749	1.477431	2.750609	8.151871
CU-vatbus	591	0.40742	0.398676	0.091805	1.585706
CCOD	591	6.00187	2.141473	3.739275	11.88163
<b>Demand Side</b>					
Assets	591	773928.3	2564375	0	3.40 (million £)
firmage	588	26.2483	38.40965	0	504
ownededu	591	4.038917	2.758071	1	9
ownexp	591	22.1692	12.65039	0	58
Infor collection	591	2.532244	0.223957	1.9846	2.8547

The demand-side variables reflect the vast differences between rural and urban firms where urban firms fare well only in terms of asset-values but are equal or much inferior than rural firms when it comes to age of the firms, education, experience, gender distribution of ownership and networking activities.

## 5 Empirical Results

We estimated equation 4 using multinomial logistic regression where  $Y_{ij}$  takes on values 0 to 6 depending on which of the 7 mutually exclusive alternative

combinations of finance- only internal, internal & bootstrap(IB), internal & debt (ID), internal, debt & bootstrap(IDB), internal, equity & bootstrap(IEB), All the four(IEDB). The base category is 'only internal finance'. In this way we can compare the firms using other combinations than using only internal finance. The dependent variables of interest are our formulations of commercial operational distance as against the conventional measure used in Patti and Gobbi (2001). We performed the same regressions with the conventional measure of operational distance (with population as denominator) and find that it does not do as good a job as our measure in terms of explaining financial behaviour of firms. Not only do the  $R^2$  values increase, but also many variables achieve very high significance levels. Especially since our context is firms, one would realise that operational distance of lending institutions to firms is more crucial in financial situation of the firms than operational distance to entire population of the region. We then estimate equations based on our measure of combined commercial operational distance and put forward the results. We first discuss the results for urban firms and then for rural firms. All the estimated equations confirm to the independence of irrelevant alternatives (IIA) assumption that is required to be satisfied by multinomial logit. We used both Hausman and Small-Hsiao tests in order to test for IIA. All the combinations used have been found to be adhering to the IIA. This was expected since our coding of alternatives was mutually exclusive in nature.

**Urban Small Firms** Table 4 presents the results of estimations on the urban sample. The variables related to commercial operational distance (COD) are COD of building societies ('BS-vatbus'), COD of banks ('Bank-vatbus') and COD of credit unions 'CU-vatbus'. The results show that urban firms in areas that



have high building society COD are less likely to choose IB, ID, IDB and IEDB combinations as against only internal finance. Similar results follow with banks in the case of ID, IDB, IDEB. The interesting component that actually increases the likelihood of choosing ID, IDB, IDEB is the credit union COD. This might imply that small firms in urban regions with high credit union operational distance tend to mainly rely on debt and combine the debt with either bootstrap or equity from family and friends. A main result is that it is the presence of very local lending institutions like the credit unions that actually increases the likelihood of obtaining finance other than depending on only internal finance. In the literature so far this was theoretically predicted for rural firms but our results show that it is also true for urban firms. While building societies tend to share a local history, firms' may treat banks and building societies as the same since many of the building societies have often converted into banks due to similar functions.

Some more observations in Table 4 can be noted. As implied by the trade-off theories of capital structure, assets increase the likelihood of obtaining finance and firms tend to choose combinations of IB, IDB and IEB. Older firms are less likely to choose IEB and IEDB. Family firms are less likely to choose IB, IEB, IDEB as against only internal financing which is in line with the results of Romano et al. (2001). Female entrepreneurs are less likely to combine either internal with bootstrap or use all the four types as also found by Chaganti et al. (1995) and Riding and Swift (1990). Although statistically insignificant, female entrepreneurs are highly likely to combine internal and debt. Our analysis gives rise to some new and interesting results. Education level of the entrepreneur helps in choosing IDB and IEB as against only internal finance. Experience does not seem to help much in choosing other alternatives. In fact, highly experienced entrepreneurs tend to stick to internal finance rather than choosing ID, IDB or

IDEB. Networking efforts by the entrepreneur increase the likelihood of choosing IDB, IEB or IDEB. Firms in urban regions that have people who collect high amount of information on financial sector tend to have a high likelihood to choose either IB or ID as against depending only on internal finance. There is significant difference in terms of industries, in that manufacturing, construction and services are significantly different from agriculture.

The second estimation that was carried out was on the effect of the combined commercial operational distance (CCOD). Table 5 presents the results. While all other variables show the same signs as before it is indeed interesting to find that the effect of CCOD is insignificant on choosing any type of combination. This makes our point stronger that presence of certain kind of lending institutions rather than all of them being present in a location. If we take results of table 4 we can say that credit unions are very important in this regard. Herd behaviour of banking presence therefore may not solve financial constraints. In a way, one can say that in urban areas no matter if all of the lending institutions are present, small firms' still rely on internal finance. It is less likely that they utilise other sources, if all of them are active in the region. This effect however might be due to many reasons specific to being an urban firm, which are yet to be investigated.

**Rural Small Firms** Table 6 presents the estimation results on the rural sample. Unlike the urban firms assets do not seem to significantly affect any choice. Older firms are less likely to combine all the four types of financing as against using only internal finance. Family firms too are less likely to combine all four types, internal and bootstrap and internal and debt as against using only internal finance. Female entrepreneurs are less likely to use IB, IDB and IDEB as against only internal finance. Networking increases the likelihood to combine internal and

bootstrap and these two with debt. The only operational distance measures that are significant are the building society and credit union COD. High presence of building societies in rural areas relative to number of business makes it less likely that firms combine internal finance with debt. Similar is the result with credit union COD when it comes to choosing all the four types of finances. Information collection helps increase the likelihood of combining internal with bootstrap but decreases the likelihood of combining all four types. Table 6 presents the results based on combined commercial operation distance in rural areas. Unlike in the urban areas CCOD seems to show a significant effect on usage of finance. Small firms in rural areas with high CCOD are less likely to use IDB and IDEB combinations.

## 6 Discussion and Conclusion

The capital structure of firms is known to be different not only due to firm characteristics but also the sources of capital. Therefore a need to understand the supply side effects on a firm's capital structure is warranted. A small firm's choice of financing sources may be limited by the supply-side financial endowment of the region. The main purpose of this study was to analyse the effect of source of capital on financial structure of small firms. Faulkender and Petersen (2006) puts forward the combination of both supply and demand sides of capital structure where the supply side is measured as access to debt via a rating. We put forward three reasons why this measure cannot be used for analysing supply side and mainly for small firms. Firstly, the supply of capital is spatial in nature. Second, small firms prefer proximate sources than distant ones. Finally, the quantity channels and price channels of lending might work more strongly in terms of

space. We then put forward our concept of regional financial system which is a way in which regions' financial endowments can be measured. As a beginning we measure a component of the regional financial system, which is the lending institutions. Given that a rating might not be a right indicator for access to finance we introduce the measure of operational distance and modify it as a commercial operational distance and find that it has higher explanatory power than the contemporary measures.

Since a region's financial environment consists of very-local, semi-local and national lending institutions, we calculated the commercial operational distance for each of these and find pronounced differences between the regions of England. These differences might indicate at the propensity of access to finance in each of the regions. Small firms are known to be heavily reliant on internal finance and the quantity and price channels are expected to drive usage of debt. We tested for the combinations of finance to the internal finance that small firms would utilise. Our findings on 2000 small firms in England show that the quantity and price channels might work only for supply of very local capital. Firms tend to prefer internal finance when semi-local or national institutions are present. This result points out that semi-local and national institutions tend to drive away usage of debt due to monitoring costs or credit rationing while very local institutions increase the usage of debt through quantity or price channels. Our results show that the presence of very local lending institutions affects the likelihood of urban small firms to combine retained earnings with either debt or debt and boot strap or debt, bootstrap and equity. These combinations are not utilised by small firms which are in the regions where banks and semi-local lending institutions exist. They would rather depend on internal financing. For rural small firms, the presence of lending institutions does not matter. In fact, high presence of any

lending institution does not change the preference for internal finance.

One more question that we addressed is whether a combined presence of all the institutions increases the usage of debt through the quantity channel. We also tested the effect of quantity channel that if all lending institutions are present in a region. High combined presence also does not deter small firms from using internal finance both in rural and urban areas. The two reasons for these are that small firms may rely on internal finance since the quantity and price channels of lending institutions do not seem to work and if they do work its only for very local lending institutions. The second reason might be that due to riskier firms approaching for debt, monitoring costs pushed to the borrower or credit rationing might trigger usage of internal finance only. In the case of small firms, Faulkender and Petersen (2006)'s proposition that usage of debt will increase with increase in suppliers of capital -stands true only with respect to increase in very local suppliers of capital and not with all.

This study was the first in a series of papers to include economic geography along with firm finances. The limitations of this paper lie in the choice of the size of regions, no direct elicitation of preferences of finance but rather usage. One of the main limitations is cross section nature of the data. We are trying to address this issue by collecting panel data on the key variables as part of a ongoing project. On the geographical angle we are going to obtain more detailed data where the zip code of the respondent could be identified and mapped to the branch zip code to obtain kilometric distances, which we were unable to do with this dataset.

The future possibilities are immense. The definition of regional financial system itself has components that have to be quantified and measured. Networks between financiers, borrower-financier networks and the size of networks are cru-

cial for measuring the total impact of a regional financial system. We are confronted with the global financial crisis which will unquestionably result in the loss of jobs, real income, and an increase of financial constraints for small firms and individuals willing to start-up. In these kind of times individuals tend to depend more on local resources and local communities. In this light, it is important to start introspecting on the strength of local financial systems.

Table 4: Effect of Commercial Operational Distance on Financial Structure of Small Firms in Urban Areas. Method: Multinomial Logit

	<b>IB</b>	<b>ID</b>	<b>IDB</b>	<b>IEB</b>	<b>IDEB</b>
Assets(log)	0.122*** (0.029)	0.055 (0.076)	0.287*** (0.059)	0.347** (0.16)	0.152 (0.11)
Age of the Firm	-0.0030 (0.0023)	-0.001 (0.0040)	-0.0057 (0.0050)	-0.0410** (0.017)	-0.0152* (0.0087)
Family firm dummy	-0.461** (0.21)	-0.146 (0.32)	-0.325 (0.28)	-1.458*** (0.35)	-1.419** (0.56)
Gender(female=1)	-0.487* (0.26)	0.231 (0.72)	-0.279 (0.26)	-0.763 (0.64)	-1.566* (0.93)
Owner's Education	0.0680 (0.044)	-0.00142 (0.052)	0.0830*** (0.019)	0.165* (0.088)	0.0515 (0.099)
Owner's Experience	-0.0208 (0.015)	-0.0583*** (0.022)	-0.0298** (0.014)	-0.0379 (0.029)	-0.0655* (0.036)
Network-Dummy	0.387 (0.26)	0.118 (0.43)	0.601** (0.25)	0.876** (0.36)	1.520*** (0.25)
BS-vatbus	-0.369** (0.14)	-1.386*** (0.21)	-0.294*** (0.11)	-1.537 (1.08)	-1.042*** (0.25)
Bank-vatbus	-0.188 (0.23)	-0.531** (0.23)	-0.492*** (0.18)	-0.126 (0.61)	-0.458** (0.20)
CU-vatbus	1.123 (0.95)	3.269*** (1.00)	1.966** (0.83)	1.897 (2.73)	2.758*** (0.74)
Info-Collect	1.226*** (0.33)	1.544*** (0.23)	0.524 (0.42)	-0.325 (0.81)	0.622 (0.50)
Services and Trade	-1.853** (0.73)	-1.153* (0.62)	-1.399** (0.58)	-2.377 (1.59)	-1.180 (0.85)
Manufacturing	-2.025*** (0.70)	-2.105** (1.00)	-1.546** (0.67)	-2.226 (1.87)	0.110 (1.07)
Construction	-1.553** (0.74)	-1.325 (0.83)	-1.439*** (0.55)	-1.309 (1.72)	-0.562 (0.66)
Observations	763	763	763	763	763
R-squared	0.31				

Base Category: Only Internal Finance.

I-Internal, B- Bootstrap, D-Debt, E-Equity

Robust standard errors in parentheses

\*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

Table 5: Effect of Combined Commercial Operational Distance on Financial Structure of Small Firms in Urban Areas. Method: Multinomial Logit

	<b>IB</b>	<b>ID</b>	<b>IDB</b>	<b>IEB</b>	<b>IDEB</b>
Assets(log)	0.119*** (0.029)	0.0500 (0.075)	0.276*** (0.058)	0.370** (0.16)	0.149 (0.11)
Age of the Firm	-0.00309 (0.0023)	-0.00144 (0.0042)	-0.00540 (0.0047)	-0.0436** (0.017)	-0.0156* (0.0092)
Family firm dummy	-0.471** (0.20)	-0.170 (0.32)	-0.332 (0.27)	-1.480*** (0.33)	-1.434*** (0.55)
Gender(female=1)	-0.491* (0.26)	0.227 (0.73)	-0.319 (0.27)	-0.746 (0.62)	-1.545* (0.92)
Owner's Education	0.0660 (0.047)	-0.00765 (0.049)	0.0726*** (0.019)	0.176* (0.091)	0.0460 (0.094)
Owner's Experience	-0.0205 (0.015)	-0.0559** (0.022)	-0.0298** (0.014)	-0.0345 (0.030)	-0.0641* (0.036)
Networking Dummy	0.402 (0.25)	0.130 (0.42)	0.623** (0.25)	0.846** (0.36)	1.525*** (0.25)
CCOD-VATBUS	0.0182 (0.064)	-0.0319 (0.088)	-0.0244 (0.070)	-0.0408 (0.15)	0.00536 (0.080)
Information Collection	1.013*** (0.34)	0.694*** (0.25)	0.174 (0.39)	-0.978 (0.81)	-0.0990 (0.58)
Services and Trade	-2.252** (1.01)	-1.505* (0.90)	-1.950** (0.86)	-2.418 (2.26)	-1.571 (0.99)
Manufacturing	-2.428** (1.01)	-2.460* (1.27)	-2.076** (1.04)	-2.368 (2.56)	-0.265 (1.37)
Construction	-1.943* (1.05)	-1.643 (1.04)	-1.984** (0.87)	-1.366 (2.49)	-0.949 (0.85)
Observations	763	763	763	763	763
R-squared	0.30				

Base Category: Only Internal Finance.

I-Internal, B- Bootstrap,D-Debt, E-Equity

Robust standard errors in parentheses

\*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$



Table 6: Effect of Commercial Operational Distance on Financial Structure of Small Firms in Rural Areas. Method: Multinomial Logit

	<b>IB</b>	<b>ID</b>	<b>IDB</b>	<b>IEB</b>	<b>IDEB</b>
Assets(log)	0.00725 (0.090)	0.125 (0.17)	0.167 (0.11)	-0.0178 (0.14)	0.368 (0.28)
Age of the Firm	-0.00478 (0.0031)	-0.00102 (0.0038)	-0.00133 (0.0025)	-0.0390 (0.026)	-0.0436*** (0.015)
Family firm dummy	-0.875** (0.36)	-2.182*** (0.74)	-0.610 (0.75)	-1.319 (0.88)	3.085*** (0.85)
Gender(female=1)	-1.088** (0.55)	-0.259 (0.98)	-1.381*** (0.39)	-0.832 (1.33)	-42.48*** (0.70)
Owner's Education	0.0374 (0.054)	-0.105 (0.11)	-0.00990 (0.068)	-0.0720 (0.14)	0.000251 (0.26)
Owner's Experience	-0.00343 (0.026)	-0.0580 (0.045)	-0.0211 (0.021)	-0.0160 (0.034)	-0.0304 (0.030)
Networking Dummy	1.441*** (0.55)	0.400 (0.66)	1.287** (0.65)	0.308 (1.10)	2.281 (1.53)
BS-vatbus	-0.359 (0.31)	-3.038** (1.25)	-0.0697 (0.18)	-0.259 (0.39)	0.340 (0.38)
Bank-vatbus	-0.248 (0.48)	-0.620 (1.25)	-0.210 (0.34)	0.227 (0.54)	1.616 (1.05)
CU-vatbus	1.575 (1.73)	1.899 (3.58)	0.515 (1.41)	0.170 (2.13)	-21.92** (9.04)
Information Collection	0.944** (0.41)	-5.165 (4.18)	0.154 (0.63)	0.598 (0.77)	-4.892*** (1.59)
Services and Trade	-0.377 (0.66)	19.89 (15.5)	0.392 (0.76)	-2.271** (0.97)	2.866** (1.12)
Manufacturing	0.437 (0.58)	-22.20 (15.2)	-0.0647 (0.56)	0.608 (1.38)	3.839** (1.80)
Construction	0.129 (0.54)	20.12 (15.3)	0.231 (0.58)	-0.418 (1.29)	1.733 (1.71)
Observations	261	261	261	261	261
R-squared	0.36				

Base Category: Only Internal Finance.

I-Internal, B- Bootstrap,D-Debt, E-Equity

Robust standard errors in parentheses

\*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

Table 7: Effect of Combined Commercial Operational Distance on Financial Structure of Small Firms in Rural Areas. Method: Multinomial Logit

	<b>IB</b>	<b>ID</b>	<b>IDB</b>	<b>IEB</b>	<b>IDEB</b>
Assets(log)	0.00472 (0.085)	0.117 (0.19)	0.163 (0.10)	-0.0158 (0.13)	0.279 (0.29)
Age of the Firm	-0.00463 (0.0030)	-0.000411 (0.0037)	-0.00131 (0.0024)	-0.0404 (0.025)	-0.0312*** (0.010)
Family firm dummy	-0.808** (0.35)	-2.064*** (0.78)	-0.576 (0.73)	-1.280 (0.86)	3.872** (1.52)
Gender(female=1)	-1.106** (0.55)	-0.484 (0.88)	-1.402*** (0.41)	-0.873 (1.30)	-38.64*** (0.68)
Owner's Education	0.0399 (0.056)	-0.0762 (0.12)	-0.0103 (0.068)	-0.0723 (0.14)	-0.0151 (0.26)
Owner's Experience	-0.00388 (0.026)	-0.0566 (0.041)	-0.0209 (0.021)	-0.0151 (0.034)	-0.0200 (0.023)
Networking Dummy	1.439*** (0.54)	0.390 (0.71)	1.302** (0.65)	0.346 (1.10)	2.310* (1.38)
CCOD-VATBUS	0.0155 (0.047)	-0.514 (0.43)	-0.0653** (0.030)	0.132 (0.088)	-0.657*** (0.21)
Information Collection	0.539 (0.39)	-5.121 (3.61)	-0.00410 (0.45)	0.543 (0.81)	-3.569*** (1.36)
Services and Trade	-0.388 (0.65)	17.07 (13.2)	0.424 (0.75)	-2.305** (0.95)	4.119 (2.68)
Manufacturing	0.218 (0.51)	-21.87* (13.0)	-0.0845 (0.58)	0.387 (1.35)	5.645*** (1.78)
Construction	0.158 (0.53)	17.19 (13.0)	0.260 (0.60)	-0.471 (1.27)	3.384** (1.54)
Observations	261	261	261	261	261
R-squared	0.34				

Base Category: Only Internal Finance.

I-Internal, B- Bootstrap,D-Debt, E-Equity

Robust standard errors in parentheses

\*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

Table 8: Post-Estimation Statistics for COD on urban sample

Log-Lik Intercept Only:	-1367.112	Log-Lik Full Model:	-949.286
D(693):	1898.571	LR(70):	835.654
		<i>Prob &gt; LR:</i>	0
McFadden's R2:	0.306	McFadden's Adj R2:	0.254
ML (Cox-Snell) R2:	0.666	Cragg-Uhler(Nagelkerke) R2:	0.685
Count R2:	0.474	Adj Count R2:	0.105
AIC:	2.672	AIC*n:	2038.571
BIC:	-2701.048	BIC':	-371.045
BIC used by Stata:	2363.179	AIC used by Stata:	2038.571

Table 9: Post-Estimation Statistics for COD on rural sample

Log-Lik Intercept Only:	-467.649	Log-Lik Full Model:	-300.847
D(191):	601.693	LR(70):	333.605
		<i>Prob &gt; LR:</i>	0
McFadden's R2:	0.357	McFadden's Adj R2:	0.207
ML (Cox-Snell) R2:	0.721	Cragg-Uhler(Nagelkerke) R2:	0.742
Count R2:	0.521	Adj Count R2:	0.194
AIC:	2.842	AIC*n:	741.693
BIC:	-461.13	BIC':	55.911
BIC used by Stata:	991.21	AIC used by Stata:	741.693

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