

BASEL III AND SME ACCESS TO CREDIT : LATER YEARS EVIDENCE FROM FRANCE.

Introduction

Concerns about potential adverse effects of regulation on Small and Medium-sized Enterprises is a long-lasting debate as old as the first Basel Accord. Each new financial regulation follows a major crisis and is designed to ensure that the same cause will not produce the same effect. In this respect, Basel III increases the quantity and quality of capital adequacy standards, implements a regulatory leverage ratio and two liquidity ratios. Those requirements aim at enhancing a sounder and safer financial system at the micro and macro level. However, if regulatory charges were to be binding, they could adversely impact bank lending.

Basically, the financial regulation involves a trade-off between higher standards, strengthening the banking system, and its cost restraining credit access. On the one hand, a more stable banking system could allow a better financing of bank-dependent borrowers. On the other hand, small firm-type creditors could shoulder the burden of more stringent banking requirements through higher credit costs and/or lower amounts. Due to SME high reliance on such resource, the potential negative side effects of the regulation is under scrutiny. This dependency is owing to poor track record, equity, collateral and inappropriate legislative or regulatory environment (Bernanke and Lown, 1991, Peek and Rosengren, 1995b, Beck et al., 2005, Demirgüç-kunt et al., 2008, Beck et al., 2010, Schizas, 2011, OECD, 2012). For example, french small firms rely on banks up to half of their total debt¹. Those bank credits account for €326.4 billion of which €53.5 billion with a maturity shorter than a year (Banque de France, 2013). With 3.2 million SME, accounting for 99.9% of the french firms, hiring 52% of the labor force², small firms financing is of prime interest for researchers as well as practitioners and authorities. Actually, the question of regulation's unfavourable consequences goes over and beyond its mere economic outcome as it could slow down growth, delay recovery and undermine social stability.

In this respect, the present paper aims at providing insights on the subject. To pursue this goal, the potential impacts of Basel III set of reforms on SME banking loan access is investigated in France during the later years.

To the best of our knowledge, literature focusing on Basel III aftermath on small firms providing quantitative analysis is very sparse. This article aims to fill this gap. Casual literature analyses bank response to a more binding regulatory environment through an increase in interest rate spread resulting in tightened credit access conditions (King, 2010, Angelini et al., 2011, Cosimano and Hakura, 2011, Slovik and Cournède, 2011). As a matter of fact, banks have ability and incentives not to transfer those increases in standards on their customers. Therefore, an upward trend in credit cost might not be observable (Elliott, 2009, Elliott et al., 2012). This have been the case after the first and second Basel Accords, as the long term interest rate

¹Source : *BvD Diane+*, author's own calculation

²Source : *INSEE, 2014*

fell by 53.62% from 9.12% to 4.23% in France, between 1986 and 2008³. The same pattern is suspected for Basel III completion and seems to have been the case as the interest rate kept on falling to 2.20% in 2013. More, the actual unconventional monetary policies applied *de jure* or *de facto* by almost all leading central banks, put an downward pressure on interest rates. Those eased refinancing access conditions, for virtually all credit institutions, possibly nullify any effect of the new regulation on such features. Consequently, an empirical strategy is used. This enables to avoid any assumption on the reaction of credit interest rates to changes in the regulatory environment as needed in the previously mentioned literature using DSGE or loan-pricing models.

In this framework, each new regulatory requirement is broken down into one specific explanatory variable representing its cost. Precisely, the bank costs of liabilities are distinctively considered as independent variables instead of the usual cost of credit, i.e. the assets return. This allows to analyse all requirements respective dynamics in the later years using microeconomic level data. This paper focuses on SME instead of considering the new regulation consequences by way of its effects on banks. Those variables are used along with SME specific ones to control for their internal characteristics explaining credit needs, in other words the share of demand-driven credit. The data is taken from the BvD Diane+ and the BvD Bankscope databases. It covers the 2008-2013 period and considers 52,412 french SME and 230 french banks.

This paper also contributes to the "Relationship versus Transaction lending" debate and to the literature on the empirical determinants of small firms access to bank credit.

By way of preview, we conclude that Basel III could lead to a "regulatory mirage". Indeed, short term positive effects can occur but, due to unsustainable banking business model, they will be overcome by negative long term ones. As a matter of fact, increased capital adequacy standards will moderate bank behaviour. At first, short term lending maturity will be extended, eliminating low return exposures regardless of their regulatory alleviation. Nevertheless, banks will also reduce their risk taking through lesser long term funding, reducing their future returns and so lending. Those aspects having a global negative effect on SME funding. More, the new set of reforms could exacerbate the funding gap between very small firms benefiting from regulatory alleviation and highly profitable large firms regardless of their risk. Medium sized enterprises offering neither regulatory relieves nor high returns are left facing credit rationing. Therefore, a regulatory charge adjusted risk/return analysis is at stake.

Regarding the Transaction versus Relationship lending debate, for short term-small amount credits, the Relationship lending seems to be the norm. While, for larger-longer term loans, banks are applying a more hard-information based approach, especially for medium term credits. In this respect, each technology use seems to be based on the loan maturity and not the firm size.

In order to investigate how Basel III could affect small firms access to bank loan, the first

³Source : OECD, 2014, author's own calculation.

part reviews the related literature. The second part presents the model and the variables used. The third part presents the results and interprets them. The fourth part provides robustness checks. One particular point is discussed in the fifth part. The last part concludes.

I. Literature review.

i. Basel I and the credit crunch.

First articles considering the effects of banking regulation on SME focus on finding an empirical link between Basel I and the credit crunch in the US during the early 90s. [Bernanke and Lown \(1991\)](#), [Hancock and Wilcox \(1994; 1998\)](#) and [Peek and Rosengren \(1995a\)](#) found a positive statistically significant relation between bank capital and lending. Hence, any decrease in bank capital due to a more stringent regulation will result in a shortage of financing. This is especially the case for the most bank-dependent borrowers like SME. Still, using microeconomics those authors only estimate an overall weak negative effect on small firms access to bank credit, if any.

ii. Basel II and the Internal Ratings Based Approach.

The second Basel Accord favours more risk-sensitive capital standards by considering the underlying asset risk instead of the borrower status. More, one of the major Basel II breakthrough is the ability for banks to provide their own risk assessments in the computation of their capital requirements (probability of default, exposure at default, loss given default etc.). Those improvements in the regulatory framework gave birth to an extensive IRBA-related literature. The promotion of stronger and standardized risk management practices to create a sounder and safer financial system, develops a major strand of the regulation literature, the scoring one. Based on the seminal [Altman \(1968\)](#) Z-Score, numerous authors study corporate bankruptcy empirical determinants and probability of default using multivariate discriminant analysis, logit and tobit modelling. Those articles conclude that accounting based data offers fairly good predictive capacity, which could be increased by the inclusion of qualitative information. More, the rating/scoring technology reduces information cost, allowing a better access to bank credit for SME in terms of volume, cost and maturity ([Frame et al., 2004](#), [Berger, Frame and Miller, 2005](#), [Berger and Frame, 2007](#)). [Van Gestel and Baensens \(2009\)](#) offer for different counterparts an extensive set of commonly used variables for internal rating purpose. Among them, the profitability, leverage, gearing, liquidity and activity ratios are often used for firms. If those specific variables are mentioned here, it is because of their link with one central paper for this work : the [Altman and Sabato \(2007\)](#). Using a logit combined with a stepwise approach, the authors feature 5 specific ratios⁴ enabling to develop a one-year distress prediction model for small firms. With data gathered from COMPUSTAT, the panel covers more than 2,000 U.S. firms between 1994 and 2002. The model is 30% more efficient than the generic one for corporates. Finally, the authors consider Basel II potential impact based on their previous work ([Altman and Sabato, 2005](#)), arguing that a more accurate credit risk model would reduce the regulatory burden under the IRBA.

⁴ Leverage=Short term debt/Equity book value, Liquidity=Cash/Total assets, Profitability=EBITDA/Total assets, Coverage=Retained earnings/ Total assets, Activity=EBITDA/Interest expenses

Regarding small firms eligible to the Basel Committee SME classification, one critical point is the capital alleviation they benefit under the Internal Ratings Based Approach. Despite the fact that small firms are individually riskier than their larger counterparts, those eased requirements are justified by higher diversification opportunities and lower inter-correlations (Dietsch and Petey, 2002; 2004, Altman and Sabato, 2005, Dietsch and Tilloy, 2010, European Banking Authority, 2012). This is especially the case for exposures treated as "Retail" : "[...] loans extended to small businesses and managed as retail exposures are eligible for retail treatment provided the total exposure of the banking group to a small business borrower (on a consolidated basis where applicable) is less than €1 million." §231, *Nature of borrowers or low value of individual exposures*, Basel Committee on Banking Supervision (2006).

However, one drawback of this abatement is the induced potential distortion in credit allocation that matches bank size with small firms risk level. In other words, large, sophisticated banks applying IRBA, would grant cheap loans to safe borrowers, thanks to "Transaction lending" technology based on hard-quantitative information allowing for reduced transaction costs. Meanwhile, risky debtors will turn themselves toward smaller, lesser sophisticated banks using the Standardized Approach to avoid IRBA exponential increase in capital charge (Dietsch and Petey, 2002, Frame et al., 2004, Berger, Frame and Miller, 2005, Berger and Udell, 2006, Ruthenberg and Landskroner, 2008). This two-tier banking system enables large financial institutions to benefit from a reduced capital adequacy charge for claims held on small firms. Hence, large banks applying the IRBA have an uneven comparative advantage, while nothing change for small banks under the Standardised Approach⁵. Still, for "Relationship lending" advocates, small banks have an expertise in SME lending. Their long lasting bonds create a "Soft information" based on proprietary qualitative data enabling small credit institutions to accurately evaluate the actual risk of informationally opaque small businesses (Berger, Miller, Petersen, Rajan and Stein, 2005, Berger, 2006, Claessens et al., 2008). Nevertheless, Basel II overall effect would depend on the share of SME portfolio classified as "Retail" under the IRBA (Dietsch and Petey, 2002; 2004, Shin, 2003, Saurina and Trucharte, 2004, Altman and Sabato, 2005; 2007, Ruthenberg and Landskroner, 2008, Valet, 2011, European Banking Authority, 2012). In this respect, Basel II could dig the funding gap between small firms with low demanding regulatory requirements, experiencing capital requirement alleviation, and large, highly profitable companies with low risks (Udell, 2004, OECD, 2006; 2012).

iii. Basel III and the missing qualitative approach.

Until now, very few quantitative analysis focusing on Basel III effects on small firms access to bank financing have been run. To our knowledge, only the paper by Cardone-Riportella et al. (2011) responds to those criteria and still, it mostly considers Basel II aftermath. Using regulatory capital requirements computation, the authors conclude that Basel Accords would

⁵ This is also an argument in favour of the potential positive effect of Basel II on SME credit access.

enhanced risk assessments and provide better loss absorbency capacity to banks. Thanks to the recognition of collateral, regulation should not be too binding for small firms. Beside, the improved risk sensitivity could increase risk premium and so, credit cost. Basel III requirements could increase credit risk premium by 0.285% in the best case scenario and by 2.466% in the worst case scenario. Those results consider the use of a Loan Guarantee Association (LGA) by SME. Without LGA, the premium rise could range from 0.239% to 16.216%, which is far worst than the authors main conclusion.

Some qualitative papers should be mentioned : [Dietsch and Tilloy \(2010\)](#), [Ambler \(2011\)](#), [Angelkort and Stuwe \(2011\)](#), [Schizas \(2011; 2012\)](#), [OECD \(2012\)](#). Broadly, those papers anticipate a potentially negative impact of Basel III on SME bank funding through a higher credit cost, lower volume and shorter maturity, delaying the recovery. This outcome would burden on small firms while they are not responsible for the crisis, more prone to diversification and more bank-dependent. Each of those concerns having been raised for Basel I and II.

iv. The disequilibrium modelling.

As the literature on Basel III consequences on SME is very sparse and due to the adopted methodology, another literature strand need to be introduced. The authors investigate potential credit rationing faced by small firms. Using microeconomic data in a disequilibrium model, solved with maximum likelihood estimations, those papers allow to disentangle the determinants of credit rationing. [Ogawa and Suzuki \(2000\)](#) study the importance of land as collateral in credit allocation in Japan between 1980 and 1993. Land plays a substantial role in mitigating borrowing constraints. In the same framework, [Atanasova and Wilson \(2004\)](#) examine monetary transmission mechanism and its effects on SME bank financing in the U.K. for the 1989-1999 period. They conclude that firms' assets mitigate borrowing constraints. More, during tight monetary conditions periods, banks and firms have diverging trajectories with a reduced supply facing an increased demand. Therefore, firms turn themselves toward interfirm credit. Finally, constrained firms are more numerous during downturns. Still considering SME financing constraints, [Carbo-Valverde et al. \(2009\)](#) test the impact of bank market power in Spain, in 1994-2002, using two alternatives measures (the Lerner Index versus the Herfindahl-Hirschmann Index). Such approach allows to reconcile two opposing views by considering bank contestability, demand elasticity and information production. Market power increases credit availability but less competitive market increases credit rationing. Closer to our work, the paper by [Kremp and Sevestre \(2013\)](#) investigates whether the credit rationing in France during the 2004-2010 period was supply or demand driven. In accordance with the European Central Bank's Survey on the Access to Finance of small and medium-sized Enterprises (SAFE), the authors demonstrate that small firms have not been strongly rationed despite more stringent lending standards in bank credit allocation.

In regard with the lack of literature, this paper aims at providing founded insights. Following

this literature review, the next part presents the model and the variables.

II. Model and variables.

i. Econometric dataset.

The panel includes 52,412 active french firms with positive borrowings from the BvD Diane+ database over the 2008-2013 period. Those firms present a net turnover lower than €50 million each and every year, which is Basel Committee threshold for inclusion in SME classification⁶. Regarding the period, only the recent banks' behaviour in the aftermath of the 2007/2008 crisis and the early years of the new regulation is of interest for this study.

The firms are sub-divided between those with borrowings and bank debts strictly lower than €1 million every year and those above. This distribution accounts for the SME exposures eligibles to the "Retail" classification. The remaining firms are considered as "Corporate" exposures. As a result, 1,138 firms are classified as "Corporate" and 51,274 as "Retail", accounting for 98.90% of the sample. Surprisingly, Retail exposures represent the very largest share of the small firms panel and is just the result of selection process. Our first guess would be that Basel Accords emphasize lending to Retail borrowers. This aspect being highly anticipated in the literature (Dietsch and Petey, 2002; 2004, Shin, 2003, Saurina and Trucharte, 2004, Altman and Sabato, 2005; 2007, Ruthenberg and Landskroner, 2008, Valet, 2011, European Banking Authority, 2012).

With observations ranging from 6,828 to 6,679 for Corporate exposures and from 307,614 to 216,716 for Retail exposures, a fixed effects estimator and its asymptotic properties are used. By way of precaution, a robust version of the model is applied. It circumvents an heteroskedastic structure of the residuals and autocorrelation within panels. This is achieved with a Huber-White-type covariance matrix of the estimated parameters, providing asymptotically efficient estimator without hypothesis about its distribution or the model validity.

The model is therefore the following :

$$y_{it} = Demand_{it}\beta + Supply_t\gamma + \alpha_i + \varepsilon_{it} \text{ with } i = 1, \dots, 51274 \text{ or } 1138, \text{ and } t = 2008, \dots, 2013 \quad (1)$$

Where y_{it} is the dependent variable, $Demand_{it}$ the time-variant set of SME specifics explanatory variables, $Supply_t$ the time-variant set of banks' specifics explanatory variables, α_i the unobserved time-invariant individual effect/constant term and ε_{it} the term of error.

All variables are logged, eliminating abnormal negative values and easing interpretation. To overcome the problem for 0 to 1 values, variables are pre-multiplied by 100. Tables 7 and 8 provide summary statistics before transformation.

ii. Dependent variables.

⁶ §273, [Basel Committee on Banking Supervision \(2006\)](#). Actually, the threshold would be on "sales" but french translation uses the turnover ("*chiffre d'affaire*") instead.

Three different explained variables are investigated in compliance with their maturity. As short term credits benefit from capital and liquidity regulatory relieves and account for a large share of small firms bank loans, it had to be treated on its own. Therefore, the explained variable used for short term credit is the "Borrowings and debts from credit institutions at less than 1 year at the origin : gross amount" in thousand euro. Are also considered the medium and long term credits respectively through the "Borrowings and debts from credit institutions at more than 1 year : at more than 1 year and less than 5 years" and the "Borrowings and debts from credit institutions at more than 1 year : at more than 5 years".

iii. Independent variables.

a. Demand variables.

As mentioned in the literature review, there is no paper in direct line with our framework. Hence, based on the mostly developed Basel empirical literature, being the scoring one, a set of "control variables" is defined to account for the share of loan explained by SME's own characteristics. Those variables are taken from [Altman and Sabato \(2007\)](#) as they focus on small firms, albeit the present paper does not study the probability of default but the loan volume. Close in spirit with the demand side of the disequilibrium model in the debate over SME credit rationing, this particular modelling do not fit our goal. A stepwise approach would provide more accurate (while over-fitted) results but remains outside the scope of this study and is left to future research.

Compared with baseline variables, some slight changes are made to fit french disclosure requirements, accounting standards and data availability.

The small firms variables are the following ratios :

- Leverage SME = (Total of debt : at more than 1 year and less than 5 years)/Equity. A leveraged firm is considered to be in need for external source of financing therefore increasing the demand for bank loans⁷.

- Liquidity SME = (Net cash)/(Net total asset). As in [Atanasova and Wilson \(2004\)](#), [Carbo-Valverde et al. \(2009\)](#), [Kremp and Sevestre \(2013\)](#), this variable is appreciated as a measure of small firm internal resources and as a substitute for external bank funding, reducing credit needs.

- Profitability SME = (EBITDA)/(Net total asset). This variable is treated as a proxy for SME's performance and quality ([Carbo-Valverde et al., 2009](#)). Thus, enhancing small firms access to credit.

- Coverage SME = (Legal reserves + contractual or statutory reserves + regulated reserves +

⁷ To tackle immediately the trite endogeneity criticism, 4 points are to be made : 1- for that kind of debt, the banking part only accounts for 35 to 40%; 2- the division by equity reduces the correlation; 3- the correlation is null and highly insignificant; 4- the panel size provides asymptotically efficient estimations and of neglectable bias regarding endogeneity and autocorrelation ([Murray, 2005](#), [Baltagi et al., 2007](#), [Greene et al., 2011](#)). Those remarks are valid for the other variables and afferent modelling concerns.

other reserves)/(Net total asset). The reserves are seen as a precautionary behaviour from small firms anticipating their future obligations. Such behaviour being rewarded by better access to funding.

- Activity SME = (EBITDA)/(Interest payable and similar charges). This ratio is close to [Kremp and Sevestre \(2013\)](#)'s "profitability" ratio, which is firm ability to generate return to serve its debt. Another way to see it is as a proxy for default risk as in [Carbo-Valverde et al. \(2009\)](#). Thus, the expected sign is positive.

b. Supply variables.

The "supply variables" are bank specific and designed to proxy the cost of Basel III set of reforms. Each aspect of the regulation is investigated by way of one particular variable representing its cost. Founded on loan-pricing models as in [Elliott \(2009\)](#), [Angelini et al. \(2011\)](#), [Slovik and Cournède \(2011\)](#), [Elliott et al. \(2012\)](#), this paper uses the liability side of the bank's balance sheet. This is a switch from the credit cost, being the return of bank assets, to the cost of bank resources.

A representative bank is considered, as cross-data between small firms and bank(s) they borrow from are not publicly available. Thus, the following explanatory variables are the annual average of observed values of the 230 actives french commercial, savings and cooperative banks from the BvD Bankscope database. This assumption, above technical considerations, could be justify by the mild concentration of french banking sector (Herfindahl-Hirschman Index of 2,030).

In this respect, the bank specific variables are presented in line with the new regulation aspect it refers to :

- Cost of equity = Return on average equity. This critical variable is designed to encompass all Basel III capital cost related features. Specifically, it stands for the cost of the increase in quantity and quality of bank equity, the additional conservation buffer, the countercyclical buffer and the capital overcharge for Global Systematically Important Banks. A very large share of the literature support the idea of a decline in the cost of equity/ROE : [Elliott \(2009\)](#), [Basel Committee on Banking Supervision \(2010a\)](#), [Kashyap et al. \(2010\)](#), [King \(2010\)](#), [Cosimano and Hakura \(2011\)](#), [Angelini and Gerali \(2012\)](#), [Elliott et al. \(2012\)](#), [Cohen and Scatigna \(2014\)](#). Those authors consider that an increase in equity volume fosters banking institutions loss absorbency capacity. Individual banks and the financial system as a whole become more stable and less risky, leading banks shareholders to ask for lower returns. With a reduced cost of equity, banks are able to fund more risky and regulatory-demanding investments. In the end, bank dependant borrowers could benefit from a more stable funding source in terms of price, volume and maturity. A negative sign is therefore expected.

- Cost of debt = (Interest expense)/(Average interest-bearing liabilities). This explanatory

variable is intimately linked to the cost of equity as in loan-pricing models the liability side of the bank's balance sheet is composed of equity and debt. As for the equity, an increase in the volume of bank debt, all things being equal, reduces its risk. SME could take advantage of a more stable banking system through better credit access.

- Gearing = $\text{Equity}/(\text{Total assets})$. One major innovation of Basel III is the enforcement of a non-risk based leverage ratio acting as a "back-stop" measure. This leverage ratio is composed of the "Capital measure" over the "Exposure measure"⁸ and is set at a minimum of 3%. As over-leveraged credit institutions and the deleveraging that followed are at the genesis of the 2007/2008 crisis, a lesser leveraged financial system would be safer. Hence, a higher leverage ratio would reduce bank risk-taking and positively affect small firms access to credit.

- Cost of liquidity ST = Daily effective federal funds rate. As for the gearing, the implementation of the Liquidity Coverage Ratio is a consequence of the financial crisis. At the dawn of the crisis, the interbank liquidity market freeze bear a large responsibility in the contagion between credit institutions. Thus, the Basel Committee enforced a short term liquidity ratio : "This standard aims to ensure that a bank maintains an adequate level of unencumbered, high-quality liquid assets that can be converted into cash to meet its liquidity needs for a 30 calendar day time horizon under a significantly severe liquidity stress scenario [...]"⁹. To account for the cost of such liquidity, the fed funds rate is used. Reason is twofold : Firstly, it is precisely the cost of interbank short term liquidity in the US. Secondly, those lending are contracted on the basis of reserve requirements deposited with the Federal Reserve, which are eligible assets for inclusion in HQLA¹⁰. In this regard, if demand for HQLA increases, so does its opportunity cost due to decreasing returns. Thus, a surge in liquidity cost is seen as restraining credit allocation.

- Cost of liquidity LT = 10 Year daily U.S. Treasury yield curve rates. This variable is appreciated as the lower bound of the Net Stable Funding Ratio. This long term liquidity ratio is designed to curtail "contractual maturity mismatch", that is maturity transformation. Specifically, the US 10 year T-Bond refers to the cost of the "available amount of stable funding", the ratio numerator. It should be seen as the lower funding rate available for banks, considering that they are more risky than a government bond and even more than the US one. Longer term funding being more expensive than shorter one, its increase affects negatively credit supply.

Following this presentation, some comments are to be made. Firstly, regarding the LCR and the NSFR, as we study France, the LIBOR, the EURIBOR and the 10 year OAT ("*Obligation Assimilable du Trésor*") would have been more relevant but they are too correlated with the bank specific variables to be used. Secondly, test the Tier 1 Capital Ratio would have been of prime interest, but this ratio is not widely disclosed and since long enough. Thirdly, time dummies are often used in such setup, but they are collinear with some variables of interest and are therefore dropped. Last but not least, Basel III variables are not regressed all together. While not collinear, some variable are too highly correlated to be safely regressed in the same

⁸ Basel Committee on Banking Supervision (2010b)

⁹ Basel Committee on Banking Supervision (2010c)

¹⁰ Basel Committee on Banking Supervision (2010c)

estimation. Therefore, along with SME specific variables, a first model regress the cost of equity, the cost of debt and the gearing. A second model includes the cost of equity, the gearing and the cost of liquidity ST as it is significantly correlated at 71.73% with the cost of debt. Finally, the cost of debt, the gearing and the cost of liquidity LT are regressed together as the later is correlated with the cost of equity at 87.76%¹¹.

iv. Summary statistics.

The Retail firms have a turnover 8 times lower than the Corporate ones¹². For the Retail class, the average amount of borrowing is surprisingly 2 times higher for the medium term than for the short term. This is probably due to the specific period observed which has probably seen short term credit not being rolled over. This special feature is not observable for the Corporate class and the credit amount is inversely correlated with its maturity. Still comparing Retail and Corporate borrowers, the leverage reaches 76.02% for the very small firms compared to 17.02% for larger SME. Noticeably, this leverage is definitively higher than the 11.04% observed for banks. This also demonstrates the small firms lack of equity. With a liquidity ratio of 17%, the Retail borrowers exceed the 2.5% of the Corporate borrowers. They also are 3.94 percentage points more profitable. The Retail activity ratio is well above the Corporate one and is somehow quite surprising.

Concerning bank specific characteristics, the representative bank presents an average cost of equity of 5.91% ranging from 8.86% in 2009 to 3.17% in 2012. The cost of debt reaches 4.17% in 2008 and decreases to 1.97% in 2013. The leverage ratio grows to 13.03% in 2010, but shrinks steadily to 8.57% in 2013. The fed fund rate moves from 0.14% to 0.07% during the period, while the T-Bond yield moves from 2.25% to 3.04%.

The following section provides estimation results.

III. Estimations results.

The results start with the Retail group, followed by the Corporate one. Each time, the overall power of the model is outlined, then each variable sign and coefficient are investigated, maturity by maturity. Demand and Supply variables are treated separately. For each variable exhibiting an unexpected sign, an alternative explanation is proposed. A dedicated section articulates results and provides general interpretations.

i. Retail class.

Table 1 provides estimations for small firms eligible to the Retail classification, i.e. with turnover lower than €50 million and borrowings and debts from credit institutions lower than €1 million. From a regulation standpoint, the Retail group of borrowers is of prime interest as it benefits

¹¹ See Correlation Table in Appendix.

¹² See Table 7 and 8 in Appendix

from regulatory requirements relieves.

Table 1: Retail class

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	ReSTrdg Borr. ST	ReSTrgf Borr. ST	ReSTdgt Borr. ST	ReMTrdg Borr. MT	ReMTrgf Borr. MT	ReMTdgt Borr. MT	ReLTrdg Borr. LT	ReLTrgf Borr. LT	ReLTdgt Borr. LT
Leverage SME	0.1280*** (0.0122)	0.1218*** (0.0122)	0.1285*** (0.0122)	0.8615*** (0.0038)	0.8565*** (0.0038)	0.8613*** (0.0038)	1.6865*** (0.1459)	1.6728*** (0.1459)	1.6877*** (0.1459)
Liquidity SME	-0.4350*** (0.0136)	-0.4354*** (0.0137)	-0.4352*** (0.0136)	0.0388*** (0.0027)	0.0384*** (0.0027)	0.0387*** (0.0027)	0.0381 (0.0329)	0.0382 (0.0334)	0.0387 (0.0329)
Profitability SME	0.0681*** (0.0259)	0.0437* (0.0257)	0.0697*** (0.0259)	0.0558*** (0.0055)	0.0364*** (0.0055)	0.0548*** (0.0055)	-0.0884 (0.1068)	-0.1493 (0.1083)	-0.0840 (0.1067)
Coverage SME	-0.0378*** (0.0143)	-0.0248* (0.0142)	-0.0386*** (0.0143)	0.0785*** (0.0035)	0.0891*** (0.0035)	0.0787*** (0.0035)	0.0483 (0.0463)	0.1185** (0.0460)	0.0431 (0.0464)
Activity SME	-0.1701*** (0.0229)	-0.1552*** (0.0228)	-0.1706*** (0.0229)	0.0143*** (0.0050)	0.0255*** (0.0050)	0.0152*** (0.0050)	-0.0452 (0.1046)	-0.0354 (0.1054)	-0.0436 (0.1046)
Cost of equity	0.0855*** (0.0301)	-0.0303 (0.0273)		-0.0416*** (0.0048)	-0.1403*** (0.0050)		0.4722*** (0.0759)	-0.1217 (0.0757)	
Cost of debt	-0.3018*** (0.0483)		-0.2810*** (0.0450)	-0.2486*** (0.0082)		-0.2708*** (0.0081)	-1.5471*** (0.1462)		-1.3611*** (0.1383)
Gearing	0.4044*** (0.0655)	0.3199*** (0.0640)	0.4614*** (0.0688)	-0.0297*** (0.0107)	-0.0815*** (0.0108)	-0.0406*** (0.0112)	1.3671*** (0.2029)	1.0589*** (0.2001)	1.6093*** (0.2142)
Cost of liquidity ST		-0.0090 (0.0152)			-0.0488*** (0.0025)			-0.4169*** (0.0443)	
Cost of liquidity LT			0.1097*** (0.0294)			-0.0239*** (0.0046)			0.5077*** (0.0774)
Constant	5.1235*** (0.5175)	4.7295*** (0.5111)	4.5406*** (0.5640)	6.9365*** (0.0938)	6.5947*** (0.0913)	7.0033*** (0.1008)	-3.5915** (1.6410)	-5.5234*** (1.6074)	-6.1656*** (1.7354)
Observations	53,501	53,501	53,501	83,812	83,812	83,812	21,060	21,060	21,060
R-squared	0.0707	0.0694	0.0708	0.8305	0.8273	0.8304	0.1802	0.1695	0.1808

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

The model is remarkably well designed for medium term borrowings, reaching an explanatory power of 83.05%, but is less fitted for long term borrowings (18.02%) and even more for short term borrowings (7.07%).

At short term, all small firms specific variables are significant, even though the coverage and the activity ratios present an opposite sign to the expected one. This means that an increase in coverage ratio leads to a shrinkage in small firms bank credit. This is probably not an indication of a precautionary behaviour but a lack of investment opportunities or a fear of the future. As for the activity ratio, a drop in small firm activity exacerbates its credit needs. In this regard, a credit can be contracted to overcome a slow-down in short term Retail firms' activity.

For medium term borrowings, the liquidity ratio is exhibiting an unexpected sign. All variables remain highly significant. Considering an increase in cash, this could be interpreted as an improvement in small firm's ability to serve its debt, instead of an alternative to bank funding.

For long term credit, only the leverage is strongly significant. For every maturities, the leverage ratio is the most important demand-related determinants in explaining small firms access to bank funding.

For Basel variables, short and long term borrowings offer the same features : almost all variables are highly significant, while the cost of equity and the cost of long term liquidity exhibit an unexpected positive sign. Thus, a reduction in the cost of equity contributes to decrease the SME loan volume. Contrary, if the cost of long term liquidity increases, the volume of small

firm borrowings follows.

At medium term, all variables remain highly significant, but the gearing ratio presents a negative sign. This indicates that a contraction of the bank leverage restrains small firms' access to medium term bank credit.

ii. Corporate class.

The remaining small firms with borrowings and debts from credit institutions above €1 million are left to the Corporate group.

Table 2: Corporate class

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	CoSTrdg Borr. ST	CoSTrgf Borr. ST	CoSTdgt Borr. ST	CoMTrdg Borr. MT	CoMTrgf Borr. MT	CoMTdgt Borr. MT	CoLTrdg Borr. LT	CoLTrgf Borr. LT	CoLTdgt Borr. LT
Leverage SME	0.0761 (0.0892)	0.0694 (0.0876)	0.0762 (0.0890)	0.5548*** (0.0548)	0.5458*** (0.0552)	0.5545*** (0.0547)	0.4232** (0.1695)	0.4208** (0.1658)	0.4247** (0.1700)
Liquidity SME	-0.2435*** (0.0524)	-0.2497*** (0.0520)	-0.2436*** (0.0524)	0.0081 (0.0104)	0.0062 (0.0109)	0.0081 (0.0103)	0.0357 (0.0271)	0.0364 (0.0276)	0.0350 (0.0271)
Profitability SME	0.0788 (0.2074)	0.0738 (0.1988)	0.0724 (0.2081)	-0.0224 (0.0418)	-0.0620 (0.0441)	-0.0241 (0.0418)	-0.2487 (0.2146)	-0.2614 (0.2308)	-0.2423 (0.2143)
Coverage SME	0.0536 (0.0983)	0.0625 (0.0955)	0.0545 (0.0987)	0.0388*** (0.0116)	0.0533*** (0.0118)	0.0393*** (0.0116)	0.0032 (0.0351)	0.0064 (0.0376)	0.0011 (0.0352)
Activity SME	-0.1111 (0.1797)	-0.1070 (0.1726)	-0.1021 (0.1803)	0.0475 (0.0331)	0.0869** (0.0346)	0.0495 (0.0331)	-0.1941* (0.1018)	-0.1799* (0.1039)	-0.2014** (0.1024)
Cost of equity	-0.1973 (0.1768)	-0.2131 (0.1672)		-0.0353* (0.0198)	-0.1629*** (0.0220)		0.2236** (0.1061)	0.1740* (0.0928)	
Cost of debt	-0.0066 (0.3042)		-0.1433 (0.2878)	-0.3344*** (0.0429)		-0.3556*** (0.0420)	-0.1329 (0.2505)		-0.0340 (0.2280)
Gearing	-0.7821** (0.3899)	-0.8137** (0.3774)	-0.7952* (0.4194)	0.0922** (0.0456)	0.0185 (0.0471)	0.0879* (0.0475)	0.7694*** (0.2446)	0.7408*** (0.2270)	0.8611*** (0.2539)
Cost of liquidity ST		0.1927** (0.0960)			-0.0604*** (0.0115)			-0.0678 (0.0789)	
Cost of liquidity LT			-0.0477 (0.1776)			-0.0125 (0.0184)			0.1887* (0.1035)
Constant	15.3416*** (3.2265)	15.2349*** (3.1671)	15.1669*** (3.5418)	10.4992*** (0.4070)	9.9398*** (0.3995)	10.4858*** (0.4225)	4.6793*** (1.6899)	4.5360*** (1.6644)	3.8821** (1.7066)
Observations	1,945	1,945	1,945	2,509	2,509	2,509	1,979	1,979	1,979
R-squared	0.0232	0.0258	0.0224	0.5267	0.5017	0.5262	0.0877	0.0879	0.0870

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

As for the Retail class, the ranking by explanatory power of the estimations remains the same with a model more fitted more medium term borrowings followed by long term and short term ones.

The leverage ratio is still the prime determinant, but the other variables are frequently insignificant. For long term borrowings, the activity ratio is significantly negative as for Retail short term borrowings and does not contradict Retail long term borrowings as this variable is not significant. Hence, a slow-down in Corporate activity triggers them to make long term investment, fostering future growth.

Considering Basel III variables, they offer an interesting behaviour for short term borrowings as they only display unexpected signs when significant. An increase in the regulatory leverage ratio reduces large SME short term borrowings. More surprisingly, the cost of short term liquid-

ity, presents a significantly positive sign, meaning that an increase of its cost raises Corporate short term credits.

For medium term credits, it is the only specification in which all variables behave as expected. Lastly, for long term loans, variables exhibit the same signs as for Retail SME.

iii. General interpretations.

Regarding explanatory power, the model provides evidences that banks heavily rely on hard/quantitative information based technologies to grant loans to informationally opaque small businesses (Frame et al., 2004, Dietsch and Petey, 2002, Shin, 2003, Repullo and Suarez, 2004, Altman and Sabato, 2005; 2007, Grunert et al., 2005, Berger and Udell, 2006, Berger and Frame, 2007, Beck et al., 2010, Claessens et al., 2008, Demirgüç-kunt et al., 2008, de la Torre et al., 2010). More, the modelling fits more the Retail than the Corporate class, supporting Altman and Sabato (2007) small firms variables selection. This aspect is confirmed demand variables being almost always significant for the Retail class while being almost always insignificant for the Corporate one. Those credits seem to rely less on "expert opinion" and "soft information", as they are more complex and costly to acquire from very small firms (Berger and Udell, 1994, Peek and Rosengren, 1995b, Udell, 2004, Berger, Miller, Petersen, Rajan and Stein, 2005, Berger, 2006). As for maturities, the model is better designed for medium term borrowings and somehow for long term credits, either granted to Retail or Corporate SME. Hence, transaction lending technologies are used for medium and longer term bank credits, whereas at short term, the relationship-type lending prevails. Still, as this model is not really suited for long term lending, other variables should be tested in order to provide further evidences on this topic. Particularly, addition of qualitative data should enhanced model prediction power (Dietsch et al., 2006, Altman and Sabato, 2007, Demirgüç-kunt et al., 2008). This contributes to the "Relationship versus Transaction lending" debate and provides evidences that hard-information based technologies are not applied regarding customers size but regarding loan maturity.

Turning to variables with unexpected signs, they actually provide relevant information : Indeed, when comparing signs in each classification (borrowings maturities and borrower classes), they never contradict each other, offering stable ground for interpretation.

The Basel III, or bank specific variables are at the core of this study and are scrutinized in the following. Those variables are more often statistically significant than the control variables, especially for the Corporate class. Hence, Basel III impacts more vigorously large SME than smaller ones. The later appear slightly less affected by the new regulation particularly in the short run. As the demand variables remain a set of control, their results are not further detailed.

The following table presents summarized results for Basel III variables. Values with unexpected signs are in italic.

Table 3: Basel III summarized results

Class	Variables	Expected sign	Short term	Medium term	Long term
Retail	Cost of equity	-	<i>0.0855***</i>	-0.0416***	<i>0.4722***</i>
	Cost of debt	-	-0.3018***	-0.2486***	-1.5471***
	Gearing	+	0.4044***	-0.0297***	1.3671***
	Cost of liquidity ST	-	/	-0.0488***	-0.4169***
	Cost of liquidity LT	-	<i>0.1097***</i>	-0.0239***	<i>0.5077***</i>
	R-squared		0.0707	0.8305	0.1802
Corporate	Cost of equity	-	/	-0.0353*	<i>0.2236**</i>
	Cost of debt	-	/	-0.3344***	/
	Gearing	+	<i>-0.7821**</i>	0.0922**	0.7694***
	Cost of liquidity ST	-	<i>0.1927**</i>	-0.0604***	/
	Cost of liquidity LT	-	/	/	<i>0.1887*</i>
	R-squared		0.0232	0.5267	0.0877

Taking a closer look at the signs, results are fairly in line with the expectations for medium term credits, but they exhibit a particular feature in the short and long run : contrary to the expected negative sign, the cost of equity is significantly positive. In this particular case, the reduced cost of equity increases medium term loans at the expense of short and long term ones. For Retail short term borrowings, the cost of equity behaviour points toward Basel Committee's postulate : the reduction in risk level of the financial system and individual banks, lowers banks' shareholders required rate of return. In turn, the reduced cost of equity allows banks to rebalance their portfolio toward more regulatory-demanding investments. Even if those investments are obviously more risky, it does not mean that the bank becomes more risky as long as its better loss absorbency capacity overcomes the increase in its portfolio risk. Also, more expensive equity forced banks to fund loans for their regulatory alleviation and not their return, which explains why Corporate short term borrowings is not impacted. In this respect, Basel III perfectly achieves its goals through a safer banking system and better funding access for borrowers.

If this reasoning was to be entirely true, long term borrowings would increase as well but they do not. This is the other other side of the coin : reduced equity cost allows bank to take safer positions as it does not need to generate higher returns to satisfy its shareholders required rate of return. Hence, long term lending decrease along with cost of equity.

In this respect, the overall outcome of Basel III reforms on capital ultimately depends on how decreased short and long term borrowings are compensated by medium term ones. When using the mean values of the tables 7 and 8, Basel III results in a decrease of €4.0745¹³ billion for Retail borrowings and of €306.9052¹⁴ billion for Corporate borrowings per percentage point of reduction in the cost of equity.

In the end, an increase in equity volume leads to a "regulatory mirage" : Basel III can extend

¹³ $0.0416 \times 39.2689 - 0.0855 \times 19.0409 - 0.4722 \times 8.6407$

¹⁴ $0.0353 \times 5230.736 - 0.2236 \times 2198.346$

short term lending maturity but undermines bank business model by lowering long term lending and so returns. This constitutes our main contribution to the Basel III literature. According to our results the new set of capital reforms enforces banks to :

1. eliminate low return exposures regardless of their regulatory alleviation,
2. eliminate high risk exposures regardless of their return,
3. ultimately rebalance their portfolio toward investments offering acceptable regulatory adjusted risk/return.

The cost of debt offers an easiest interpretation as it always have the expected negative sign when significant. This conclusion supports Basel Committee view on a positive effect of the set of reforms on the cost of debt ([Basel Committee on Banking Supervision, 2010a](#)). Depending on how much the cost of debt will decrease, this could compensate the cost of equity negative effect.

Turning to the gearing, it is the only bank specific variable to be (almost) always highly significant. Associated with its meaningful role played for small firms, this provides evidence of the leverage ratio's critical aspect in firm risk management and gives support to [Estrella et al. \(2002\)](#) conclusions on simple ratios predictably power. Still, for Retail medium term borrowings and Corporate short term borrowings, the gearing is significantly negative and needs scrutiny : an uptrend in the banking leverage ratio shrinks small firms exposures in this layout. As a matter of fact, the regulatory leverage ratio will force banks to modify their business model toward riskier positions. Credit institutions have to maintain their required rate of return and compensate for the induced deleveraging. In the mean time, this will dig the funding gap between low risk exposures benefiting from regulatory alleviation and highly profitable investments. This aspect is displayed by the positive sign for Retail short term exposures and Corporate medium and long term exposures. As a matter of fact, the regulatory leverage ratio exacerbates small firms funding gap. This confirms our conclusions on the cost of equity regarding low risk/return exposures, as banks would not be able to use leverage to maintain their required rate of return.

The short term liquidity cost takes most of the time the expected negative sign, corroborating that the rising cost of high quality liquid assets reduces lending. Besides, for Corporate short term borrowings, the variable exhibits a positive sign. In this case, the increase in HQLA cost reduces Corporate lending maturity. Actually, small firms need 5 to 20 times less HQLA than large companies. In details, SME's cash outflows face a coefficient ranging for 5 to 10% applied to the total exposure amount, against 25 to 75% for large entities. The inflows coefficients are the same whatever the firm size but the total net cash outflows is definitively lower for SME. The proxy for NSFR cost almost never has the expected negative sign when significant. For Corporate borrowers, this variable is barely significant for long term borrowings and with the opposite sign to the expected. Hence, the long term liquidity ratio do not negatively impact large SME. For very small firms, the NSFR digs the gap between short term and long term credits. This positive sign indicates that when long term liquidity cost increases, small

firm exposures go along. Actually, SME exposures with a remaining maturity lower than one year borne a Required Stable Funding factor of 85% against 100% for longer term exposures explaining this surprising result.

In respect of those results, the following table provides a synthetic conclusion :

Table 4: Synthetic conclusion

	Loan characteristics				
Regulatory charge	low	low	mild	mild	high
Return	low	mild	mild	high	high
Basel III effect	Rationing	Funding	Rationing	Funding	Rationing

This table underlines how Basel III will create a moderate banking system, avoiding risks but digging the funding gap in the mean time, as expected by numerous authors ([Udell, 2004](#), [OECD, 2006](#); [2012](#)).

It is interesting to underline that Retail exposures for short and long term borrowings behave the same as long term Corporate borrowings in each and every aspect. This observation and the stability exhibited by the variables in the same maturity class and across SME classes allow us to be fairly confident in the robustness of our estimations. Still, the following section provide proper robustness checks.

IV. Robustness checks.

The robustness checks use more general models, naming the Generalized Least Square and the Generalized Method of Moments¹⁵. As mentioned before, this panel dataset provides reliable results and the robustness checks face some shortcomings : the main problem lies in dataset gaps. This prevents from using a properly corrected version of the GLS estimator¹⁶ and weakens GMM results.

Due to the matrix computation of the GLS, Retail class had to be reduced. Therefore, a random subsample is used, accounting for 2% of very small firms. A panel-specific AR(1) autocorrelation structure is retained.

The one step System Generalized Method of Moments is designed for "small T, large N" dynamic panel-data and instrumentalized lagged endogenous explanatory variables ([Blundell and Bond, 1998](#), [Roodman, 2006](#), [Soto, 2009](#)). In regards with the short time frame, such dynamic model is not very relevant and the results prove this assumption to be right. Following the estimations, the p-value of the Hansen test of overidentification restrictions statistic is presented. Are also reported the Arellano-Bond test statistics for AR(1) and AR(2) in first differences. Finally, the number of instruments, including the collinear ones are reported. Instruments are

¹⁵ See Tables 9, 10, 11 and 12 in Appendix.

¹⁶ No correction for heteroskedastic and correlated error structure of the residuals and regressions "forced", regardless of the gaps in the dataset.

collapsed in order to limit instrument proliferation. A robust covariance matrix of the parameter estimates correcting for heteroskedasticity and autocorrelation within panels is computed.

Globally, those supplementary estimations provide strong ground to the previous ones, especially when an unexpected sign is observed. Indeed, when an unexpected sign is observed, it is always the same within the considered time range. Surprisingly, the model fits more the Corporate exposures especially for the GLS model. Another difference with the OLS is the lack of significance of Basel related variables in almost every specifications. This is particularly true for the GMM. The later proving to be poorly designed for our purpose as almost every variables are insignificant and especially the lagged explained variable.

In order to correct the imperfections of this framework some adjustments could be made but would also create other drawbacks : firstly, levels could have been used instead of logged variables but relative explanatory power would have been challenged. Secondly, only individuals containing all needed observations could have been retained but obviously would have created an unacceptable selection bias.

Again, and according to the number of estimations ran, we do not perform further robustness checks and trust our estimations.

V. Discussion.

One particular point needs to be discussed : does increased equity volume really reduces equity price ?

The debate over equity being more costly than debt is not considered as numerous authors are already discussing the topic. Here, we rather focus on two aspects raising concerns about reduced cost of equity thanks to a more stable banking system.

Firstly, if the banking risk is actually reduced by an increased quantity of equity, it is achieved through a transfer of risk on shareholders. This is actually one of the Basel Committee's aim ([Basel Committee on Banking Supervision, 2011](#)). However, this ends up in a rise in individual shareholders' level of risk, turning them to require higher rate of return. One can argue that previous bank returns were too high regarding explicit and implicit guaranties, i.e. privatizing profits and socializing losses. Thus, even if shareholders individual level of risk rises, they will not ask for higher rate of return¹⁷. Still, shareholders operate on diversified markets offering alternative investment opportunities with potentially better risk/return. [King \(2010\)](#) goes further and asserts that the loss of implicit government guaranties could push the shareholders to be more return-demanding. More, if this "over-return" was so large, investors' portfolio would have been only composed of bank assets, limited by diversification strategies, which obviously have not been the case.

Secondly, the way equity is accumulated makes its cost inter-temporally non-linear. As al-

¹⁷ Which is an heroic assumption and is not confirmed empirically, see [Cohen and Scatigna \(2014\)](#).

ready demonstrated, the marginal cost of equity stock is cheaper in the short run than the marginal cost of equity flow, being issuing new capital (Myers and Majluf, 1984, Berger et al., 2008, Gropp and Heider, 2010, Kashyap et al., 2010, Cosimano and Hakura, 2011, Cohen and Scatigna, 2014). In this respect, banks increase their quantity of equity through retained earnings (Hancock and Wilcox, 1994, Repullo and Suarez, 2004, Berger et al., 2008, Angelini and Gerali, 2012, OECD, 2012, Cohen and Scatigna, 2014). Actually, "*Profitability is a bank's first line of defence against unexpected losses, as it strengthens its capital position and improves future profitability through the investment of retained earnings*" (European Central Bank, 2010). Nevertheless, the marginal cost of equity based on retained earnings increases over time : returns on long term loans are future retained earnings, their net present value is thus lower than contemporaneous retained earnings. They are therefore more expensive than short term retained earnings. Hence, banks focus their activity on assets with low regulatory requirements (contrary to long term lending) and offering decent returns regardless of their regulatory alleviation (contrary to Retail short term lending). This behaviour ending up in a "moderation" as previously demonstrated in this paper. Consequently, the regulatory purpose equity accumulation is achieved through decreasing returns. As a matter of fact, each marginal unit of equity mobilized through continuous retained earnings is dynamically more expensive than the previous one. The Return on Equity mechanically stepping toward zero. This business model being unsustainable, banks have to fund riskier projects to compensate for this more expensive capital. Paradoxically, this would be a good thing for the SME regarding our estimations and probably the entire economy.

In the end, if the increased volume of equity can reduce its cost in the short run, both will ultimately increase in the long run.

From a stylised point of view, SME offer higher interest rates than large firms with a spread of 1.64 percentage point between 2008 and 2013 (3.91% against 2.27%¹⁸). Still, this interest rate does not seem to be based on the actual small company risk level but on its ability to serve its debt : for the 2008-2012 period, the average interest on turnover of the firms with a return over €50 million is 18.40% against 42.10% for SME¹⁹. therefore, the risk/return is lower for SME lending. Diversification strategies show limitations (Evans and Archer, 1968, Raffestin, 2014) and can not justify such discrepancy.

Recently, Cohen and Scatigna (2014) confirm numerous observations : retained earnings have been the main form of equity constitution as issuing new equity is costly and shrinks prior shareholders' rate of return. Retained earnings are positively correlated with asset volume. There was no increase in banks' revenue from non-interest income or operational expenses reduction. Finally, the ROE reduction is due to lower profitability and equity volume increase. Still, shareholders did not accept a decrease in the ROE, corroborating King (2010) and our standpoint.

¹⁸ Source : Banque de France, 2014, author's own calculations.

¹⁹ The gap is even larger when 2013 is integrated but somehow suspect.

CONCLUSION

Following an unprecedented international financial crisis, the Basel Committee on Banking Supervision implements a new set of reform. The need for an improved regulation leads authorities to increase the quantity and quality of equity as much as enforcing liquidity requirements. Although, this tightening in the regulatory environment could burden on the most bank-dependant borrowers like SME.

The contemporary quantitative literature on the subject is surprisingly scarce and this paper aims at providing some insights. Therefore, we study the impact of Basel III on french small firms in the later years. Our framework focus exactly on small firms borrowings and allows to avoid any assumption about banks' behaviour regarding interest rate.

We conclude that Basel III could result in a "regulatory mirage" with elusive positive effects in the short run but definitively negative ones in the long run : a moderation in bank risk taking can be observed at first with extended maturity for short term lending. However, this regulation distorts bank business model turning it to be unsustainable. Actually, the increase in maturity is not due to lower cost of equity but to lower future returns and the regulatory ratio implementation. More, the news standards can increase the medium sized enterprises funding gaps they neither benefit from regulatory relieves nor offer high risk adjusted returns. Eventually, banks could rebalance their portfolio toward exposures offering satisfactory returns adjusted from its risk and regulatory requirements. This rebalancing could also decrease exposures to the more risky and profitable assets regardless of their return, restraining the emergence of medium sized enterprises.

We provide some evidence to the Relationship versus Transaction lending literature by demonstrating that banks widely apply hard-information based technologies to grant loan to informationally opaque small firms. This is especially true for medium term lending and somehow for long term lending. For short term exposures, relationship lending seems to prevail.

Regarding the rationing literature, the conclusions are less clear cut and the use of a disequilibrium model would contribute to enhance our framework.

Still, the SME market is almost as strategic for the banking sector than the other way around. Small firms could take advantage of the recent refocusing of the banking system on its core business which provides stable returns and cross-selling opportunities²⁰. In addition, the impact of Basel III ultimately depends on the respective bank characteristics and starting point.

²⁰ Shin (2003), de la Torre et al. (2010), Valet (2011)

APPENDIX

Table 5: Correlation Table

Variables	Borrowings	Borrowings	Borrowings	Borrowings	Leverage	Liquidity	Profitability	Coverage	Activity	Cost of	Cost of	Gearing	Cost of	Cost of	
		CT	MT	LT	SME	SME	SME	SME	SME	Equity	Debt		Liquidity	Liquidity	
													ST	LT	
Borrowings	1.0000														
Borrowings ST	0.6838 (0.0000)	1.0000													
Borrowings MT	0.3682 (0.0000)	0.0008 (0.7082)	1.0000												
Borrowings LT	0.2576 (0.0000)	0.2054 (0.0000)	0.0427 (0.0000)	1.0000											
Leverage SME	-0.0000 (0.9856)	0.0000 (0.9973)	-0.0001 (0.9681)	0.0001 (0.9646)	1.0000										
Liquidity SME	-0.0072 (0.0001)	-0.0044 (0.0347)	-0.0069 (0.0010)	-0.0077 (0.0002)	-0.0008 (0.6971)	1.0000									
Profitability SME	-0.0043 (0.0155)	-0.0029 (0.1706)	-0.0034 (0.1003)	-0.0040 (0.0564)	0.0031 (0.1324)	0.1349 (0.0000)	1.0000								
Coverage SME	-0.0051 (0.0147)	-0.0021 (0.3156)	-0.0030 (0.1488)	-0.0044 (0.0332)	-0.0012 (0.5512)	0.0689 (0.0000)	-0.0564 (0.0000)	1.0000							
Activity SME	-0.0001 (0.9573)	-0.0000 (0.9852)	-0.0001 (0.9702)	-0.0001 (0.9647)	-0.0000 (0.9906)	-0.0026 (0.2222)	0.0698 (0.0000)	-0.0000 (0.9831)	1.0000						
Cost of Equity	0.0018 (0.3177)	0.0011 (0.5905)	0.0025 (0.2213)	0.0026 (0.2048)	0.0008 (0.6888)	-0.0020 (0.2595)	0.0145 (0.0000)	-0.0294 (0.0000)	-0.0014 (0.5166)	1.0000					
Cost of Debt	0.0013 (0.4567)	0.0006 (0.7584)	0.0018 (0.3963)	0.0102 (0.0000)	0.0045 (0.0297)	-0.0050 (0.0052)	0.0257 (0.0000)	-0.0506 (0.0000)	0.0000 (0.9939)	0.4900 (0.0000)	1.0000				
Gearing	0.0017 (0.3275)	0.0020 (0.3439)	0.0027 (0.1926)	-0.0011 (0.5898)	-0.0028 (0.1736)	0.0042 (0.0181)	0.0189 (0.0000)	-0.0089 (0.0000)	-0.0009 (0.6734)	0.1433 (0.0000)	0.1165 (0.0000)	1.0000			
Cost of liquidity ST	-0.0002 (0.9287)	-0.0021 (0.3137)	0.0003 (0.8740)	0.0075 (0.0003)	0.0042 (0.0455)	-0.0026 (0.1416)	0.0116 (0.0000)	-0.0252 (0.0000)	-0.0001 (0.9645)	0.0648 (0.0000)	0.7173 (0.0000)	0.1139 (0.0000)	1.0000		
Cost of liquidity LT	0.0007 (0.6923)	-0.0005 (0.8234)	0.0013 (0.5404)	-0.0007 (0.7476)	0.0003 (0.8958)	-0.0012 (0.5188)	-0.0010 (0.5587)	-0.0081 (0.0001)	-0.0015 (0.4772)	0.8776 (0.0000)	0.1465 (0.0000)	-0.1401 (0.0000)	-0.0642 (0.0000)	1.0000	

Significant level in parentheses

Table 6: Variables construction

Variables	Name	Construction	Source	Expected sign	
Dependant variable	Borrowings ST	Log(100 x Borrowings and debts from credit institutions at less than 1 year at the origin : gross amount)	BvD Diane+		
	Borrowings MT	Log(100 x Borrowings and debts from credit institutions at more than 1 year : at more than 1 year and less than 5 years)	BvD Diane+		
	Borrowings LT	Log(100 x Borrowings and debts from credit institutions at more than 1 year : at more than 5 years)	BvD Diane+		
Explanatory variables	Demand	Leverage SME	Log(100 x (Total of debt : at more than 1 year and less than 5 years)/Equity)	BvD Diane+	+
		Liquidity SME	Log(100 x (Net cash)/(Net total asset))	BvD Diane+	-
		Profitability SME	Log(100 x (EBITDA)/(Net total asset))	BvD Diane+	+
		Coverage SME	Log(100 x (Legal reserves + contractual or statutory reserves + regulated reserves + other reserves)/(Net total asset))	BvD Diane+	+
		Activity SME	Log(100 x (EBITDA)/(Interest payable and similar charges))	BvD Diane+	+
	Supply	Cost of equity	Log(100 x Return on average equity)	BvD Bankscope	-
		Cost of debt	Log(100 x (Interest expense)/(Average interest-bearing liabilities))	BvD Bankscope	-
		Gearing	Log(100 x Equity/(Total assets))	BvD Bankscope	+
		Cost of liquidity ST	Log(100 x Daily effective federal funds rate)	Federal Reserve Bank of New York	-
		Cost of liquidity LT	Log(100 x 10 Year daily U.S. Treasury yield curve rates)	U.S. Department of the Treasury	-

Table 7: Retail class summary statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Turnover	307614	1146.16	2390.274	-.798	48324.65
Borrowings	307644	96.3342	143.4543	.001	999.914
Borrowings ST	224511	19.0409	67.8944	-19.511	1316.518
Borrowings MT	224509	39.2689	84.0457	-7.565	12861.55
Borrowings LT	224508	8.6407	53.6186	-330	15783.91
Leverage SME	224512	.7602	173.7198	-50654	54218
Liquidity SME	307643	.17	.204	-9.8372	1
Profitability SME	307643	.1102	.3321	-75.1915	18.1102
Coverage SME	224460	.1983	.521	-2.2724	134.8684
Activity SME	216716	115.792	17324.83	-5975462	3250405
Cost of Equity	307644	5.9095	1.8724	3.1683	8.8647
Cost of Debt	307644	2.7304	.7681	1.9684	4.1657
Gearing	307644	11.0408	1.4449	8.5743	13.0281
Cost of liquidity ST	307644	.0867	.0377	.04	.14
Cost of liquidity LT	307644	2.685	.764	1.78	3.85

Table 8: Corporate class summary statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Turnover	6816	9359.57	11435.83	-1.126	49718.68
Borrowings	6828	26262.55	279659.5	1000	1.02e+07
Borrowings ST	6691	7159.736	182602.7	0	1.02e+07
Borrowings MT	6692	5230.736	90252.07	0	4983693
Borrowings LT	6692	2198.346	28901.89	-.002	1750000
Leverage SME	6698	.1702	57.2137	-4178.553	675.3615
Liquidity SME	6828	.025	.1481	-.9698	.9999
Profitability SME	6828	.0708	.0836	-.9672	1.2455
Coverage SME	6679	.1127	.1388	-.1222	.8039
Activity SME	6681	5.6019	63.8843	-1642.494	4075.839
Cost of Equity	6828	5.9095	1.8725	3.1683	8.8647
Cost of Debt	6828	2.7304	.7682	1.9684	4.1657
Gearing	6828	11.0408	1.445	8.5743	13.0281
Cost of liquidity ST	6828	.0867	.0377	.04	.14
Cost of liquidity LT	6828	2.685	.764	1.78	3.85

Table 9: Retail class GLS

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	ReSTrdg Borr. ST	ReSTrgf Borr. ST	ReSTdgt Borr. ST	ReMTrdg Borr. MT	ReMTrgf Borr. MT	ReMTdgt Borr. MT	ReLTrdg Borr. LT	ReLTrgf Borr. LT	ReLTdgt Borr. LT
Leverage SME	0.0607** (0.0264)	0.0654** (0.0274)	0.0686** (0.0287)	0.6967*** (0.0111)	0.6962*** (0.0110)	0.6969*** (0.0111)	0.7606*** (0.1093)	0.6322*** (0.0661)	0.7699*** (0.1146)
Liquidity SME	-0.5275*** (0.0234)	-0.5143*** (0.0238)	-0.5209*** (0.0244)	-0.0362*** (0.0110)	-0.0350*** (0.0110)	-0.0336*** (0.0113)	-0.2743*** (0.0791)	-0.2575*** (0.0525)	-0.2700*** (0.0805)
Profitability SME	0.0395 (0.0635)	0.0996 (0.0665)	0.0253 (0.0666)	-0.1781*** (0.0205)	-0.1867*** (0.0202)	-0.1702*** (0.0213)	-1.4139*** (0.2195)	-1.3172*** (0.1603)	-1.3972*** (0.2239)
Coverage SME	-0.0400* (0.0235)	-0.0534** (0.0255)	-0.0420* (0.0238)	0.0891*** (0.0091)	0.0896*** (0.0092)	0.0882*** (0.0091)	0.0527 (0.0522)	0.0449 (0.0319)	0.0546 (0.0597)
Activity SME	-0.3525*** (0.0575)	-0.3546*** (0.0577)	-0.3393*** (0.0584)	0.1769*** (0.0167)	0.1809*** (0.0168)	0.1733*** (0.0174)	0.8538*** (0.1906)	0.7459*** (0.1305)	0.8478*** (0.1908)
Cost of equity	-0.0446 (0.1087)	-0.5873*** (0.0926)		-0.0985*** (0.0335)	-0.0998*** (0.0304)		1.2289*** (0.2706)	0.7200** (0.3092)	
Cost of debt	-1.4410*** (0.1467)		-1.5306*** (0.1265)	0.0153 (0.0470)		-0.0106 (0.0442)	-1.2682*** (0.3286)		-0.7728** (0.3729)
Gearing	0.2770 (0.2723)	-0.4276 (0.2992)	0.3100 (0.2646)	0.0628 (0.0819)	0.0729 (0.0816)	0.0269 (0.0833)	1.0725 (0.8781)	0.1433 (0.6356)	1.4573 (0.9274)
Cost of liquidity ST		-0.0894 (0.0658)			-0.0059 (0.0166)			-0.2923** (0.1384)	
Cost of liquidity LT			0.1159 (0.1097)			-0.0888*** (0.0332)			1.1183*** (0.2850)
Constant	14.8189*** (2.2415)	15.2213*** (2.1867)	14.0591*** (2.2722)	5.1818*** (0.6428)	5.2101*** (0.6227)	5.4416*** (0.6800)	-5.5589 (6.9318)	-1.3179 (4.1214)	-9.4718 (7.4696)
Observations	998	998	998	1,550	1,550	1,550	338	338	338

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 10: Retail class GMM

VARIABLES	(1) ReSTrdg Borr. ST	(2) ReSTrgf Borr. ST	(3) ReSTdgt Borr. ST	(4) ReMTrdg Borr. MT	(5) ReMTrgf Borr. MT	(6) ReMTdgt Borr. MT	(7) ReLTrdg Borr. LT	(8) ReLTrgf Borr. LT	(9) ReLTdgt Borr. LT
L.Borr. ST	0.2633*** (0.0999)	0.1049 (0.1242)	0.1559 (0.1222)						
L.Borr. MT				0.3762*** (0.0940)	0.3872*** (0.0865)	0.3894*** (0.0903)			
L.Borr. LT							0.4879 (0.3163)	0.5663* (0.3290)	0.3964** (0.1937)
Leverage SME	0.4724** (0.2097)	0.1413 (0.1905)	0.0489 (0.0764)	0.7577*** (0.1131)	0.7760*** (0.1045)	0.7551*** (0.1286)	0.8340* (0.4739)	0.9352* (0.4771)	0.9279** (0.3865)
Liquidity SME	-0.1002 (0.2776)	-0.5340*** (0.1211)	-0.2751 (0.8791)	-0.0421* (0.0249)	0.1456 (0.1757)	-0.0012 (0.2306)	-0.1299 (0.1273)	-0.1291 (0.1348)	-0.3759 (0.3796)
Profitability SME	-0.2597 (0.2250)	0.1673 (0.1878)	0.1039 (0.1632)	-0.8592 (0.5353)	-0.9136** (0.4408)	-0.8429 (0.5362)	-0.7342* (0.3770)	-0.8279** (0.3840)	-1.3304* (0.7995)
Coverage SME	0.0844 (0.2305)	0.2479 (0.4843)	-0.0321 (0.1241)	0.0759*** (0.0271)	0.0597* (0.0338)	0.0742** (0.0354)	0.5356 (0.4834)	0.5995 (0.4885)	0.4056 (0.3401)
Activity SME	-0.0216 (0.2364)	-0.2875* (0.1488)	-0.3827 (0.4214)	0.6706* (0.3473)	0.6466** (0.2506)	0.6504** (0.3044)	0.7278 (0.4548)	0.8448* (0.4655)	1.4141* (0.8515)
Cost of equity	-0.1809 (0.4921)	-0.9584*** (0.2151)		-0.0216 (0.1015)	-0.0557 (0.0727)		-0.0317 (0.6362)	-0.0673 (0.3456)	
Cost of debt	-2.7898** (1.2129)		-2.2139 (2.4398)	0.0099 (0.2319)		0.8435 (0.7117)	-0.0486 (1.3296)		3.6907 (3.5927)
Gearing	0.6693 (0.8653)	-0.7996 (0.6585)	0.1080 (2.2844)	0.4437 (0.2781)	0.4466** (0.2040)	-0.4109 (0.5979)	-0.7647 (1.1060)	-0.7489 (0.9687)	-4.0221 (3.5808)
Cost of liquidity ST		-0.1296 (0.1305)			-0.0298 (0.0415)			-0.2624 (0.2113)	
Cost of liquidity LT			-0.1615 (1.1784)			-0.4507 (0.3366)			-1.8616 (1.8116)
Constant	14.6328*** (4.9875)	18.0851*** (6.1041)	19.3376* (11.1576)	-3.1247 (3.7569)	-3.0845 (2.7770)	0.5815 (3.2714)	2.7175 (7.7484)	1.3396 (8.3306)	13.1783 (14.8613)
Observations	729	729	729	1,078	1,078	1,078	226	226	226
hansenp	0.116	0.247	0.227	0.329	0.667	0.618	0.140	0.266	0.0548
arlp	0.00143	0.0430	0.0239	0.00119	0.00275	0.000482	0.147	0.124	0.145
ar2p	0.385	0.185	0.288	0.549	0.776	0.478	0.271	0.199	0.474
j0	110	20	20	20	70	25	20	20	30

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 11: Corporate class GLS

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	CoSTrdg Borr. ST	CoSTrgf Borr. ST	CoSTdgt Borr. ST	CoMTrdg Borr. MT	CoMTrgf Borr. MT	CoMTdgt Borr. MT	CoLTrdg Borr. LT	CoLTrgf Borr. LT	CoLTdgt Borr. LT
Leverage SME	-0.4991*** (0.0360)	-0.4568*** (0.0430)	-0.4885*** (0.0352)	0.3704*** (0.0102)	0.3640*** (0.0101)	0.3693*** (0.0100)	0.2550*** (0.0272)	0.2188*** (0.0242)	0.2709*** (0.0294)
Liquidity SME	-0.3663*** (0.0113)	-0.3698*** (0.0159)	-0.3705*** (0.0111)	0.0062 (0.0052)	0.0080 (0.0052)	0.0007 (0.0050)	0.0182* (0.0093)	0.0156 (0.0096)	0.0189* (0.0105)
Profitability SME	-0.4199*** (0.0747)	-0.4311*** (0.0852)	-0.4102*** (0.0575)	-0.2736*** (0.0187)	-0.2864*** (0.0184)	-0.2844*** (0.0183)	0.0324 (0.0603)	0.0534 (0.0605)	0.0585 (0.0603)
Coverage SME	0.0178 (0.0229)	0.0389* (0.0235)	-0.0023 (0.0194)	0.0396*** (0.0057)	0.0399*** (0.0058)	0.0348*** (0.0056)	-0.0459*** (0.0156)	-0.0676*** (0.0133)	-0.0456*** (0.0153)
Activity SME	-0.0348 (0.0718)	-0.0118 (0.0787)	-0.0391 (0.0568)	0.2097*** (0.0166)	0.2211*** (0.0166)	0.2137*** (0.0159)	-0.2769*** (0.0526)	-0.2920*** (0.0525)	-0.2905*** (0.0519)
Cost of equity	-0.2128*** (0.0817)	-0.3910*** (0.0913)		0.0236 (0.0202)	-0.0065 (0.0194)		0.2982*** (0.0673)	0.1966*** (0.0639)	
Cost of debt	-0.3175** (0.1411)		-0.5842*** (0.1069)	-0.1226*** (0.0283)		-0.0955*** (0.0260)	-0.2666*** (0.0807)		-0.1968** (0.0805)
Gearing	0.0408 (0.2590)	-0.1722 (0.2839)	0.1058 (0.1575)	0.2431*** (0.0471)	0.2323*** (0.0472)	0.2234*** (0.0478)	0.9178*** (0.1764)	0.7323*** (0.1667)	1.0118*** (0.1841)
Cost of liquidity ST		0.2119*** (0.0615)			-0.0307*** (0.0098)			-0.0738** (0.0347)	
Cost of liquidity LT			-0.0368 (0.0799)			-0.0070 (0.0184)			0.2732*** (0.0647)
Constant	14.4128*** (2.0872)	14.5169*** (2.1565)	14.3100*** (1.6720)	8.1654*** (0.3847)	7.7792*** (0.3754)	8.3395*** (0.4036)	4.6795*** (1.4866)	5.5316*** (1.2734)	3.9732** (1.6020)
Observations	1,782	1,782	1,782	2,348	2,348	2,348	1,820	1,820	1,820

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 12: Corporate class GMM

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	CoSTrdg Borr. ST	CoSTrgf Borr. ST	CoSTdgt Borr. ST	CoMTrdg Borr. MT	CoMTrgf Borr. MT	CoMTdgt Borr. MT	CoLTrdg Borr. LT	CoLTrgf Borr. LT	CoLTdgt Borr. LT
L.Borr. ST	0.4804*** (0.0667)	0.4788*** (0.0667)	0.4793*** (0.0671)						
L.Borr. MT				0.5601*** (0.1982)	0.5963*** (0.2117)	0.5565*** (0.1971)			
L.Borr. LT							0.5568** (0.2247)	0.5544** (0.2231)	0.5470** (0.2232)
Leverage SME	-0.1436 (0.1861)	-0.1589 (0.1928)	-0.1344 (0.1852)	0.0787 (0.0800)	0.0412 (0.0985)	0.0837 (0.0842)	0.4068** (0.1864)	0.3931** (0.1817)	0.4068** (0.1851)
Liquidity SME	-0.4218*** (0.1562)	-0.4267*** (0.1567)	-0.4207*** (0.1569)	-0.0498 (0.0371)	-0.0632 (0.0565)	-0.0518 (0.0374)	0.0777** (0.0354)	0.0723** (0.0340)	0.0765** (0.0359)
Profitability SME	-0.8356 (0.6276)	-0.7721 (0.6784)	-0.8689 (0.6138)	-0.1090 (0.1221)	0.0596 (0.2481)	-0.1050 (0.1279)	-0.0795 (0.3127)	0.0047 (0.3238)	-0.0926 (0.3050)
Coverage SME	0.0017 (0.2113)	-0.0012 (0.2111)	0.0073 (0.2125)	-0.0060 (0.0193)	-0.0062 (0.0228)	-0.0047 (0.0195)	0.0297 (0.0724)	0.0161 (0.0706)	0.0339 (0.0722)
Activity SME	0.5637 (0.4831)	0.5160 (0.5196)	0.5889 (0.4744)	0.0698 (0.1035)	-0.0313 (0.2028)	0.0683 (0.1115)	-0.3993 (0.2760)	-0.4287 (0.2977)	-0.3854 (0.2901)
Cost of equity	-0.2427 (0.4143)	-0.2680 (0.1793)		0.0805 (0.0882)	0.0456 (0.0460)		-0.0693 (0.1702)	-0.0213 (0.1004)	
Cost of debt	-0.0483 (1.0396)		-0.2497 (2.3775)	-0.0575 (0.2065)		-0.1829 (0.5849)	0.1264 (0.4364)		-0.0157 (1.6166)
Gearing	-0.3395 (0.7427)	-0.3841 (0.3880)	-0.3553 (2.3449)	0.1900 (0.1463)	0.1504 (0.1019)	0.3826 (0.5793)	-0.0666 (0.4021)	-0.0139 (0.2537)	0.0189 (1.6140)
Cost of liquidity ST		0.0506 (0.1538)			0.0046 (0.0279)			0.0398 (0.0610)	
Cost of liquidity LT			-0.1618 (1.1248)			0.1526 (0.2891)			-0.0054 (0.7448)
Constant	7.5351* (4.3845)	7.8960* (4.4055)	7.9925 (10.0078)	3.1512 (2.4391)	3.3576* (1.7202)	2.1673 (1.6557)	5.7930* (3.0781)	5.8547* (3.3700)	5.6129 (4.7298)
Observations	1,337	1,337	1,337	1,824	1,824	1,824	1,357	1,357	1,357
hansenp	0.624	0.636	0.609	0.393	0.323	0.390	0.795	0.691	0.824
ar1p	2.47e-08	1.87e-08	3.27e-08	0.0232	0.0183	0.0241	0.0122	0.0142	0.0119
ar2p	0.178	0.176	0.166	0.977	0.880	0.993	0.251	0.283	0.259
j0	90	90	90	110	30	110	110	110	110

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

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