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Corporate Finance Under Low Interest Rates: Evidence from Hong Kong

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Abstract

This paper examines the impact of the dramatic reduction in interest rates by the Federal Reserve on Hong Kong. Using a panel of several hundred firms in Hong Kong we find that firms increase all types of debt, but shift from short-term to long-term debt as rates fall. This can be attributed in part to a supply-side effect as the benign monetary policy environment has improved creditworthiness. The most noticable result from our analysis is the high level of bank dependence among Hong Kong firms and the continued dependence on bank finance even when interest rates fall. Potentially this may reveal that Hong Kong lacks the benefits of a deep domestic bond market.

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1. Introduction

In the period since 2001 the Federal Reserve has lowered the Fed Funds rate dramatically. This has had a direct impact on many more economies than just the United States. Hong Kong, for example, has a linked exchange rate system that means, subject to forward and spot exchange rates being in alignment, base rates in Hong Kong follow the Federal funds rate of the United States as the Monetary Authority seeks to maintain the exchange rate at HK$7.8 to the US dollar under the currency board arrangements. As a result interest rates in Hong Kong have fallen from around eight percentage points to their present levels of two-and-three-quarter percentage points – or by two-thirds. This is a dramatic fall in rates and will have had an effect on the domestic macroeconomy irrespective of whether interest rates are directly under the control of the monetary authorities in Hong Kong or not.

Monetary policy conducted through interest rate changes operates through various channels, which have been documented in Bernanke and Gertler (1995), Mishkin (1995) and the Bank of England (1999). As the cost of borrowing falls below the expected return on marginal investment projects investment demand increases, and the economy is stimulated through the direct interest rate channel. Also, as firms become financially more healthy and their creditworthiness improves, so there is an amplifying indirect effect from the credit channel which helps stimulate the economy further. When rates fall it is expected that the demand for external funds will increase as the direct and indirect rate channels of monetary policy take effect. But it is not clear whether the demand for all types of external finance will increase proportionately. Some components of external finance may prove more attractive than others, and the demand for bank borrowing for example, may exceed demand for credit obtained through the sale of marketable debt or equity. Equally, short-term debt may be replaced by longer-term debt if short-term interest rates fall below the rates that are expected to prevail in the longer run. In addition, some types of firms may find that the credit constraints that they face on the supply side, from the markets and financial intermediaries, are relaxed less quickly than for other types of firms. Firms that were previously only able to obtain credit from banks, perhaps because they were too small to be listed on the stock exchange or to issue their own commercial paper or bonds, find that other forms of credit become available.

In this paper we seek to control for the demand effects and examine what happens to supply of credit when interest rates fall. Our approach is to examine the implications of falling interest rates in an asymmetric information context where firms typically face borrowing constraints. These constraints often prevent firms from borrowing as much as they would like from the cheapest sources. We argue that demand is therefore usually constrained by supply and that firms obtain funds from suppliers on the basis of their creditworthiness, as measured by balance sheet performance. Under low rates of interest, balance sheets improve and suppliers lend more freely, allowing previously constrained firms (or even firms that were totally excluded from the credit market) to borrow larger (non-zero) amounts on better terms. All our results need to be interpreted in the context of constrained or rationed credit.

The unique feature of Hong Kong is its heavy reliance on bank lending as a means of external finance for investment. This is typically a form of finance that is low in the pecking order, and firms that are able to access the financial markets usually substitute away from bank lending to some degree. Yet companies in Hong Kong are highly bank dependent compared to companies in other countries and only the largest companies obtain finance from non-bank sources such as bond and equity markets.[1] In particular, the domestic bond market is small in comparison to other countries, on the basis of the market capitalisation to GDP and therefore the main alternative to bank finance is equity finance. This makes Hong Kong an interesting case to consider when interest rates fall.

This paper examines the effects of very low rates of interest on the financing of the corporate sector in Hong Kong, and in application it explores the implications for monetary policy and for financial stability because these two issues are closely linked. If the low interest rates in Hong Kong at present encourage firms to overborrow while rates are exceptionally low, since credit is readily supplied, they may be more exposed to sharp reductions in the availability of credit, if and when interest rates rise in the future, which could lead to even more *contractionary* forces in output. There is therefore a structural question about whether low interest rates could induce problems of financial instability that would pose a dilemma for policymakers as rates increase in the US.

The paper is organised as follows. The next section gives the theoretical underpinnings for the paper, then section 3 develops the econometric methodology, sections 4 and 5 report the data sources and the results. The final two sections draw out the implications and conclusions.

2. Theoretical Underpinnings

Under perfect financial markets, the Modigliani and Miller (1958) theorem states that the market value of a firm is independent of its financial composition.[2] However, a growing number of theoretical and empirical studies have shown that the financial positions of firms are important for their investment and employment decisions under imperfect financial markets (c.f. Bernanke and Blinder, 1988; Fazarri *et al.,* 1988; Bernanke and Gertler, 1995; Gertler and Gilchrist, 1994) . The informational asymmetries create conditions on the supply-side where firms may face credit rationing, or monitoring by banks at a cost, which may limit the availability of credit to less than would be demanded in an unconstrained market.

Informational asymmetries and agency cost problems lead to a wedge between the costs of different types of external and internal funds. This implies two basic results; (i) firms cannot substitute external funds for internal funds without cost and, (ii) short-term and long-term debt from banks, and market-based finance from bond and equity markets are not perfect substitutes. In fact the imperfect substitution among financial instruments has important implications for both the capital structure and the real activity of firms. The rates of return on various financial funds differ according to the extent of informational

[1] It is unclear whether this is because large firms choose to obtain finance in this way, and smaller companies choose not to, or because all but large companies are constrained from obtaining credit in this way.

[2] See Modigliani and Miller (1958)

asymmetries in the corresponding financial markets. This gives rise to a *financial hierarchy* where firms choose the least costly source of finance to fund their investment projects c.f. Majluf and Myers (1984).

Using the theoretical model in Bougheas, Mizen and Yalcin (2004) we can make a number of propositions about the structure of corporate finance.[3] We assume that firms own assets which consist of tangible collateral assets (C) and intangible assets, while their financial liabilities consist of equity and debt. Debt can be separated into senior debt (D^S) and junior debt (D^J), where the senior debt is paid off first in the case of default. All new finance is junior debt, hence the availability of credit will rest on the likelihood that junior debt will be repaid, and all new investment requires some initial investment (F). The investment generates a return $kF \quad (k>1)$ with probability p and zero with probability $1\text{-}p$. Firm owners and potential creditors are risk neutral. All financial markets are competitive. The opportunity cost of funds is given by the riskless interest rate r.

Following Townsend (1979), we assume that only firm owners can costlessly observe project returns, therefore banks must incur monitoring costs to verify the returns reported by firm owners. If the firm reports a positive return then the bank has no incentive to incur the monitoring cost, but if it reports a zero return the bank will find it profitable to monitor the firm.[4] When firms default on their debt obligations, their creditors can liquidate their tangible assets. The value of tangible assets is equal to C_H with probability π and is equal to $C_L \ (<C_H)$ with probability $1\text{-}\pi$. The expected value, $\pi C_H+(1\text{-}\pi)C_L=C$, is equal to the value of the tangible assets at the time when the financial contract is agreed. Firms receive earnings for continuing to operate, which we label V, there exists a cut-off value V^* for the continuation payoffs such that if $V<V^*$ firms will always default independently of their project's payoff.

In this theoretical framework it is possible to determine whether junior debt can be obtained from the capital market, we label this D^J_C. Four cases emerge. If the lowest possible collateral value exceeds the sum of senior and junior debt then all debt is riskless, and the firm will obtain market finance (i.e. from bond or equity markets). Where the debt is higher than the lowest level of collateral, or higher than the highest level of collateral but future earnings exceed the difference between the debt and the high level of collateral, then finance may be obtained but at a higher than risk free rate of interest. In the third case firms may have incentives to misreport returns and this will result in higher loan rates than the second case and possible credit constraints. The fourth case is where the firm will certainly default and finance is not available from the market. In each case we can determine the external finance available as follows:

Case 1: If $C_L>D^S+D^J_C$ then $D^J_C= (1+r)F$
Case 2: If $C_H> D^S+D^J_C>C_L$ then
$pD^J_C + (1\text{-}p)(\pi(\min\{D^J_C,C_H\text{-}D^S\}) + (1\text{-}\pi)\min\{D^J_C,C_L\text{-}D^S\}) = pD^J_C + (1\text{-}p)(\pi D^J_C + (1\text{-}\pi)(C_L\text{-}D^S))$
The inequality $C_L\text{-}D^S<D^J_C$ implies that $D^J_C>(1+r)F$
Case 3: If $D^S+D^J_C>C_H$ and $V>V^*$ then
$pD^J_C + (1\text{-}p)(\pi(\min\{D^J_C,C_H\text{-}D^S\}) + (1\text{-}\pi)\min\{D^J_C,C_L\text{-}D^S\}) = pD^J_C + (1\text{-}p)(\pi(C_H\text{-}D^S) + (1\text{-}\pi)(C_L\text{-}D^S))$
this also implies $D^J_C>(1+r)F$ and D^J_C/F (Case 3) > D^J_C/F (Case 2)
Case 4: If $D^S+D^J_C>C_H$ and $V<V^*$ then $D^J_C = 0$.
Proof: Bougheas *et al*. (2004).

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3 While these propositions are similar to those in the literature they outline clearly the theoretical basis for our results.

4 See Diamond (1984) for a costly-state verification model where financial intermediaries arise endogenously.

In the third case banks may provide finance at a higher cost than the market. The bank is able to monitor the firm, but the additional costs of doing so result in higher interest rates on credit for the firm. In this situation, junior debt from banks, D^J_B, is available:

$$D^{\mathrm{J}}_{\mathrm{B}} = \{(1+r)F+(1-p)m(F) - (1-p)(\pi(\ C_{\mathrm{H}}-D^{\mathrm{S}}) + (1-\pi)(C_{\mathrm{L}}-D^{\mathrm{S}}))\} / p$$

where $m(F)$ is a monitoring cost. Note that the inclusion of $m(F)$ raises the effective cost of credit from banks compared to the market.

Proof: Bougheas *et al*. (2004).

Most studies of the credit channel consider the circumstances surrounding a *tightening* of monetary policy, where firms face higher interest rates, and worsening economic conditions that affect profitability, cash flow and collateral values. The hypothesis here is that firms will be forced to obtain credit lower down the pecking order of finance at a higher cost, or may be excluded from obtaining credit altogether. In the case where monetary policy is loosening, we should expect the reverse: lower interest rates reduce the underlying cost of finance (the risk free rate) and the effective rate charged by banks or the market. This is because lower rates affect the discounting of future profits, increasing the present value of continuity payments, V, and improving the project returns. In addition, we might expect a general improvement in profitability, cash flow and collateral values that should allow firms to access credit higher up the hierarchy as the constraints cease to bind. In the context of our model we could conceive that there would be a higher probability of financial payoffs that allow the firms to pay off their debts, and higher probability that collateral assets would be high rather than low. Hence under a low interest rate environment $p^l > p^h$ and $\pi^l > \pi^h$. This reflects the lower risks associated with the firm and the favourable economic environment on the demand side. It follows that $D^{\mathrm{J}}_{\mathrm{C}}$ and $D^{\mathrm{J}}_{\mathrm{B}}$ would be higher for each of the cases 1-3 above under lower interest rates, other things equal, and the effective interest rate on debt is lower. As p falls so the cost of bank debt converges on the cost of market debt, but so long as $p<1$ is always more expensive.

We might also allow for a shift in maturity of debt under low interest rates. Suppose the firm could choose between short-term finance $(T=1)$ or long-term finance $(T>1)$ where the loan is sufficient to fund the investment project for T periods. (We assume the effective rate set by the market/bank is fixed in relation to the *initial* risk free rate for the whole loan period.) If a firm chooses long-term finance $(T>1)$ it will incur $D^{\mathrm{S}} > 0$ for T periods at the *initial* interest rate. This will increase the effective rate on D^{J} in subsequent periods up to T. If rates were expected to be lower in subsequent periods the firm could take advantage of those lower rates only at future effective rates affected by the fact that $D^{\mathrm{S}} > 0$ due to the remaining long-term finance. Firms could even find themselves credit constrained and excluded from obtaining junior debt altogether. But if rates were low, and were not expected to fall further, a firm would have an incentive to obtain a larger debt at a longer maturity, if the market or bank does not constrain them. If rates were not expected to fall further the fact that the firm was holding senior debt would not prove to be a disadvantage.

We expect that firms will reduce their dependence on short-term credit from banks and will take up longer-term credit or non-bank credit. This paper explores whether low interest rates induce firms to hold different types of debt over longer maturities. This may occur because both the slope and the position of the yield curve alter as rates fall. There will be implications for monetary policy and financial stability in this context.

3. Econometric Methodology

In this study, we use a microeconomic framework that allows us to discuss the factors affecting the choice among various types of external finance. There are two aspects to consider. First, monetary policy affects the preferences between intermediate finance versus market finance or short-term versus long-term finance for firms with similar characteristics. Second, our theoretical framework above explains how the supply of credit depends on the firm's performance in terms of financial balance sheet variables such as debt levels, liquidity, profitability, and the availability of collateral assets. Quite independently of a firms preferences, certain types of finance may be accessible while others are constrained on the supply side.

In keeping with the approach of Kashyap, Stein and Wilcox (1993), Oliner and Rudebusch (1996), and Gertler and Gilchrist (1994), we use data on real bank lending, real total debt and measure monetary stance using nominal interest rates. In contrast to these studies we consider the effect of a dramatic *loosening* of monetary policy, rather than a monetary tightening, as most studies of credit channels do. The loosening of policy results from the close link between the Hong Kong base rate and the Federal Funds rate required to maintain the link between the Hong Kong dollar and the US dollar exchange rate. We identify the impact of the falling and subsequently lower base rate on the financial choices of firms during the period 2001-2003 by introducing an interaction term that treats the response to the low interest rate period in isolation from the rate changes in general. We are able to control for further cyclical effects arising from the stage of the business cycle using GDP growth and for firm-specific effects due to the health of the balance sheet. We split the sample in order to determine whether (relatively) bank dependent firms, small firms and manufacturing firms have different responses to other types of firms. The first two categories are split at the median, while the last category is determined by the SIC code.

We explain the uptake of short-term versus long-term debt in total debt using the interest rate, the GDP growth rate, interaction terms that consider the effect of the base rate for the low interest rate period, and financial health measures for individual firms.[5] The empirical model used in the estimations is:

$$y_{it} = \sum_{k=1}^{p} \alpha_k y_{i,t-k} + x_{it}\beta_1 + w_{it}\beta_2 + \lambda_t + \eta_i + v_{it}; \qquad t=q+1,...,T_i; \qquad i=1,...,N,$$

[5] In the Generalized Method of Moments *(GMM)* estimations, we will treat firm type dummies and respective interaction terms as exogenous variables as we construct these variables based on the information of pre-sample period as we effectively use the data for the period of 1998-2001 in the *GMM* estimations.

where η_i, λ_t and v_{it} are individual specific effects, time specific effects, and disturbance terms, respectively. y_{it} is the dependent variable in each case for the logarithms of real bank loans *(LRBLOANS)*, real short-term debt *(LRSTDEBT)* i.e. debt of one year or less to maturity, real long-term debt *(LRLTDEBT)* i.e. debt of over one year to maturity, and real total debt *(LRDEBT)*, the ratio of bank loans to total debt *(MIX1)*, and the ratio of short-term debt to total debt *(MIX2)*. In fixed effects estimations we drop the dynamic terms on the right hand side, but for dynamic panel estimation *(GMM)* the first term in the right hand side includes p lags of the dependent variables.

The dependent variable is determined by a set of explanatory variables. These can be split into three categories. First, the impact of monetary policy is measured by the interest rate, $BRATE_t$, and the interest rate during the low interest rate period, $BRATE_t*LP$. $BRATE_t*LP$ is the interaction term, defined by interacting the base rate with a low interest rate period dummy (LP), that enables us to make inferences about the impact of monetary policy on firm's financial behaviour.[6,7] Second, an indicator of the business cycle based on the firm-invariant *GDP* growth rate appears to capture demand-side effects. Third, firm-specific exogenous and endogenous explanatory variables $LGEAR_{it}, LSOLV_{it}, LLIQ_{it}, LPROFIT_{it}, LCOL_{it}, LINVTA_{it}$, which are logarithms of the gearing ratio, the solvency ratio, the liquidity ratio, the return on capital, the ratio of inventories to total assets, and the ratio of tangible assets to total assets, respectively capture idiosyncratic responses by creditors to balance sheet variables.

Where GMM is used x_{it} are strictly exogenous explanatory variables while w_{it} are endogenous or predetermined explanatory variables other than the lags of the dependent variable. These variables are replaced with suitable instruments in the form of lagged values of the endogenous variables, where q is the maximum lag length in the model. Where *GMM* is the estimator the specification of the econometric model is verified on the basis of two tests, i.e. the test of second order serial correlation (m_2) and the Sargan tests of overidentifying restrictions in the *GMM* procedure.[8]

The econometric estimation method is an important issue. In panel estimation where there is a dynamic element to the relationship, the correlation between the lagged dependent variables and the disturbance terms leads to inconsistent estimates in the fixed effects or random effects models (Nickell, 1981).

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6 The use of interactive terms has also been employed by Gerlach, Peng and Shu (2004) when exploring banking performance in Hong Kong using panel data methods.

7 The choice of the base rate is motivated by the fact that this is an indicator of the monetary policy stance. It is closely related to the lending rate to firms (the Prime rate), which has typically taken a value 2-3 percentage points above the base rate, but has moved closely with it. The sole exception occurred during the sample when the Base rate was reduced in 2003 by a further 75 basis points but the Prime rate did not show a corresponding reduction. During this period the banking system was highly liquid and did not need to resort to the money markets for funds, therefore the link between the Base rate and the Prime rate temporarily slackened. Nevertheless, Prime rates were still very low relative to the period before 2001, and use of the base rate is likely to accurately capture the relationship between corporate financing and the falling interest rate.

8 The assumption of no serial correlation in error term is essential for the consistency of estimates in the model using the lags of the dependent variable as instruments. Two statistics can be computed to test for the first and second order correlation and are denoted by m_1 and m_2, respectively. We may expect a negative first order serial correlation (m_1) and no evidence of second order serial correlation (m_2) in the first difference error terms for serially uncorrelated error terms. Therefore, in case of sufficiently small value of the m_2 statistic, the hypothesis of having serial correlation is rejected. The Sargan statistic calculated from the two-step procedure, using estimates of the error term as a weight matrix, is suggested for selecting instruments and specifying the model as it is heteroscedasticity-consistent under the two-step *GMM* procedure (Arallano and Bond; 1991).

Static panel data models produce biased and inconsistent estimates for short time periods because of the (omitted) dynamic factors (lagged dependent variables) and the existence of endogenous or predetermined explanatory variables. The existence of these biases in fixed effects models has encouraged the use of *GMM* estimators (Arellano and Bond, 1991) and instrumental variable methods (Anderson and Hsiao, 1981) where there is a sufficient time dimension to the data. There can be drawbacks with these methods, however, when the instruments, which are typically lagged values of the variables concerned are poorly correlated with the variables that they instrument due to structural breaks in the data. In our case the economic conditions pre-Asian crisis before 1997 were substantially different to post-crisis conditions, and the dramatic reduction in nominal interest rates from 2001 and the onset of deflation has further damaged the usefulness of instruments in the second half of our sample. Fundamentally, the purpose of these alternative estimators is to remove the biases in coefficients when dynamic relationships come into play. While these biases do exist, they may not be very large. There is increasing recognition that the size of the biases should be examined before instrumental variable estimators or GMM estimators are employed (see Mulkay, Hall and Mairesse, 2000; Bond *et al.*, 2003). A comparison of the estimates using OLS, within (fixed-effects) and GMM estimators will illustrate the extent to which alternative estimators are necessary for this study; we return to this matter in the results section.

We do not use time dummies as these would be collinear with GDP_{it} and $BRATE_{it}$, which capture the cyclical factors originating from the business cycle and the econometric software (*STATA 8.0*) would automatically drop them as regressors. The number of time periods available for the i^{th} individual (T_i) is small relative to the number of firms (N).

4. Data Construction

The original data are retrieved from the Thomson Financial Primark database to give figures for short-term and long-term debt, bank lending and total debt for around 700 Hong Kong companies.[9] In addition we select variables reflecting the profitability, gearing, liquidity, solvency, and tangible assets for these firms. After allowing for the fact that there are missing observations for some companies, a sufficient sample of 427 firms is extracted. We then construct an unbalanced panel of firms for our econometric work according to the following criteria.[10]

a. Removal of Outliers

We reduce the impact of outliers by cleaning the dataset, which reduces the sample to 368 firms. The cleaning trims 0.5 percent of observations from upper and lower tails of the distribution for the gearing ratio, the solvency ratio, and the liquidity ratio. The tangible assets-total asset ratio and financial mixes take values in the range of zero to one hundred; therefore these variables are not trimmed.

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9 We are grateful to the Hong Kong Institute for Monetary Research and Dickson Tam for providing the data for this project.

10 Constructing a balanced panel would result in the loss of a considerable number of firms from the panel, and could potentially introduce selection bias, since all the firms in the panel would be survivors.

b. Constructing Yearly Data from Annual Accounts

Firms release their balance sheet reports at various dates during the year. Most of firms (200 firms) report information on their balance sheets and profit (loss) accounts by the end of December (financial year-end). Many firms report at the end of March each year and others report in other months. We adjust all our firm-specific variables for financial year cycles so as to be able to compare the responses for each calendar year. Therefore, if a firm reports at the end of March each year, the variables for 2000 are calculated based on weighted averages of March 2000 and March 2001 figures in the ratio 25%:75% and corresponding percentages are used for other months.

c. Econometric Estimation

For fixed effects estimates we use logarithms of our variables in real terms. Since we cannot take logarithms of negative values, we drop a number of firms with profits or liquidity less than zero. Where dynamic estimation is required we lose observations (and thus firms) requirement for lagged values of variables as instruments for endogenous variables. The number of observations and the number of firms used in the estimations are provided in the notes under the respective Tables where appropriate.

d. Sample-Splitting Criteria

We split firms according to their bank loans-total debt ratio (bank dependency), size and industry. We classify firms based on the average values of the bank loans-total debt ratio over the period of 1995-1997 (pre-period) as bank-dependent. The firms in the upper 50 percent of the bank loans-total debt ratio distribution are named the bank dependent firms. We also classify the firms in the lower 50 percent of their assets as small (*Small*), and the firms in the upper 50 percent as large (*Large*). This classification considers average values of assets over the period of 1995-1997. We also classify firms based on industry to capture industrial heterogeneity. We carry out regressions based on whole sample and split samples based on bank dependency, size and industry.

In Table 1a, we report summary indicators for all firms for the two sub-periods, while in Table 2 we report the differences in the dependent variables for the sample splits employed in the paper.[11] We observe that in real terms the figures for bank lending increased by HK$17,332m. It is not possible from the data to determine the breakdown of bank lending between short-term and long-term loans, but the average values of all short-term lending and long-term lending rose in real terms by HK$3,538m and HK$20,088m respectively, while total lending from bank and non-bank sources rose by HK$26,721m. In percentage terms the increase in bank lending of 12.7% appears to have been concentrated in long-term rather than short-term lending, which rose 25% and 4% respectively. The average level of total debt rose by 15%. The ratios of bank lending to total debt and short-term lending to total debt both fell marginally, suggesting a shift in maturity of debt towards longer term debt as interest rates fell.

[11] The figures for the real value of bank lending, short-term and long-term loans, and total lending are reported in logarithms, while the remaining variables are reported as scaled values corresponding to the definitions below Table 1.

Table 1b shows the dependence of Hong Kong firms on bank lending after sorting firms into ascending order on the basis of the bank debt-total debt ratio. The bank debt-total debt ratio of firms in the lowest ten percentile (in terms of this ratio) has declined sharply since 2000, which indicates that firms that are the least bank dependent have tended to reduce their dependency further i.e. shifted into market finance, as interest rates have fallen. For firms with a relatively moderate dependency ratio (between 35-55 percentiles) there has been a tendency to increase their bank dependency ratio, and the most bank dependent firms (in the upper 25 percentile of the distribution) have continued to obtain almost all finance from banks over the period. Hence, non-bank dependent firms (firms in the 10th percentile) tend to prefer market finance while relatively bank dependent firms tend to increase bank debt when rates fall. The overall effect of the bank dependency of firms will depend on the proportion of firms in each category. Table 1c reveals that when we assess firms on the basis of asset size, the larger firms are less bank dependent than the smaller ones, since the bank dependency ratio increases more or less monotonically with the centiles of the asset distribution. While there is clear evidence that large firms are less bank dependent than small firms in an absolute sense, the difference in the extent is very small since the 25 centile and the 75 centile show a difference in bank dependence of only 7.5 pecent. This is a remarkably small spread suggesting high bank dependence is observable across a broad range of firm sizes. Firms are split into bank dependent and non-bank-dependent firms on the basis that the ratio of bank loans to total debt is greater than (less than) 50% but as the following figures show, there are firms of all sizes in each category:

	1998-2003	**averages**
Asset Size	BD<50	BD>50
10 Centile	37	62
25 Centile	103	198
50 Centile	205	495
75 Centile	304	831
All Firms	428	1165

Table 1d reports the composition of the liabilities of the companies in the sample. Equity is dominated by debt, which is broken down by category into its components. The table illustrates the movement in debt composition over the two periods corresponding to high and low interest rate episodes.

Sub-samples of firms are constructed on the basis of bank dependence, size and industrial classification, where all categories marginally reduced the proportion of bank lending and short-term lending in total debt. These are reported in Table 2, and reveal substantial differences between the *relatively* bank dependent firms and those that were less bank dependent in our sample.[12] Bank dependent firms had a ratio of bank lending to total debt of 90 percent on average (with a median value of 99.4 percent) and a ratio of short-term lending to total debt of two-thirds. By comparison *relatively* non-bank dependent firms had corresponding ratios of only 50 percent and around 60 percent, which are high by international standards, but low relative to the bank dependent firms. Evidence presented in Allen, Chui and Maddaloni

[12] Most firms in Hong Kong are bank dependent by international standards since on average 70% of total debt is bank lending, and even for the relatively non-bank dependent firms this figure is 50%.

(2004) shows that this is not uncommon in ex Japan Asian countries since equity and bank loans are the primary source of external finance and bond markets are secondary sources in terms of scale (adjusted relative to GDP).

The differences between small and large firms and manufacturing and non-manufacturing firms were not so great as the differences between bank dependent and non-bank dependent firms. The fact that small firms and large firms have comparable ratios for bank lending suggests that the bank dependent/non-bank dependent distinction does not map directly to a small/large firm distinction. In other words small firms are not necessarily more bank-dependent than large firms, although they may have shorter maturity loans than large firms, and the average size of loans of all types is smaller.

The impact of the Asian crisis in the 1998-2000 period is seen in the average values for balance sheet indicators in Table 2. Debt gearing was higher, and solvency and liquidity were lower immediately after the Asian crisis compared to the 2001-2003 period. Profits were just 6 percent of net assets and tangible assets rose as inventories increased after 1997. Although we include a dummy to capture the impact of the crisis, this dummy is never important, perhaps because the effects of the crisis are clearly seen in the firm specific indicators of financial health.

5. Results

Our choice of estimation procedure is based on three considerations. First, we examine the extent of the biases identified by Nickell (1981) in panel estimators, by making a comparison between *OLS*, fixed effects and *GMM* results in dynamic specifications. Table 3 reports the results. The coefficient estimates for the *OLS* estimator is upwardly biased, but the fixed effects and *GMM* estimators are very similar. In three out of four cases where we use the logarithms of real bank loans, real short-term debt, real long-term debt and real total debt as dependent variables the fixed effects and *GMM* coefficient estimates are not statistically different. This implies that the extent of the (downward) bias in fixed effects estimates seems to be small. Second, when we consider *GMM* estimates of our regressions the coefficients on the lagged dependent variables are small and insignificant in the majority of cases. This suggests that dynamic terms are unlikely to be important, removing the main objection to the fixed-effects estimator in the presence of dynamic terms. Third, our relatively small samples do not give such precise *GMM* estimates compared to fixed effects estimators, and this results in low significance for many variables and weaker tests for significance of differences between coefficient estimates in split samples. Following this reasoning we report results below that are based on fixed effects regressions which we believe can be reliably used to generate the results.[13]

Reading across Tables 4-7 we can observe the effects of a change in interest rates on the respective debt categories. The negative sign on the estimated coefficients indicates that the response of firms is

[13] Using similar reasoning Mulkay, Hall and Mairesse (2000) opt for fixed effects estimators in their study based on relatively small samples of data. The evidence suggests that the biases from using this estimator are small, and the influence of dynamic effects is minor. With fixed effects the coefficients are estimated with more precision than with GMM. In preliminary examination of the data we estimate the regressions using static and dynamic specifications but the results change very little. We report only the static regression results.

to increase all types of debt and total debt as interest rates fall. We attribute this effect to the changing supply of credit as the price of borrowing falls. Since demand would also be affected, and macroeconomic conditions have been sluggish in the post Asian crisis period in Hong Kong, we control for cyclical effects with GDP growth, which has a generally positive and significant effect on corporate debts. A period of deflation from 1999 has caused real interest rates to be higher over the period than they would otherwise have been, even with falling nominal rates, but real rates have still fallen from a peak of 11.8% in 2000 to 4.2% in 2003, and the current data for 2004 suggests that real rates will fall further.[14]

Kashyap *et al.* (1993) argue that the responses to interest rates of the ratios of bank lending to total debt (Mix1) and short-term debt to total debt (Mix2) can be used to determine the supply-side response to changing monetary policy, since the demand effects on the numerator and the denominator will broadly cancel. When we examine these ratios we find there is a clear positive influence of rates on the short-term debt to total debt ratio, which suggests that the amount of short-term debt taken up falls relative to total debt when rates fall (as we found in the log levels results). This may reflect the fact that firms have taken advantage of low nominal rates to restructure the maturity of their debts by effectively locking in the low rates on loans of longer maturity that became available as creditors expanded supply with the more favourable economic climate and the improvement in corporate balance sheets.[15] The ratio of bank lending to total debt remains unchanged, and this confirms the argument of Oliner and Rudebusch (1996) that bank-dependent firms, like those in Hong Kong, are unlikely to show much variation in the mix of bank lending to other forms of finance in response to monetary policy changes. This is not inconsistent, however, with the idea that firms lengthen the maturity of their bank loans as rates fall.

Differences in responses across categories of firms can be seen in the change in the magnitudes of the responses to interest rate changes across the first row of the Tables. Non-bank-dependent firms respond to falling rates by increasing bank debt and short-term debt by more than bank-dependent firms; bank-dependent firms increase long-term borrowing and reduce short-term borrowing (presumably from banks, although we cannot be sure of this) as rates fall. Small firms borrow more from banks when rates fall and increase bank lending even more strongly when interest rates are very low. Large firms shift their liabilities to longer maturity debt as rates fall, and more so as rates reach low levels. Manufacturing firms are more responsive to interest rate movements than non-manufacturing firms, with roughly double the response in long-term debt and total debt at low interest rates.

These results demonstrate, along with the results for the ratio of short-term to total debt, that the maturity of debt has increased as rates have fallen to lower levels. The value of short-term debt, which had a similar value on average to that of long-term debt held by firms in the 1998-2000 period, increased

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[14] Deflation will have reduced outstanding debt, but we have recorded debts in real dollar terms. Deflation will also have reduced the pressure on the rates of interest, which will fall unless there are other constraints (like the linked exchange rate arrangement) to keep them at levels compatible with the US. The deflationary environment may have encouraged consumers to postpone expenditure and thereby have reduced domestic demand, and output growth figures may be more indicative of production, much of which occurs on the mainland not Hong Kong. When we included inflation as an explanatory variable in our regressions it had a negative and significant effect on total debt, but was insignificant in all the other regressions, leaving all other coefficient estimates unchanged. The results are available on request.

[15] It may be the case that this effect is *active*, in the sense that firms deliberately chose to restructure their debts towards longer term maturities, or it may be *passive*, since short term debts may have been retired as they matured while long term debts remain on the books for longer and the proportion increases in of total debt.

by much less than the long-term debt (the percentage increases were 4% and 25% respectively). The relationship to bank lending cannot be clearly distinguished since short-term and long-term debt includes debt of the appropriate maturity from all sources, but even bank dependent firms seem to have increased the maturity of their loans. In general the responsiveness of long-term loans to interest rates (Table 6 row 1) is much greater than the responsiveness of short-term loans (Table 5 row 1).

The predictions of the theoretical model in Bougheas *et al*. (2004) indicate that firms with more healthy balance sheets as indicated by higher liquidity, collateral, profits and lower debt would obtain more market finance, while those that perform badly on these criteria would obtain more costly bank finance or no finance at all. The results in Tables 4-7 indicate that there is a changing maturity structure of debt in response to indicators of financial performance. Firms that are financially healthy obtain more long-term debt, and generally reduce their short-term debt, other things equal. Firms that have less liquidity and collateral in contrast obtain less long-term debt and more short-term finance. These features are invariant across firms of different types and there are no reversals of sign according to the sample splits in response to these variables. Therefore, bank dependent firms seem to respond similarly to non-bank dependent firms with respect to the same variables, as do small and large firms, and manufacturing and non-manufacturing firms. It is unclear how total debt or bank lending would be expected to respond to financial health indicators because these are combinations of long-term and short-term debt, and therefore the response would depend on the relative proportions of debt at each maturity. Only where the response was similarly signed for short- and long-term debt would the result be unambiguous for these aggregated debts.

The results for the *GMM* estimates of the coefficients do not differ much in qualitative terms from the fixed effects estimates. There are, however, noticeably fewer cases where the interest rate is significantly negative, and in the low interest rate period there is almost no influence on corporate debt. This arises because the standard errors on the *GMM* estimates are larger than for the fixed effects estimators. The influence of balance sheet variables is virtually identical for both *GMM* and fixed effects. The results are reported for comparison but we focus on the fixed effects results.

6. Implications for Monetary and Financial Stability

The reorganisation of corporate debt towards longer maturities under the significantly lower nominal interest rate environment post 2001 has ensured that firms with access to longer-term debt have locked in the lower rates for the duration of their loans. This will reduce their sensitivity to future rate rises to some degree. If borrowing can be secured at low rates then corporate investment will be maintained for projects with the required rate of return even if US rates increase, as they have already begun to do. This may prevent rate increases from significantly reducing corporate investment in the short term, although it will depend on the proportion of firms that have been able to shift the maturity of their debt towards longer-term lending. There will be some reduction in the leverage of the base rate over domestic demand and inflation as a result, but the benefits of the low nominal rates on economic growth and employment will be longer lasting.[16]

[16] Borrowing at longer maturities is conducted on a mixture of fixed and floating rates. The proportion of fixed to floating rate debt is one third to two thirds, with floating rates being split roughly equally between rates corresponding to Prime and HIBOR rates.

The extent of the restructuring of the loans has not been dramatic, despite the steep reduction in nominal interest rates, and the falling real rates. This may reflect the fact that macroeconomic conditions have been sluggish: Gerlach *et al*. 2004 show that real GDP, which fell by over 5% post crisis, has failed to fully recover to pre-crisis levels, and the low nominal rates of interest have been accompianied by deflation until mid-2004. On the demand side the high, but falling, real rates may have discouraged additional borrowing, and may have limited the willingness of banks to extend credit on more favourable terms on the supply-side, since this effect will have reduced firms' creditworthiness in general. Nevertheless all types of corporate debt have increased in real terms over the period implying that credit constraints have not been binding for financially secure firms. Corporate lending has been offered on the whole to firms with healthy balance sheets and adequate collateral, suggesting that there are unlikely to be financial stability concerns associated with the increase in debt under the recent low base rates.

What is most striking about corporate finance in Hong Kong compared to the US, Japan and European countries with vibrant international financial centres is the extent to which firms are bank dependent. The average level of bank debt to total debt for firms of all types was 70% in the 1998-2000 period and this hardly fell in the 2001-2003 low interest rate period, where the figure was 66%. The median level of bank debt was even higher, indicating that the distribution is highly skewed with there being many more small firms with greater dependence on banks than there are large firms with access to non-bank finance. When we split our sample into bank-dependent and non-bank dependent firms, therefore, we emphasise that this distinction is relative: even relatively non-bank dependent firms still obtain fifty percent of their total debt from banks. The response to the low interest rate environment has seen a shift in the maturity structure of the debt towards longer debt instruments, but the continued dependence on debt obtained mostly from banks. In many other countries these economic conditions would have induced a shift away from bank-based finance towards market finance at a lower marginal cost. Arguably, firms quoted on the Hong Kong stock exchange could have obtained equity finance from the markets, but stock markets have performed poorly since the bursting of the dotcom bubble and the war on Iraq. The absence of an intermediate option such as a commercial paper or bond market has fostered far higher bank dependence in Hong Kong and Asia (ex Japan) generally, than elsewhere.

This raises the issue of what might have happened under the low interest rate environment if Hong Kong or the Asian region had more developed domestic bond markets, where firms could obtain market funding. Joseph Yam has pointed out that the size of ex-Asian bond markets is one-third of the size of the domestic bond markets in Japan, the UK and the US when measured by market capitalisation relative to GDP (see Yam, 2004). The opportunities for raising external finance from this source are therefore limited despite the fact that there appears to be strong investment demand for bonds from the public and private sectors.

There are considerable gains from a deep domestic bond market in such circumstances since it can reduce the outflow of capital into foreign currency denominated bonds, and encourage foreign investors to diversify their investments in Hong Kong between the currently high level of investment in equities towards domestic bonds of various maturities. This can go some way towards reducing the exposure to exchange rate movements for both borrowers and savers. From the perspective of the corporate sector the deepening of a domestic bond market provides an intermediate form of finance between bank

lending and equity markets that reduces the costs of external finance, particularly for those firms that are financially sound but not sufficiently large to participate in the stock exchange. At present those firms obtain longer maturity loans from banks at a higher cost than they would be likely to obtain under bond finance.

7. Conclusions

This paper examines the impact of the dramatic reduction in interest rates by the Federal Reserve on Hong Kong, which has accepted lower interest rates domestically to maintain the linked exchange rate under its currency board arrangements. The lower rates would be expected to stimulate the economy through various channels of transmission and to encourage firms to alter the level and structure of their debts. Using a panel of several hundred firms in Hong Kong we find that firms increased all types of debt, and shifted from short-term to long-term debt as rates fell. This can be attributed in part to a supply-side effect as the benign monetary policy environment has improved creditworthiness of firms despite the sluggishness of the macroeconomy post Asian crisis. Lenders appear to have responded to signals from the balance sheet and more credit has been offered to firms with healthy balance sheets and adequate collateral. The lengthening of the maturity of debt is expected to reduce the leverage of the base rate in the short term as firms with fixed rate loans lock in the low rates of interest on their debt without particular danger for monetary or financial stability. The most noticable result from our analysis is the high level of bank dependence among Hong Kong firms and the continued dependence on bank finance even when interest rates fall and conditions of credit supply improve. Potentially this may reveal that Hong Kong lacks the benefits of a deep domestic bond market offering an alternative source of external finance for firms that are not large enough to float on the stock market. In the absence of a bond market, firms are more bank dependent and generally pay more for their external finance from these sources than they would from financial markets. Future work will compare the effects of the reduction in interest rates with firms in economies where a bond market exists to determine whether there was a noticable difference in the response to loosening monetary policy.

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Table 1a. Basic Indicators for Sub-Periods

	1998-2000 Period				2001-2003 Period			
Variable	**Obs**	**Mean**	**Median**	**Std. D.**	**Obs**	**Mean**	**Median**	**Std. D.**
LRBLOANS	787	11.82	11.94	2.54	650	11.94	12.00	2.61
LRSTDEBT	826	11.36	11.68	2.48	699	11.40	11.57	2.48
LRLTDEBT	691	11.33	11.45	3.00	578	11.53	11.73	3.26
LRDEBT	840	12.08	12.23	2.64	719	12.22	12.38	2.70
MIX12	840	70.69	82.66	32.25	719	67.15	82.02	35.94
MIX32	840	61.56	66.32	32.94	719	58.74	60.18	35.31
GEAR	938	41.94	24.71	99.32	855	37.03	21.13	93.44
SOLV	938	51.92	56.21	37.68	855	55.43	60.70	33.20
LIQ	938	204.84	93.17	622.61	855	280.75	106.41	811.47
PROFIT	938	7.25	3.95	120.47	855	39.59	4.26	1420.76
COL	938	35.48	31.07	25.82	855	33.37	28.17	26.20
INVTA	938	16.19	8.65	19.35	855	15.95	7.89	19.63

Notes: The statistical data are reported for the sample after the removal of outliers, which results in large standard deviations, particularly for some ratios where the denominator can be small for certain firms.

Variable	**Definition**
LRBLOANS	Log of real bank loans
LRSTDEBT	Log of real short-term loans
LRLTDEBT	Log of real long-term loans
LRDEBT	Log of real total debt
MIX1	Bank loans/total debt*100
MIX2	Short term loans/total debt*100
BRATE	Base rate (percent)
GDP	GDP growth rate (percent)
GEAR	Total debt/shareholder equity*100
SOLV	Shareholder equity/total asset*100
LIQ	(current assets-stocks)/current liabilities*100
PROFIT	Profit before tax/(total asset-current liabilities)*100
COL	Tangible assets/total assets*100
INVTA	Inventories/total assets*100
D9798	Asia crises dummy, one for 1997 and 1998, zero otherwise.

Table 1b. Percentage Distribution of Bank Debt-Total Debt Ratio (%)

Percentile	1998 Centile	1999 Centile	2000 Centile	2001 Centile	2002 Centile	2003 Centile	1998-2003 Centile
1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	0.0	0.1	0.0	0.0	0.0	0.0	0.0
10	19.2	19.4	1.6	0.8	0.1	0.0	3.5
20	44.3	43.6	37.0	32.1	24.0	9.2	34.7
25	54.7	52.2	45.0	44.0	38.7	22.0	47.1
30	59.2	57.5	54.2	55.6	51.0	40.9	55.7
40	67.8	71.0	68.1	68.2	67.0	63.2	68.1
50	80.0	81.0	83.6	83.6	80.4	75.1	81.2
75	99.8	99.8	100.0	100.0	99.9	99.8	99.91
	Obs=265	Obs=284	Obs=308	Obs=295	Obs=283	Obs=158	Obs=1593

Table 1c. Percentage Distribution of Bank Debt-Total Debt Ratio (%)

	1998		1999		2000		2001	
Asset Size	Firm	Mean	Firm	Mean	Firm	Mean	Firm	Mean
10 Centile	9	58.6	12	65.7	21	61.8	24	54.2
25 Centile	34	61.1	44	65.1	66	60.5	66	61.0
50 Centile	107	72.4	121	71.7	149	67.1	142	63.9
75 Centile	186	72.1	204	72.3	230	69.2	215	67.8
All Firms	265	70.5	284	71.2	308	69.2	295	68.4

	2002		2003		1998-2003	
Asset Size	Firm	Mean	Firm	Mean	Obs	Mean
10 Centile	23	51.3	10	56.1	99	57.1
25 Centile	63	61.5	28	59.8	301	61.5
50 Centile	130	63.7	51	57.5	700	66.7
75 Centile	205	67.0	95	61.9	1135	69.0
All Firms	283	66.7	158	62.5	1593	68.5

Table 1d. Types of External Finance by Category

	HK$ 1998-2000 average [1]	%	HK$ 2001-2003 average [2]	%	ratio of [2] to [1]
TOTAL LIABILITIES	12566667	100	18000000	100	1.432361
Shareholders' equity	5091363	40.5	6907505	38.4	1.35671
Share capital	4463750	35.5	6115359	34.0	1.370005
Debt	2201253	17.5	3422528	19.0	1.554809
Long-Term Debt	1787615	14.2	3160905	17.6	1.768225
Due within 1 to 5 years	1295970	10.3	2071225	11.5	1.598205
Due within 1 to 2 years	472355	3.8	658021	3.7	1.393066
Due within 2 to 5 years	907172	7.2	1579066	8.8	1.740647
Due after 5 years	446836	3.6	1556997	8.6	3.484493
Short-Term Loans	665843	5.3	785885	4.4	1.180286
Current Maturities	455009	3.6	659024	3.7	1.448374
U&O short term loans	197762	1.6	160000	0.9	0.809051
Bank loans & overdrafts	1473417	11.7	1987493	11.0	1.348901

Table 2. Dependent Variable Indicators for Split Samples

	1998-2000 Period				2001-2003 Period			
Variable	**Obs**	**Mean**	**Median**	**Std. D.**	**Obs**	**Mean**	**Median**	**Std. D.**
Bank-Dependent *v*. Non-Bank Dependent1								
LRBLOANS	429	11.86	12.14	2.40	361	12.02	12.26	2.28
LRSTDEBT	426	11.35	11.74	2.29	361	11.51	11.82	2.04
LRLTDEBT	339	11.17	11.47	2.78	273	11.45	11.75	2.91
LRDEBT	430	11.97	12.21	2.44	361	12.18	12.44	2.31
MIX1	430	90.29	99.39	15.50	361	89.33	99.07	18.54
MIX2	430	66.36	72.63	31.78	361	65.35	76.31	33.59
LRBLOANS	373	11.77	11.70	2.65	302	11.84	11.82	2.94
LRSTDEBT	416	11.40	11.62	2.64	354	11.32	11.49	2.87
LRLTDEBT	367	11.44	11.44	3.17	317	11.59	11.65	3.53
LRDEBT	427	12.21	12.35	2.79	375	12.27	12.39	3.04
MIX1	427	50.03	54.10	32.39	375	44.42	47.12	35.34
MIX2	427	57.09	55.48	33.50	375	52.79	46.15	36.01
Small Firms *v*. Large Firms[2]								
LRBLOANS	343	10.15	10.57	1.98	276	10.05	10.52	1.95
LRSTDEBT	369	9.91	10.48	2.18	313	9.75	10.27	2.18
LRLTDEBT	278	8.97	9.23	2.23	230	8.81	9.11	2.30
LRDEBT	377	10.33	10.75	2.11	323	10.23	10.71	2.02
MIX1	377	70.08	84.73	34.05	323	62.80	78.75	39.29
MIX2	377	74.89	87.00	29.10	323	72.42	88.56	32.97
LRBLOANS	459	13.07	13.26	2.13	387	13.29	10.57	2.12
LRSTDEBT	473	12.51	12.79	2.05	402	12.71	10.48	1.86
LRLTDEBT	428	12.83	13.03	2.38	360	13.26	9.23	2.52
LRDEBT	480	13.47	13.58	2.10	413	13.79	10.75	2.08
MIX1	480	70.35	81.35	31.03	413	69.31	84.73	33.31
MIX2	480	51.41	46.87	32.14	413	48.42	87.00	33.63
Manufacturing Firms *v*. Non-Manufacturing Firms								
LRBLOANS	295	11.56	11.71	2.08	245	11.46	11.69	2.18
LRSTDEBT	309	11.20	11.49	2.14	260	11.16	11.28	2.14
LRLTDEBT	251	10.47	10.75	2.72	215	10.60	10.89	2.90
LRDEBT	312	11.68	11.87	2.23	263	11.70	11.94	2.29
MIX1	312	73.79	86.71	30.37	263	69.47	83.57	33.84
MIX2	312	70.60	79.97	28.97	263	66.65	75.27	30.90
LRBLOANS	507	11.97	12.11	2.74	418	12.22	12.40	2.78
LRSTDEBT	533	11.47	11.83	2.64	455	11.56	11.92	2.65
LRLTDEBT	455	11.77	11.90	3.03	375	12.06	12.25	3.34
LRDEBT	545	12.33	12.49	2.79	473	12.52	12.69	2.87
MIX1	545	68.20	78.86	33.33	473	64.77	78.50	37.34
MIX2	545	56.67	55.27	34.04	473	54.67	48.76	36.99

Notes: (1): The firms that are classified in the upper 50 percent of average bank debt-total debt ratio distribution during the period of 1995-1997 (upper panel), and firms that are classified in the lower 50 percent (lower panel). (2): The firms that are classified in the lower 50 percent of average total assets distribution during the period of 1995-1997 (upper panel) and firms that are classified in the upper 50 percent (lower panel).

Table 3. Comparisons of OLS, Fixed Effects and GMM Estimates

Dependent Variable	OLS		FE		GMM	
	Coefficient	Std Error	Coefficient	Std Error	Coefficient	Std Error
LRBLOANS	0.814	0.012	0.257	0.021	0.191	0.050
LRSTDEBT	0.667	0.013	0.142	0.017	0.175	0.032
LRLTDEBT	0.870	0.012	0.279	0.024	0.232	0.060
LRDEBT	0.775	0.010	0.105	0.012	0.109	0.022

Notes: The tabulated results correspond to the estimated coefficient on the lagged dependent variable for each estimator. The extent of the upward bias on *OLS* and downward bias on Fixed Effects (*FE*) can be compared to the *GMM* estimates.

Table 4. Fixed Effects Estimates for Log of Real Bank Loans

	No Inter Term (1)	Whole Sample(2)	Bank Dep.(3)	Non-Bank Dep.(4)	Small (5)	Large (6)	Man. Ind (7)	Non-Man Ind.(8)
$BRATE_t$	-0.064***	-0.070***	-0.053***	-0.092***	-0.064**	-0.066***	-0.029	-0.095***
	(4.45)	(4.19)	(4.04)	(2.77)	(1.98)	(3.60)	(0.99)	(4.75)
$BRATE_t$*LP		-0.009	0.007	-0.022	-0.065**	0.026*	0.027	-0.030*
		(0.68)	(0.68)	(0.81)	(2.57)	(1.71)	(1.07)	(1.82)
GDP_t	0.018***	0.016***	0.015***	0.020*	0.007	0.020***	0.013	0.018***
	(3.20)	(2.79)	(3.23)	(1.68)	(0.61)	(3.09)	(1.20)	(2.60)
D9798	0.058	0.045	0.078*	0.045	0.026	0.043	-0.013	0.070
	(1.08)	(0.79)	(1.71)	(0.40)	(0.24)	(0.69)	(0.12)	(1.04)
$LGEAR_{it}$	0.926***	0.926***	0.988***	0.834***	0.860***	0.967***	0.902***	0.937***
	(34.73)	(34.68)	(49.41)	(14.45)	(16.80)	(32.64)	(15.39)	(32.04)
$LSOLV_{it}$	1.104***	1.104***	1.095***	1.017***	1.048***	1.077***	1.012***	1.180***
	(16.14)	(16.14)	(16.90)	(8.19)	(9.82)	(11.11)	(8.45)	(13.43)
$LLIQ_{it}$	-0.024	-0.023	-0.036	-0.013	0.088	-0.062	-0.048	-0.016
	(0.59)	(0.57)	(1.02)	(0.17)	(1.12)	(1.35)	(0.52)	(0.35)
$LCOL_{it}$	0.140***	0.140***	-0.056	0.334***	0.098	0.180***	0.040	0.202***
	(2.88)	(2.89)	(1.41)	(3.59)	(1.25)	(2.92)	(0.47)	(3.42)
Constant	4.585***	4.633***	5.233***	4.555***	3.196***	5.564***	4.710***	4.538***
	(10.95)	(10.91)	(14.81)	(5.40)	(4.22)	(10.48)	(5.44)	(9.00)
Observations	2038	2038	1115	923	798	1240	737	1301
No. of firm	319	319	168	151	153	166	117	202
R-squared	0.45	0.45	0.75	0.25	0.34	0.55	0.33	0.52

Notes: Absolute value of *t* statistics in parentheses, * significant at 10%; ** significant at 5%; *** significant at 1%.

Table 5. Fixed Effects Estimates for Log of Real Short-Term Debt

	No Inter Term (1)	Whole Sample(2)	Bank Dep.(3)	Non-Bank Dep.(4)	Small (5)	Large (6)	Man. Ind (7)	Non-Man Ind.(8)
$BRATE_t$	-0.052***	-0.037**	-0.024	-0.054**	-0.027	-0.037*	-0.062**	-0.024
	(3.85)	(2.40)	(1.19)	(2.20)	(1.19)	(1.78)	(2.45)	(1.21)
$BRATE_t$*LP		0.025*	0.034**	0.018	-0.003	0.043**	0.036*	0.019
		(1.94)	(2.04)	(0.88)	(0.16)	(2.42)	(1.65)	(1.17)
GDP_t	0.013**	0.017***	0.016**	0.019**	0.008	0.020***	0.018*	0.017**
	(2.49)	(3.00)	(2.15)	(2.12)	(0.98)	(2.68)	(1.89)	(2.37)
D9798	0.041	0.078	0.064	0.105	0.011	0.121*	0.068	0.076
	(0.78)	(1.41)	(0.91)	(1.19)	(0.13)	(1.66)	(0.73)	(1.10)
$LGEAR_{it}$	0.928***	0.929***	0.910***	0.952***	1.027***	0.848***	0.869***	0.946***
	(41.52)	(41.59)	(31.55)	(27.54)	(35.27)	(26.17)	(19.44)	(36.59)
$LSOLV_{it}$	1.253***	1.253***	1.240***	1.269***	1.286***	1.294***	1.127***	1.305***
	(19.97)	(19.99)	(12.56)	(14.87)	(18.25)	(11.46)	(11.13)	(15.43)
$LLIQ_{it}$	-0.401***	-0.404***	-0.477***	-0.344***	-0.195***	-0.544***	-0.459***	-0.387***
	(10.51)	(10.58)	(8.82)	(6.28)	(3.65)	(10.28)	(5.66)	(8.84)
$LCOL_{it}$	-0.133***	-0.134***	-0.258***	-0.030	-0.130**	-0.103	-0.264***	-0.059
	(3.01)	(3.03)	(4.21)	(0.46)	(2.51)	(1.42)	(3.71)	(1.05)
Constant	6.151***	6.022***	6.843***	5.320***	3.386***	7.442***	7.204***	5.556***
	(16.38)	(15.80)	(12.78)	(9.51)	(6.96)	(12.42)	(10.17)	(11.69)
Observations	2128	2128	1112	1016	860	1268	768	1360
No. of firm	338	338	168	170	166	172	121	217
R-squared	0.56	0.56	0.59	0.54	0.69	0.49	0.48	0.60

Notes: Absolute value of *t* statistics in parentheses, * significant at 10%; ** significant at 5%; *** significant at 1%.

Table 6. Fixed Effects Estimates for Log of Real Long-Term Debt

	No Inter Term (1)	Whole Sample(2)	Bank Dep.(3)	Non-Bank Dep.(4)	Small (5)	Large (6)	Man. Ind (7)	Non-Man Ind.(8)
$BRATE_t$	-0.078***	-0.082***	-0.141***	-0.023	-0.032	-0.102***	-0.122***	-0.056**
	(3.84)	(3.43)	(4.29)	(0.67)	(0.65)	(3.98)	(2.74)	(2.07)
$BRATE_t$*LP		-0.005	-0.073***	0.052*	-0.026	0.008	-0.027	0.006
		(0.27)	(2.66)	(1.84)	(0.69)	(0.36)	(0.72)	(0.25)
GDP_t	0.021***	0.020**	0.014	0.026**	0.017	0.020**	0.028*	0.014
	(2.63)	(2.40)	(1.22)	(2.15)	(1.05)	(2.23)	(1.76)	(1.48)
D9798	0.037	0.030	0.128	-0.092	0.026	0.020	0.116	-0.027
	(0.48)	(0.37)	(1.18)	(0.77)	(0.16)	(0.23)	(0.75)	(0.29)
$LGEAR_{it}$	1.094***	1.093***	1.096***	1.096***	0.987***	1.254***	1.138***	1.086***
	(25.00)	(24.92)	(15.61)	(19.36)	(14.53)	(20.41)	(12.70)	(22.46)
$LSOLV_{it}$	1.015***	1.014***	1.075***	1.014***	0.932***	1.160***	0.725***	1.302***
	(10.00)	(9.98)	(5.61)	(8.29)	(6.48)	(7.06)	(4.07)	(10.28)
$LLIQ_{it}$	0.356***	0.356***	0.466***	0.291***	0.386***	0.349***	0.718***	0.239***
	(6.23)	(6.24)	(5.18)	(3.91)	(3.69)	(5.17)	(5.34)	(3.99)
$LCOL_{it}$	0.472***	0.472***	0.752***	0.296***	0.463***	0.423***	0.476***	0.464***
	(6.48)	(6.48)	(6.60)	(3.12)	(3.75)	(4.69)	(2.98)	(5.93)
Constant	0.956	0.991	-0.528	1.656**	-0.941	1.466*	-0.469	0.840
	(1.54)	(1.56)	(0.49)	(2.06)	(0.90)	(1.66)	(0.36)	(1.16)
Observations	1825	1825	903	922	675	1150	654	1171
No. of firm	309	309	150	159	141	168	114	195
R-squared	0.34	0.34	0.34	0.36	0.32	0.37	0.30	0.39

Notes: Absolute value of *t* statistics in parentheses, * significant at 10%; ** significant at 5%; *** significant at 1%.

Table 7. Fixed Effects Estimates for Log of Real Total Debt

	No Inter Term (1)	Whole Sample(2)	Bank Dep.(3)	Non-Bank Dep.(4)	Small (5)	Large (6)	Man. Ind (7)	Non-Man Ind.(8)
$BRATE_t$	-0.072***	-0.064***	-0.074***	-0.054***	-0.052***	-0.066***	-0.077***	-0.056***
	(8.87)	(6.81)	(7.16)	(3.42)	(3.67)	(5.34)	(4.72)	(4.96)
$BRATE_t$*LP		0.014*	0.005	0.025*	-0.006	0.029***	0.026*	0.008
		(1.81)	(0.63)	(1.85)	(0.54)	(2.76)	(1.90)	(0.82)
GDP_t	0.016***	0.019***	0.015***	0.023***	0.014***	0.021***	0.021***	0.017***
	(5.11)	(5.42)	(4.08)	(3.91)	(2.72)	(4.59)	(3.58)	(4.11)
D9798	0.062**	0.083**	0.085**	0.090	0.071	0.085**	0.097	0.073*
	(1.98)	(2.49)	(2.34)	(1.57)	(1.39)	(1.97)	(1.63)	(1.84)
$LGEAR_{it}$	1.052***	1.053***	1.036***	1.073***	1.051***	1.050***	1.065***	1.048***
	(79.02)	(79.08)	(69.62)	(48.52)	(57.62)	(56.11)	(37.36)	(71.08)
$LSOLV_{it}$	1.145***	1.145***	1.087***	1.190***	1.165***	1.090***	1.138***	1.137***
	(30.54)	(30.54)	(21.34)	(21.53)	(26.43)	(16.74)	(17.66)	(23.67)
$LLIQ_{it}$	-0.011	-0.013	0.014	-0.030	0.053*	-0.036	0.022	-0.012
	(0.50)	(0.56)	(0.50)	(0.85)	(1.66)	(1.17)	(0.43)	(0.49)
$LCOL_{it}$	0.032	0.032	-0.091***	0.114***	-0.050	0.141***	-0.146***	0.118***
	(1.25)	(1.25)	(2.87)	(2.94)	(1.63)	(3.50)	(3.21)	(3.88)
Constant	4.763***	4.691***	5.261***	4.283***	2.927***	5.720***	4.502***	4.794***
	(21.53)	(20.89)	(19.04)	(12.17)	(9.92)	(16.39)	(10.06)	(17.99)
Observations	2180	2180	1119	1061	879	1301	776	1404
No. of firm	342	342	168	174	169	173	122	220
R-squared	0.80	0.80	0.85	0.76	0.84	0.78	0.73	0.83

Notes: Absolute value of *t* statistics in parentheses, * significant at 10%; ** significant at 5%; *** significant at 1%.

Table 8. Fixed Effects Estimates for the Ratio of Bank Loans to Total Debt (MIX1)

	No Inter Term (1)	Whole Sample(2)	Bank Dep.(3)	Non-Bank Dep.(4)	Small (5)	Large (6)	Man. Ind (7)	Non-Man Ind.(8)
$BRATE_t$	0.681 *	0.611	0.904 **	0.262	0.701	0.644	2.574 ***	-0.470
	(1.78)	(1.39)	(2.17)	(0.34)	(0.90)	(1.25)	(3.50)	(0.86)
$BRATE_t$*LP		-0.119	0.576 *	-0.877	-0.692	0.372	0.608	-0.552
		(0.32)	(1.67)	(1.31)	(1.10)	(0.83)	(0.97)	(1.20)
GDP_t	0.024	0.007	0.073	-0.043	0.040	-0.015	-0.142	0.075
	(0.16)	(0.04)	(0.48)	(0.15)	(0.14)	(0.08)	(0.52)	(0.38)
D9798	-0.057	-0.236	0.609	-1.038	2.238	-1.627	-1.805	0.559
	(0.04)	(0.15)	(0.42)	(0.36)	(0.77)	(0.89)	(0.67)	(0.29)
$GEAR_{it}$	-0.000	-0.000	-0.002 *	-0.000	-0.000	-0.001	-0.000	-0.001
	(1.34)	(1.33)	(1.80)	(1.02)	(1.29)	(0.96)	(1.26)	(0.89)
$SOLV_{it}$	0.028 **	0.028 **	0.026 *	0.030	0.030 *	0.016	0.048 **	0.019
	(2.21)	(2.21)	(1.79)	(1.51)	(1.78)	(0.74)	(2.22)	(1.22)
LIQ_{it}	-0.002	-0.002	0.001	-0.002	-0.002	-0.005	-0.000	-0.002
	(1.33)	(1.33)	(0.16)	(1.06)	(1.02)	(0.76)	(0.04)	(1.39)
COL_{it}	0.166 ***	0.166 ***	0.095 **	0.243 ***	0.099	0.208 ***	0.176 *	0.163 ***
	(3.42)	(3.41)	(2.07)	(2.76)	(1.25)	(3.25)	(1.91)	(2.83)
Constant	58.753 ***	59.416 ***	78.181 ***	40.207 ***	61.138 ***	58.200 ***	48.722 ***	65.214 ***
	(20.08)	(16.60)	(22.43)	(6.36)	(10.59)	(12.03)	(7.81)	(14.71)
Observations	2284	2284	1161	1123	958	1326	801	1483
No. of firm	348	348	173	175	174	174	123	225
F-Stat	3.30 ***	2.90 ***	2.06 **	1.95 **	2.01 **	1.97 **	2.68 ***	1.59
R-squared	0.01	0.01	0.02	0.02	0.02	0.02	0.03	0.01

Notes: Absolute value of *t* statistics in parentheses, * significant at 10%; ** significant at 5%; *** significant at 1%.

Table 9. Fixed Effects Estimates for the Ratio of Short-Term Loans Total Debt (*MIX2*)

	No Inter Term (1)	Whole Sample(2)	Bank Dep.(3)	Non-Bank Dep.(4)	Small (5)	Large (6)	Man. Ind (7)	Non-Man Ind.(8)
$BRATE_t$	0.853**	1.087**	1.707***	0.500	1.610**	0.740	0.673	1.338**
	(2.26)	(2.51)	(3.10)	(0.75)	(2.33)	(1.33)	(1.00)	(2.41)
$BRATE_t$*LP	-0.195	-0.136	-0.065	-0.199	-0.122	-0.127	-0.118	-0.139
	(1.30)	(0.86)	(0.33)	(0.80)	(0.49)	(0.62)	(0.47)	(0.69)
GDP_t	-0.186	0.410	-0.036	1.141	0.169	0.601	0.120	0.222
	(0.13)	(0.26)	(0.02)	(0.46)	(0.07)	(0.31)	(0.05)	(0.11)
D9798	-0.000	-0.000	-0.000	-0.000	-0.000	0.000	-0.000	0.001
	(0.62)	(0.63)	(0.18)	(0.57)	(0.63)	(0.31)	(0.78)	(0.61)
$GEAR_{it}$	-0.021*	-0.021*	-0.016	-0.017	-0.024	-0.007	-0.004	-0.025
	(1.67)	(1.68)	(0.83)	(0.99)	(1.60)	(0.30)	(0.19)	(1.53)
$SOLV_{it}$	-0.005***	-0.005***	-0.026***	-0.003**	-0.004**	-0.032***	-0.054***	-0.004**
	(3.29)	(3.30)	(4.79)	(2.00)	(2.38)	(4.39)	(6.13)	(2.26)
LIQ_{it}	-0.180***	-0.178***	-0.382***	-0.001	-0.180***	-0.253***	-0.407***	-0.111*
	(3.74)	(3.70)	(6.31)	(0.01)	(2.58)	(3.65)	(4.81)	(1.90)
COL_{it}		0.397	1.036**	-0.177	0.609	0.336	0.198	0.707
		(1.09)	(2.27)	(0.31)	(1.09)	(0.69)	(0.34)	(1.52)
Constant	64.384***	62.170***	74.046***	53.806***	71.422***	60.485***	86.032***	53.398***
	(22.30)	(17.60)	(16.06)	(9.96)	(14.03)	(11.55)	(14.99)	(11.90)
Observations	2284	2284	1161	1123	958	1326	801	1483
No. of firm	348	348	173	175	174	174	123	225
F-Stat	4.54***	4.13***	8.00***	1.23	2.46**	3.53***	6.42***	1.93**
R-squared	0.02	0.02	0.06	0.01	0.02	0.02	0.08	0.01

Notes: Absolute value of *t* statistics in parentheses, * significant at 10%; ** significant at 5%; *** significant at 1%.

Table 10. Difference GMM Estimates for Log of Real Bank Loans

	No Inter Term (1)	Whole Sample(2)	Bank Dep.(3)	Non-Bank Dep.(4)	Small (5)	Large (6)	Man. Ind (7)	Non-Man Ind.(8)
$BLOANS_{i,t-1}$	0.045	0.045	-0.034	0.123**	0.086**	0.066*	0.034	-0.003
	(1.60)	(1.59)	(1.55)	(2.33)	(2.13)	(1.80)	(0.84)	(0.10)
$BLOANS_{i,t-2}$			0.009	-0.017	0.026	-0.032	-0.068*	0.035
			(0.44)	(0.47)	(0.62)	(1.23)	(1.94)	(1.31)
$LGEAR_{it}$	0.556***	0.554***	1.017***	0.747***	0.644***	0.898***	0.808***	0.816***
	(8.28)	(8.26)	(19.99)	(6.20)	(6.08)	(11.62)	(8.66)	(9.91)
$LSOLV_{it}$	0.851***	0.847***	1.272***	0.996***	0.815***	1.708***	1.051***	0.840***
	(5.76)	(5.74)	(8.85)	(4.00)	(3.70)	(7.47)	(5.48)	(3.63)
$LLIQ_{it}$	-0.108	-0.104	-0.055	-0.024	0.002	-0.007	-0.205	-0.034
	(1.53)	(1.48)	(0.89)	(0.21)	(0.02)	(0.09)	(1.49)	(0.44)
$LCOL_{it}$	-0.132	-0.131	-0.078	0.426**	0.229*	0.621***	0.432***	0.027
	(1.28)	(1.28)	(0.85)	(2.42)	(1.68)	(3.87)	(3.05)	(0.20)
$BRATE_t$	-0.023*	-0.027*	-0.008	-0.031	-0.020	-0.028*	0.004	-0.040**
	(1.74)	(1.90)	(0.66)	(1.08)	(0.65)	(1.75)	(0.18)	(2.20)
$BRATE_t$*LP		-0.009	0.013	-0.006	-0.021	0.006	0.014	-0.002
		(0.80)	(1.42)	(0.29)	(0.96)	(0.46)	(0.78)	(0.15)
GDP_t	0.009**	0.008**	0.011***	0.017**	0.010	0.014***	0.016**	0.014***
	(2.37)	(1.98)	(3.41)	(2.19)	(1.25)	(3.13)	(2.44)	(2.91)
Constant	-0.020*	-0.015	-0.003	0.005	-0.082**	0.039**	0.007	-0.015
	(1.77)	(1.21)	(0.25)	(0.14)	(2.40)	(2.20)	(0.24)	(0.76)
Observations	1381	1381	613	476	361	728	390	699
No. of firm	291	291	143	118	108	153	94	167
Sargan(p-val.)	0.34	0.40	0.50	0.61	0.36	0.41	0.63	0.56
m_2	0.50	0.49	0.46	1.77	0.09	1.89	1.95	1.81

Notes: Absolute value of z statistics in parentheses, * significant at 10%; ** significant at 5%; *** significant at 1%.

All variables except LP, $BRATE_t$, GDP and interaction terms are treated as endogenous or predetermined variables. We use two and three lags of these variables, namely $LBLOANS_{i,t-2}$, $LBLOANS_{i,t-3}$, $LGEAR_{i,t-2}$, $LGEAR_{i,t-3}$, $LSOLV_{i,t-2}$, $LSOLV_{i,t-3}$, $LLIQ_{i,t-2}$, $LLIQ_{i,t-3}$, $LCOL_{i,t-2}$, $LCOL_{i,t-3}$ as instrumental variables.

In the first column we do not use interaction terms (interaction of low interest rate period with the base rate) as explanatory variables. In the remaining columns estimations are carried out by interaction terms for *BRATE*. For example, in the second column, we use the interaction term for the base rate with whole sample while in the remaining columns we employ interaction terms by using sub-samples split according to firm characteristics, namely bank dependency, size and industry.

Estimations results are from the one-step *GMM* procedure except the Sargan test which is obtained from the two-step procedure. Second order autocorrelation tests, m_2, do not reject the hypothesis of no serial correlation in the error terms for all regressions. The Sargan tests also do not reject the hypothesis of the validity of over-identifying restrictions in the model.

Table 11. The Difference GMM Estimates for Log of Real Short-Term Debt

	No Inter Term (1)	Whole Sample(2)	Bank Dep.(3)	Non-Bank Dep.(4)	Small (5)	Large (6)	Man. Ind (7)	Non-Man Ind.(8)
$STDEBT_{I,t-1}$	0.003	0.004	0.009	0.072*	-0.017	0.042	0.053*	-0.027
	(0.14)	(0.16)	(0.32)	(1.94)	(0.53)	(1.24)	(1.78)	(0.90)
$STDEBT_{I,t-2}$	-0.039**	-0.038**	-0.039*		-0.090***	0.011		-0.030
	(2.05)	(2.03)	(1.76)		(3.26)	(0.40)		(1.22)
$LGEAR_{it}$	1.054***	1.060***	1.150***	0.947***	1.072***	1.061***	0.894***	1.109***
	(13.97)	(14.06)	(16.38)	(14.83)	(14.45)	(12.74)	(11.72)	(13.33)
$LSOLV_{it}$	1.299***	1.312***	1.599***	1.191***	1.113***	2.633***	1.278***	1.286***
	(7.30)	(7.38)	(7.78)	(7.91)	(6.43)	(9.68)	(8.48)	(5.00)
$LLIQ_{it}$	-0.455***	-0.458***	-0.453***	-0.391***	-0.185*	-0.564***	-0.558***	-0.401***
	(5.75)	(5.80)	(4.23)	(4.92)	(1.90)	(5.51)	(4.69)	(4.57)
$LCOL_{it}$	-0.168	-0.178*	-0.396***	-0.012	-0.080	0.315*	0.027	-0.234
	(1.62)	(1.72)	(2.68)	(0.12)	(0.85)	(1.67)	(0.30)	(1.51)
$BRATE_t$	-0.010	-0.007	0.020	-0.027	0.005	-0.027	-0.032	0.002
	(0.68)	(0.47)	(1.08)	(1.27)	(0.19)	(1.35)	(1.64)	(0.09)
$BRATE_t$*LP		0.022*	0.042***	-0.005	0.011	0.014	0.013	0.030**
		(1.92)	(3.03)	(0.30)	(0.63)	(0.87)	(0.80)	(1.97)
GDP_t	0.008**	0.011***	0.011**	0.007	0.004	0.014**	0.004	0.014***
	(2.24)	(2.78)	(2.26)	(1.13)	(0.64)	(2.44)	(0.65)	(2.71)
Constant	0.017	0.001	-0.004	0.027	-0.034	0.022	0.032*	-0.017
	(1.07)	(0.06)	(0.20)	(1.40)	(1.24)	(0.98)	(1.80)	(0.77)
Observations	1124	1124	605	664	380	744	517	720
No. of firm	273	273	141	146	117	156	111	172
Sargan(p-val.)	0.29	0.36	0.46	0.36	0.26	0.54	0.21	0.74
m_2	0.97	0.81	-1.10	1.15	1.20	-0.85	1.02	-0.53

Notes: Absolute value of z statistics in parentheses, * significant at 10%; ** significant at 5%; *** significant at 1%.

All variables except LP, $BRATE_t$, GDP and interaction terms are treated as endogenous or predetermined variables. We use two and three lags of these variables, namely $LSTDEBT_{i,t-2}$, $LSTDEBT_{i,t-3}$, $LGEAR_{i,t-2}$, $LGEAR_{i,t-3}$, $LSOLV_{i,t-2}$, $LSOLV_{i,t-3}$, $LLIQ_{i,t-2}$, $LLIQ_{i,t-3}$, $LCOL_{i,t-2}$, $LCOL_{i,t-3}$ as instrumental variables.

In the first column we do not use interaction terms (interaction of low interest rate period with the base rate) as explanatory variables. In the remaining columns estimations are carried out by interaction terms for *BRATE*. For example, in the second column, we use the interaction term for the base rate with whole sample while in the remaining columns we employ interaction terms by using sub-samples split according to firm characteristics, namely bank dependency, size and industry.

Estimations results are from the one-step *GMM* procedure except the Sargan test which is obtained from the two-step procedure. Second order autocorrelation tests, m_2, do not reject the hypothesis of no serial correlation in the error terms for all regressions. The Sargan tests also do not reject the hypothesis of the validity of over-identifying restrictions in the model.

Table 12. The Difference GMM Estimates for Log of Real Long-Term Debt

	No Inter Term (1)	Whole Sample(2)	Bank Dep.(3)	Non-Bank Dep.(4)	Small (5)	Large (6)	Man. Ind (7)	Non-Man Ind.(8)
$LTDEBT_{I,t-1}$	0.065	0.068	0.147***	-0.017	0.107*	0.124***	0.047	0.136***
	(1.53)	(1.58)	(2.67)	(0.32)	(1.67)	(2.58)	(0.70)	(2.95)
$LTDEBT_{i,t-2}$	-0.072**	-0.072**	-0.045	-0.100**	-0.134**	-0.052	-0.035	-0.085**
	(2.43)	(2.41)	(1.26)	(2.19)	(2.43)	(1.52)	(0.72)	(2.47)
$LGEAR_{it}$	0.682***	0.678***	0.276*	0.939***	0.552***	0.793***	0.609***	0.709***
	(5.60)	(5.56)	(1.82)	(7.38)	(3.85)	(6.13)	(3.08)	(6.37)
$LSOLV_{it}$	0.076	0.078	-0.415	0.598**	0.018	1.037***	-0.255	0.395
	(0.27)	(0.28)	(0.95)	(2.29)	(0.06)	(3.01)	(0.67)	(1.26)
$LLIQ_{it}$	0.289***	0.285***	0.288	0.377***	0.118	0.473***	0.930***	0.183*
	(2.71)	(2.67)	(1.63)	(3.31)	(0.82)	(3.53)	(3.23)	(1.89)
$LCOL_{it}$	0.872***	0.879***	0.909**	1.077***	0.055	0.792***	0.929**	0.445**
	(3.41)	(3.43)	(2.47)	(4.22)	(0.17)	(2.97)	(2.03)	(2.01)
$BRATE_t$	-0.028	-0.030	-0.115***	0.034	-0.020	-0.038	-0.060	-0.031
	(1.18)	(1.23)	(3.49)	(0.97)	(0.36)	(1.42)	(1.22)	(1.17)
$BRATE_t$*LP		-0.010	-0.064**	0.037	0.007	-0.020	-0.065*	0.012
		(0.56)	(2.48)	(1.42)	(0.17)	(0.99)	(1.72)	(0.60)
GDP_t	0.019***	0.017***	0.011	0.024**	0.014	0.013*	0.012	0.018**
	(3.19)	(2.78)	(1.32)	(2.55)	(1.08)	(1.79)	(0.88)	(2.58)
Constant	-0.037	-0.029	-0.085**	0.055	-0.163***	0.015	-0.038	-0.037
	(1.42)	(1.02)	(2.39)	(1.33)	(2.71)	(0.50)	(0.70)	(1.22)
Observations	908	908	462	446	268	640	303	605
No. of firm	232	232	114	118	85	147	82	150
Sargan(p-val.)	0.82	0.78	0.84	0.39	0.61	0.34	0.76	0.41
m_2	0.19	0.13	1.09	1.65	-0.52	0.78	0.19	0.20

Notes: Absolute value of z statistics in parentheses, * significant at 10%; ** significant at 5%; *** significant at 1%.

All variables except LP, $BRATE_t$, GDP and interaction terms are treated as endogenous or predetermined variables. We use two and three lags of these variables, namely $LLTDEBT_{i,t-2}$, $LLTDEBT_{i,t-3}$, $LGEAR_{i,t-2}$, $LGEAR_{i,t-3}$, $LSOLV_{i,t-2}$, $LSOLV_{i,t-3}$, $LLIQ_{i,t-2}$, $LLIQ_{i,t-3}$, $LCOL_{i,t-2}$, $LCOL_{i,t-3}$ as instrumental variables.

In the first column we do not use interaction terms (interaction of low interest rate period with the base rate) as explanatory variables. In the remaining columns estimations are carried out by interaction terms for *BRATE*. For example, in the second column, we use the interaction term for the base rate with whole sample while in the remaining columns we employ interaction terms by using sub-samples split according to firm characteristics, namely bank dependency, size and industry.

Estimations results are from the one-step *GMM* procedure except the Sargan test which is obtained from the two-step procedure. Second order autocorrelation tests, m_2, do not reject the hypothesis of no serial correlation in the error terms for all regressions. The Sargan tests also do not reject the hypothesis of the validity of over-identifying restrictions in the model.

Table 13. The Difference GMM Estimates for Log of Real Total Debt (Alternative Specification)

	No Inter Term (1)	Whole Sample(2)	Bank Dep.(3)	Non-Bank Dep.(4)	Small (5)	Large (6)	Man. Ind (7)	Non-Man Ind.(8)
$DEBT_{i,t-1}$	-0.027**	-0.027**	-0.024**	-0.018	-0.004	-0.015	-0.033	-0.012
	(2.57)	(2.55)	(2.43)	(0.88)	(0.35)	(0.98)	(1.61)	(1.00)
$LGEAR_{it}$	1.038***	1.038***	1.044***	1.114***	1.066***	0.942***	1.001***	1.013***
	(39.29)	(39.33)	(43.43)	(30.71)	(41.77)	(26.44)	(22.66)	(37.23)
$LSOLV_{it}$	1.229***	1.230***	1.233***	1.333***	1.336***	1.326***	1.161***	1.198***
	(20.00)	(20.02)	(19.87)	(16.68)	(23.23)	(13.94)	(13.43)	(16.21)
$LLIQ_{it}$	-0.129***	-0.130***	-0.079**	-0.133***	-0.006	-0.087*	-0.182***	-0.110***
	(4.57)	(4.57)	(2.56)	(3.22)	(0.21)	(1.96)	(2.89)	(3.73)
$LCOL_{it}$	0.044	0.044	-0.126**	0.153***	-0.060*	0.483***	-0.032	0.064
	(1.09)	(1.09)	(2.42)	(2.94)	(1.69)	(6.38)	(0.63)	(1.27)
$BRATE_t$	-0.026***	-0.026***	-0.035***	-0.017	-0.033***	-0.019**	-0.043***	-0.018**
	(4.29)	(4.08)	(5.54)	(1.50)	(3.57)	(2.08)	(3.97)	(2.27)
$BRATE_t$*LP		0.001	0.001	0.001	-0.000	-0.006	0.006	-0.003
		(0.21)	(0.23)	(0.06)	(0.03)	(0.71)	(0.70)	(0.43)
GDP_t	0.010***	0.010***	0.009***	0.011***	0.010***	0.007***	0.009***	0.010***
	(5.64)	(5.39)	(5.03)	(3.33)	(3.73)	(2.68)	(2.82)	(4.52)
Constant	0.023***	0.022***	0.009	0.044***	-0.004	0.043***	0.021**	0.020***
	(4.58)	(3.97)	(1.64)	(4.21)	(0.54)	(5.62)	(2.05)	(3.06)
Observations	1479	1479	775	704	539	940	526	953
No. of firm	307	307	156	151	138	169	112	195
Sargan(p-val.)	0.03	0.05	0.41	0.26	0.22	0.17	0.25	0.22
m_2	1.91	1.93	0.97	1.54	-1.31	2.48	1.96	0.91

Notes: Absolute value of z statistics in parentheses, * significant at 10%; ** significant at 5%; *** significant at 1%.

All variables except LP, $BRATE_t$, GDP and interaction terms are treated as endogenous or predetermined variables. We use two and three lags of these variables, namely $LDEBT_{i,t-2}$, $LDEBT_{i,t-3}$, $LGEAR_{i,t-2}$, $LGEAR_{i,t-3}$, $LSOLV_{i,t-2}$, $LSOLV_{i,t-3}$, $LLIQ_{i,t-2}$, $LLIQ_{i,t-3}$, $LCOL_{i,t-2}$, $LCOL_{i,t-3}$ as instrumental variables.

In the first column we do not use interaction terms (interaction of low interest rate period with the base rate) as explanatory variables. In the remaining columns estimations are carried out by interaction terms for *BRATE*. For example, in the second column, we use the interaction term for the base rate with whole sample while in the remaining columns we employ interaction terms by using sub-samples split according to firm characteristics, namely bank dependency, size and industry.

Estimations results are from the one-step *GMM* procedure except the Sargan test which is obtained from the two-step procedure. Second order autocorrelation tests, m_2, do not reject the hypothesis of no serial correlation in the error terms for all regressions. The Sargan tests also do not reject the hypothesis of the validity of over-identifying restrictions in the model.