Small Business Economics **24**: 29–38, 2005.

The Higher Cost of Follow-Up Loans

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ABSTRACT. This paper uses unique data and looks at the interest margin for follow-up finance vis-à-vis first round-finance. Applying data for asset values, we examine the substitution between collateral and interest margins. Consistent with the theories of Bester (1985), Besanko and Thakor (1987) and the empirical evidence of Cressy (1996b), we find that a trade-off between collateral and interest margins exists. Our main result indicates that follow-up finance is more expensive for loans but not for overdrafts. We suggest that a relatively fixed asset base (Land and Buildings), as seen in higher security to loan values, raises the price and risk of successive financial increments. This explains the higher relative cost of follow-up finance to borrowers.

KEY WORDS: asymmetric information, collateral, interest margins, new venture finance

1. Introduction

This is the first analysis to explore the cost of follow-up commercial finance that controls for the value of collateral. Previous work has looked at the influence of business-bank relationships on the price of credit and hence indirectly has examined the price of follow-up finance. A number of theoretical papers predict the relative cost of finance in the second borrowing period (Petersen and Rajan, 1995; Boot and Thakor, 1994; Greenbaum et al., 1989; Sharpe, 1990; Diamond, 1989). Empirical evidence, however, points to an indeterminate relationship between the length of a borrowing relationship and the price of credit (Petersen and Rajan, 1994).

Multi-period models that describe the relative cost of follow-up finance do not consider the role of collateral. This omission is likely to be a shortcoming if one considers the pivotal role played by collateral in the collateral signalling literature. Despite the inability of the empirical literature to shed light on the features of collateral in second round finance, a rich theoretical literature describes the collateral/interest margin trade-off. Some of these theories support the view that borrowers will receive price reductions on their bank borrowing, if they provide their lender with additional security (Besanko and Thakor, 1987a, b; Bester, 1985).

Therefore, what is missing in the examination of the cost of repeat finance, is the role of assets and hence security. While Hanley (2001) suggests that security is a fluid input to be spread over successive borrowing increments, she does not infer how a fixed input would affect the risk/cost of further lending.

To date no research has drawn from both collateral-price and relationship-price theories in order to establish and interpret how the price of follow-up finance differs from the price of the first loan taken out by an entrepreneur. This is a gap in the literature that our analysis attempts to fill.

We analyse a set of over 1,000 U.K. commercial loans and overdrafts to non-listed enterprises to find how the value of security reduces the price of finance. We find that the trade-off result obtains for both initial and follow-up finance. However, for loan finance alone, borrowers must absorb

Final version accepted on February 28, 2003

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higher borrowing costs that we suggest are a consequence of a relatively static asset base.

Our analysis is organised as follows. We first present the theoretical underpinnings of the collateral-price and relationship-price literature. The following section gives a brief overview of the data. In the section following this, we map out our equations. The Results section follows. We conclude with a section outlining the main implications of our findings.

2. Theoretical framework

Theories about the collateral/interest margin trade-off are found in the collateral signalling literature. According to Besanko and Thakor (1987a)

> "By designing credit contracts with inversely related interest rates and collateral requirements, banks can sort borrowers into risk classes".[1]

These models, albeit with differing assumptions, exemplified by Chan and Kanatas (1985), Besanko and Thakor (1987) and de Meza and Southey (1996) are underpinned by the assumption that borrowers know their own default type but that the bank cannot observe this information.[2] However, the bank does know that a borrower can invest in a low-risk project with a riskless pay-off. Furthermore, a bank knows that an applicant has the choice of investing the same capital in a high-risk project of uncertain pay-off. Collateral is used as a screening device that allows the applicants to "truthfully reveal their success probabilities".[3] Borrowers who wish to undertake a high-risk project will opt for lower collateral and higher interest margins, than their counterparts who are persuaded to opt for a low-risk alternative.[4]

Chan and Kanatas (1985) argue that if the value of collateral is more stable and observable than the quality of an entrepreneur's project, then an entrepreneur could trade collateral for lower interest rates. According to their model, an entrepreneur can earn either 0 or R depending on being unsuccessful or successful respectively. The entrepreneur is more sanguine about the project quality than the bank and so the entrepreneur's positive payoff prediction p_e exceeds the bank's assessment p_b. With a project size B, collateral C and 100 percent bank finance, a fair loan involves zero expected profit to the bank (a frequent convention in these models)

$$(1 + i)B = (1 - p_b)C + p_b(1 + r)B \qquad (1)$$

The entrepreneur's expected profit is

$$\pi_e = p_e[R - (1 + r)B - (1 - p_e)C] \qquad (2)$$

The marginal rate of substitution of interest margins for collateral is always lower for the entrepreneur than for the bank because of the comparatively low liquidation value (deadweight cost) of collateral and the higher in-use value of an asset to an entrepreneur. An optimal contract involves full collateralisation.

Of the small amount of available empirical work on loan commitments, Cressy (1996b) demonstrates the collateral/interest margin trade-off in a U.K. study of approximately 2,000 business start-ups where margins are found to be an inverse function of loan security. Burke and Hanley (2002) reveal an interest margin/collateral trade-off in their analysis of the information environment surrounding loan commitments.

Having outlined the theoretical underpinnings for an interest margin/collateral trade-off, we turn to the theories surrounding second round finance.

Areas where second round finance (i.e. a pre-existing business-bank relationship) are shown to play a role include credit availability and the magnitude of interest on various types of borrowing (Cole, 1998; Berger and Udell, 1995; Petersen and Rajan, 1994).

All theories dealing with second round finance have a common denominator: the establishment of a business-bank relationship or survival of a business to the second borrowing round should (a) reduce information asymmetries and (b) flag the higher survival likelihood of an enterprise. A summary of the different predictions reached in these multi-period models is contained in Table I. Where the theories differ, is the way in which a bank responds to the enhanced in-house information it has accumulated on the borrower.

Diamond's (1989) multi-period model postulates that a bank will reward survivors (those who chose lower risk projects or who were ex ante lower risk borrowers) by reducing their interest margins on second round finance. If entrepreneurs are aware of this incentive, then a bank should draw a safer pool of applicants for finance (reduced adverse selection) and borrowers will be persuaded to choose lower risk projects (reduced

TABLE I
Private information models

Model	Information	Bank concentration	Prediction for first-round finance
Petersen and Rajan (1995)	Non-observable	Either high or low	Rate with concentration period 2 > rate with competition period 1 Rate with concentration period 1 < rate with competition market period 1
Boot and Thakor (1994)	Non-observable	Low	Rate period 1 > rate period 2
Greenbaum et al. (1989)	Non-observable	Low	Rate period 1 < rate period 2
Sharpe (1990)	Non-observable	Low	Rate period 1 < rate period 2
Diamond (1989)	Observable to other lenders	Not specified	Rate period 1 > rate period 2

moral hazard). Boot and Thakor's (1994) model predictions concur with this description of cheaper second round finance.

However, other models assuming asymmetric information predict that second round finance will be more expensive. Greenbaum et al. (1989) and Sharpe (1990) outline models predict rising costs as a firm's reputation becomes established. Sharpe describes an exploitative bank relationship where a bank exploits its information monopoly on a borrower, when information about a borrower's reputation cannot be observed by competing banks. This information monopoly is reflected in an interest margin hike for second-round finance. Sharpe argues that this interest margin hike is due to the entrepreneur being "informationally captured" by her lender.

Finally, Petersen and Rajan (1995) have developed a reputation model that delivers different predictions that describe the difference between first-round and second-round interest margins. These differences are driven by the amount of competition/concentration in the lending market. Table I summarises the predicted differences between first and second round finance.

3. Data description and analysis

The data comprise a range of client data collected by a major U.K. retail bank for commercial loans. Bank anonymity was a precondition of securing our data. Therefore, the sample relates to firms who have been successful in securing a bank loan. The variables that are taken from the application forms of small and medium sized firm applicants, relate to the period January 1998 until December 1999. The data contain a breakdown of collateral/owner's equity values which allows us to examine security/interest margin trade-offs. A full list and description of the variables we examine for first time borrowers is presented in Appendix 2.

Methodology

We develop our methodology mindful of two stylised facts: the first is the price-collateral trade-off postulated in the signalling theories and the second is the price-relationship trade-off described in Petersen and Rajan (1995).

Expressing the price-collateral relationship as an empirical model, we need to show the extent to which price – expressed as the interest margin over the internal bank borrowing rate – responds to the provision of collateral. In other words, we need to explore the elasticity of the interest margin with respect to collateral provision. Physical collateral, as opposed to equity, C_{LB}, helps to insure a bank against the downside risk of default. This physical collateral measure is the one described in the theoretical literature.[5]

Formally, our model testing the collateral/interest margin elasticity is

$$r_i = X_i'\alpha + \beta(C_{LB})_i + \mu_i \qquad [1]$$

where X_i' is a vector of exogenous variables, other than collateral that affect the margin for application i. Fortunately, our data equip us to test the collateral-margin relationship for the first time because of the comprehensiveness of our Land and Buildings physical collateral variable.

A separate issue is where we also investigate

TABLE II

	All collateral (Equity and Land and Buildings) to cumulative balances (%)						Land and Buildings to cumulative balances (%)					
	Loans		Odrfts.				Loans		Odrfts.			
	1st round	Follow-up	1st round	Follow-up			1st round	Follow-up	1st round	Follow-up		
1st quartile	25	23	28	16			21	42	24	14		
2nd quartile	32	27	25	15			20	12	20	13		
3rd quartile	24	24	29	26			36	22	32	25		
4th quartile	19	26	18	43			23	25	24	47		
	100	100	100	100			100	100	100	100		
	Value	df	Sig.	Value	df	Sig.	Value	df	Sig.	Value	df	Sig.
Pearson χ^2	6.43	3	0.09	32.30	3	0.00	42.19	3	0.00	22.03	3	0.00
Likelihood Ratio	6.66	3	0.08	31.17	3	0.00	42.86	3	0.00	21.37	3	0.00
No. obs.	961			426			911			396		

the determinants of physical collateral, C_{LB}, in a further regression. The ability of an entrepreneur to provide collateral is in turn a function of her asset base and is commensurate with the amount of finance that the borrower needs, where larger amounts of borrowing require higher levels of security (Burke and Hanley, 2002). Relationships between collateral, the amount and nature of finance borrowed and the supporting assets that are used as collateral are investigated in the collateral signalling literature (Chan and Kanatas, 1985). Additionally, the high bivariate associations between C_{LB} and these variables are taken as evidence of a relationship. However, the direction of the relationships is inferred from the theory (See correlation matrix in Appendix 1.) Hence C_{LB} is expressed as

$$C_{LB} = f(A_T, Asset_{no\_bp}, working) + \eta_i \qquad [2]$$

where A_T denotes cumulative borrowing (coefficient conjectured to be positive), negative for the additional Property assets dummy $Asset_{no\_bp}$,[6] and positive for higher risk working capital loans, *working*.[7]

The model described above is straightforward and reflects what we see in the theory. However, the theory seldom takes cognisance of constraints in the data. Such constraints include biases arising from data collection and reporting procedures at a bank. A possible consequence of these flaws is a correlation between some of the exogenous variables and the error term.[8] These violate the OLS assumption that

$$Cov[X, \varepsilon] = 0$$

We tested for this possible anomaly using the standard Durban-Wu-Hausman test to ensure that the estimates for physical collateral are unbiased.[9] The significance level for the F statistic causes us to reject the hypothesis of non-bias and employ instead a 2-stage design to rectify this. The slightly amended model with the in-built correction for measurement error, is now very much as before. The only difference is that the *estimated* physical collateral measure, denoted by *C hat*, is incorporated in the second stage. Our model now is:

First stage

$$\hat{C}_{LB} = f(A_T, Asset_{no\_bp}, working) + \eta_i \qquad [3]$$

Second stage

$$r_i = X_i'\alpha + \beta(\hat{C}_{LB})_i + \mu_i \qquad [4]$$

The second thrust to the empirical model is the inclusion of a dummy, $finance_{FR}$, signifying whether the finance requested is follow-up finance or whether the application for finance represents the first ever request. Obtaining a loan is sometimes a precursor to obtaining an overdraft (letter of credit L/C). We know this because Berger and

Udell (1995) argue that overdrafts are higher risk. It follows that we need to control for the potentially spurious result that would arise if follow-up finance appeared deceptively more expensive because of the higher prevalence of overdraft finance. We therefore, look separately at loan and overdraft finance and observe the relationship between follow-up finance and the interest mark-up.

Our final equation as suggested by the theory and following consideration of measurement error, uses a 2-stage least squares format.

Results

Some summary statistics are presented in Table III for the continuous and dummy variables respectively. The average collateral level is approximately £100,000, covering an average cumulative borrowing level ("A_T1") of £126,000. Land and Buildings account for approximately 77 percent (77.5K/100.8K) of all collateral. Because the bank does not take a charge over assets with a high mark-down cost on disposal of an asset such as machinery, Land and Buildings represent the core security over which the bank takes a charge. On average, entrepreneurs contribute just over £28,000 to each project for which they request borrowing. The average interest margin of 3 percent is identical to the median interest margin, indicating an even distribution. Approximately 61 percent of applications are for first round finance ("$finance_{FR}$" = 1). 31 percent of applications are for overdrafts, a percentage which parallels the 41 percent of applications that are non-asset backed ("*working*" = 1).

As indicated in the Methodology section, our regression adopts a 2-stage format with collateral from Land and Buildings, "$C_{LB}1$", instrumented on the cumulative amount borrowed and controlling for the unavailability of a business premises asset over which a charge can be taken, i.e. the variable "$Asset_{No\_BP}$". The preliminary results from our Hausman test presented in Table IV, confirm that standard OLS would be inappropriate for this model. Rather a 2-stage design is preferable based on the high and significant *F* statistic obtained on the residual for the collateral residual, "*coll_res*" (see discussion in Methodology).

From Table IV we can ascertain that, all things equal, an increase in the level of cumulative borrowing of £90,000, from £10,000 to £100,000, is accompanied by an increase in Land and Buildings collateral of approximately £52,182 ($0.5798 \times 90{,}000$).[10] With increased debt exposure, a bank claims a higher tranche of collateral to defray against the higher losses that will arise if the business defaults.

In Table V we look at the effect of increasing Land and Buildings collateral on the magnitude of the interest margin. Regression (i) is a fully saturated model containing both the follow-up finance variable, "$finance_{FR}$", as well as the overdraft variable, "*odrft*". Because we know from the correlation matrix in Appendix 1 that both the latter variables are relatively highly correlated,

TABLE III
Summary statistics

Variable	Obs	Mean	Median	Std. Dev.	Min	Max
A_T1	1409	126,005	85,000	135,862	0	1,350,000
collall	1409	100,839	60,000	137,785	17	1,550,000
C_{LB}	1315	77,445	38,500	125,991	0	1,500,000
C_E	1409	28,560	9,000	61,706	0	1,300,000
r	1179	3.0	3.0	1.0		8.7

	Obs	No. with attribute	
$finance_{FR}$	1403	865	61.7%
$Asset_{No\_BP}$	1409	501	35.6%
odrft	1409	433	30.7%
working	1409	572	40.6%

TABLE IV
Hausman test for exogeneity of Land and Buildings collateral measure

First Stage
Dependent variable $C_{LB}1$

	Coef.	Std. Err.	*t*	*P* > |*t*|
AT1	0.5798	0.02	29.17	0.00
$Asset_{No\_BP}$	–6.0454	5.79	–1.04	0.30
working	13.1757	5.45	2.42	0.02
_cons	–2.3441	4.89	–0.48	0.63

Second Stage
Dependent variable *r*

	Coef.	Std. Err.	*t*	*P* > *t*
$C_{LB}1$	–0.0036	0.00	–11.10	0.00
coll_res	0.0036	0.00	8.43	0.00
C_E1	–0.0004	0.00	–0.94	0.35
$finance_{FR}$	–0.2644	0.05	–4.89	0.00
_cons	3.4134	0.05	66.81	0.00

Hausman test for collateral residual

(1) *coll_res*	0.0
F(1, 1088)	71.14
Prob > *F*	0.0000

TABLE V
IV (2SLS) regressions with robust standard errors

	(i) Coef. *(t-stat.)*	(ii) Coef. *(t-stat.)*	(iii) Coef. *(t-stat.)*
Dependent variable	*r*	*r*	*r*
$C_{LB}1$	–0.0034 *(–7.35)***	–0.0033 *(–7.54)***	–0.0034 *(–7.4)***
C_E1	–0.0013 *(–2.38)***	–0.0013 *(–2.46)***	–0.0014 *(–2.47)***
$finance_{FR}$	–0.1334 *(–1.67)**		–0.2245 *(–3.63)***
odrft	0.1856 *(–2.43)***	0.2542 *(4.41)***	
_cons	3.2798 *(34.47)***	3.1647 *(67.66)***	3.4050 *(48.94)***
Instrumented	$C_{LB}1$	$C_{LB}1$	$C_{LB}1$
Instruments:	C_E1 $finance_{FR}$ *odrft* A_T1 $Asset_{No\_BP}$ *working*	C_E1 *odrft* A_T1 $Asset_{No\_BP}$ *working*	C_E1 $finance_{FR}$ A_T1 $Asset_{No\_BP}$ *working*
No. obs.	1093	1098	1093
F(4, 1088)	18.44		
F(3, 1094)		25.50	
F(3, 1089)			21.17
Prob > *F*	0.0000	0.0000	0.0000
Root MSE	0.91067	0.90767	0.91424

where known customers are more likely to receive overdrafts, "*odrft*" and "$finance_{FR}$" are entered separately in regression (ii) and regression (iii) respectively.

We now look at the marginal effects of a change in the exogenous variable Land and Buildings on the interest margin. From regression (iii), for an applicant of follow-up finance, increasing the Land and Buildings collateral component from £10,000 to £100,000, all things equal, reduces the interest margin by 306 basis points, from 3.331 percent to 3.025 percent.[11] Therefore an entrepreneur can effectively trade-off higher levels of physical collateral against reduced interest margins.

Our second point relates to the price differential between first- and second-round finance. First-round finance is cheaper than repeat finance, all things equal. The price differential is 225 basis points for our sample. 12 This finding is consistent with the descriptive statistics outlined in Table II.

However, we suspect that part of the significance of the role played by the follow-up finance variable, "$finance_{FR}$", is due to the relatively high proportion of overdraft finance awarded to applicants for follow-up finance (See Table III). Indeed the decline in the magnitude of the coefficients for the variables "$finance_{FR}$" and "*odrft*" in the fully saturated model, suggests that collinearity has induced this change. Therefore, Table VI observes the impact of Land and Buildings collateral *within* the categories of loan and overdraft finance respectively.

From observing the rise in significance of "$finance_{FR}$" between regression (i) and regression (iii) in Table V when we do not control for the type of finance, we expect an interest margin differential for new and repeat customers according to the type of finance applied for in Table VI. This differential arises from the way in which loans and overdrafts are secured. The follow-up finance variable, "$finance_{FR}$", only matters in the case of loans, where first term loans are relatively cheap. This is because collateral is not spread so thinly over cumulative balances for first-round finance. Hence the coefficient on "$finance_{FR}$" in Table VI is only significant for loans but not for overdrafts.[13]

In interpreting this result, we refer back to Table II where follow-up loans overall exhibited lower proportions of Land and Buildings collateral to cumulative balances. We saw that these ratios suggest that collateral is spread more thinly over the existing asset base, (42 percent of customers for follow-up finance with ratios in the first quartile compared with 21 percent of customers for initial finance), compared with the healthier percentages exhibited by first-round applicants. Hence the higher interest margin mark-up for

TABLE VI
IV (2SLS) regression with robust standard errors

	Coef. *(t-stat.)* Loans	Coef. *(t-stat.)* Overdrafts
Dependent variable *r*		
$C_{LB}1$	–0.0031 *(–6.12)***	–0.0045 *(–5.02)***
C_E1	–0.0012 *(–1.23)*	–0.0014 *(–3.58)***
$finance_{FR}$	–0.2455 *(–2.12)***	0.0385 *(0.37)*
_cons	3.3405 *(26.91)***	3.5092 *(38.0)***
Instrumented	$C_{LB}1$	$C_{LB}1$
Instruments:	C_E1 $finance_{FR}$ A_T1 $Asset_{No\_BP}$ *working*	C_E1 $finance_{FR}$ A_T1 $Asset_{No\_BP}$ *working*
No. obs.	713	380
F(3, 709)	13.73	
F(3, 376)		10.44
Prob > *F*	0.0000	0.0000
Root MSE	89633	0.9328

applicants seeking follow-up finance. In other words, the stretching of a fixed asset over successive finance applications, imposes a higher risk to the bank in the event of default. This higher risk induces a higher interest margin.

Conclusions

We conclude on the basis of the distribution of the interest margin quartiles over the applicant type and on the basis of our regressions, that follow-up finance is more expensive than first-round finance. This result holds for loan but not necessarily for overdraft finance. We qualify our result by noting that since there are fewer applications for overdrafts than loans (396 vis-à-vis 911 respectively), that it is possible that this result is driven by the lower number of overdraft applications with implications for a higher standard error.

We suggest that a relatively fixed asset base (Land and Buildings), as seen in higher security to loan values for non first-round finance, raises the price and risk of successive financial increments. This explains the higher relative cost of follow-up finance to borrowers.

Our results appear to suggest two possibilities. The first is the possibility of lock-in where a bank appears able to hike up the margins for follow-up finance without denting its profit margin through customer withdrawal. This suggests that the customer is unable, or unwilling, to move to a competing bank for follow-up finance. This could be due to the effect of information capture documented by Sharpe (1990). Therefore, our result is consistent with the multi-period theories of finance that predict that a bank will exert monopoly power over a borrower if information about the borrower's quality cannot be readily conveyed to a competing bank.

The second interpretation of our result would portray the interest margin hike in a more favourable light. The lower Land and Buildings collateral to cumulative balances ratios for applicants of follow-up finance, suggests the higher risk to the bank of successive rounds of finance. With this evidence in mind, a bank compensates for additional risk by charging a higher rate in successive bargaining rounds.

Overall, we argue that our results make it imperative for researchers to include collateral in multi-period models of finance. Failing to recognise the extra risk to a bank that arises from a static level of securable assets, coupled with dynamic demand for increased balances, could lead to banks being unfairly condemned for what at a first glance appear to be monopolistic practices.

Acknowledgements

The authors would like to thank a major British Bank who has requested to remain anonymous for data and commentary. Useful comments were also contributed two anonymous referees. The authors express their gratitude and emphasise that the usual disclaimer applies.

Appendix 1. Correlation matrix (bivariate relationships)

	r	A_T1	*collall*	$C_{LB}1$	C_E1	$Asset_{No\_BP}$	$finance_{FR}$	*odrft*	*working*
r	**1.00**	–0.34***	–0.25***	–0.20***	–0.12***	0.22***	–0.08***		0.08***
A_T1		**1.00**	0.68***	0.64***	0.24***	–0.23***	–0.12***	–0.02	0.02
collall			**1.00**	0.89***	0.45***	–0.20***	–0.03	–0.03	0.00
$C_{LB}1$				**1.00**	0.00	–0.15***	–0.06**	0.01	0.07***
C_E1					**1.00**	–0.11***	0.06**	–0.08**	–0.11***
$Asset_{No\_BP}$						**1.00**	0.03	0.00	0.03
$finance_{FR}$							**1.00**	–0.42**	–0.30***
odrft								**1.00**	0.49**
working									**1.00**

Pearson Correlation Sig. (2-tailed) * at 10 percent level; ** at 5 percent level; *** at 1 percent level.

Appendix 2. List of variables

bal_all	total finance obtained
A_T1	total finance obtained denominated in £1,000s
collall	land, guarantees, life policy, equity
$C_{LB}1$	collall – equity denominated in £1,000s
C_E1	owners' equity denominated in £1,000s
r	r interest rate on a loan or overdraft
$Asset_{No\_BP}$	no freehold business premises (coded as 1)
$finance_{FR}$	$finance_{FR}$ =1 if first-round finance
odrft	Business overdraft coded as 1 for "yes"
time	Time (six monthly period start Jan–Apr 1998)
time1	time1 (first period)
time2	time2 (second period)
time3	time3 (third period)
working	working – borrowing is for working capital

Notes

[1] P. 672 Besanko and Thakor (1987).

[2] In the case of De Meza and Southey (1996), the information flow is reversed, with the bank knowing about the true quality of the entrepreneur, than the entrepreneur herself.

[3] P. 673, ibid.

[4] This signalling model by Besanko and Thakor follows the lead set by the pathbreaking collateral paper by Bester (1985). A major modelling difference in Besanko-Thakor is the assumption assets are binding However, for the purposes of our discussion, their assumption of a collateral/interest margin trade-off is sufficient.

[5] The equity component of total collateral is interpreted as a measure of goodwill and borrower liquidity and in this context can be expected to induce a reduction in the interest margin. However, it is not theorised to affect the interest margin directly.

[6] This variable is coded as 1 implying no freehold business premises, hence the negative relationship with collateral.

[7] Non working capital loans can be secured on the value of the assets purchased, hence their higher likelihood of being secured on the value of purchased assets, if these assets have a comparable value in their next best use e.g. real estate. Working capital loans depend on existing collateral and property for security. Chan and Kanatas (1985) make this assumption.

[8] Certain practices for populating missing values for a regressor can give rise to the situation where the filled-in data are correlated with the disturbance term.

[9] Davidson and MacKinnon (1993) suggest this augmented regression test which is performed by including the residuals of each endogenous right hand side variable, as a function of all exogenous variables, in a regression of the original model. If the *F* test indicates that the residual exhibits significant explanatory power as a variable in its own right, it is necessary to employ a two-stage design.

[10]

[11] = [–0.0034 × (10) – 0.0014 × (28.560) – 0.2245 × (0) + 3.405] – [–0.0034 × (100) – 0.0014 × (28.560) – 0.2245 × (0) + 3.405].

[12] =[–0.0034 × (77.445) – 0.0014 × (28.560) – 0.2245 × (1) + 3.405] – [–0.0034 × (77.445) – 0.0014 × (28.560) – 0.2245 × (0) + 3.405].

[13] We should point out that the coefficient on "$finance_{FR}$" for overdraft finance is positive (new customers are charged more for overdraft finance) albeit insignificant.

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