CUER Working Paper

C. Tsurriel Somerville

Does the Lender Matter? Lender Type and Home Office Location and Real Estate
Development Lending

August 2002

CUER Working Paper 02-06

U B C
Commerce

CENTRE FOR URBAN ECONOMICS AND REAL ESTATE

Faculty of Commerce & Business Administration, University of British Columbia

2053 Main Mall, Vancouver, B.C., Canada V6T 1Z2 T 604 822 8399, F 604 822 5350, cuer@commerce.ubc.ca

Does the Lender Matter? Lender Type and Home Office Location and Real Estate Development Lending

C. Tsurriel Somerville ‡

August 2002

The author wishes to thank Laarni Bulan Joe Gyourko, Bob Helsley, Chris Mayer, Will Strange, Dogan Tirtilogu, and two anonymous referees for helpful comments and aid. Special thanks are due to Greg Carney, Maria Lau, and Zhan Binghui for data collection help and to Cynthia Holmes for research assistance. I greatly appreciate the cooperation of the BC Land Title Office and the BC Registrar of Corporations, and particularly Valerie Adam, Bob Bowles, Scotty Dunning, and Darcy Hammet. Financial support for this research was received from the Social Science and Humanities Research Council of Canada. All errors are the responsibility of the author.

‡ Faculty of Commerce & Business Administration, University of British Columbia, 2053 Main Mall, Vancouver, BC Canada, V6T 1Z2. tsur.somerville@commerce.ubc.ca

Abstract

Inter-regional expansion and merger and acquisition activity triggered by regulatory reforms are changing the structure of North America's financial industry. Increases in concentration and the belief that large and small financial institutions specialize in distinct segments of the lending market has raised concerns among some that these industry changes will have real effects on the availability and access to credit for distinct classes of borrowers, especially smaller firms. This paper examines this issue by looking at differences across lenders in the financing of residential construction by lender type and home office, local vs. out-of-province, location. The analysis has two components. The first is a descriptive data analysis for evidence that smaller, local lenders provide capital to more marginal and infra-marginal borrowers. The second is a test of whether lenders active in multiple jurisdictions allocate loan capital for real estate efficiently. The paper uses data on over 1,300 senior and junior construction loans in the Vancouver, BC Canada metropolitan area to evaluate these issues. We find that local lenders do seem to behave differently, charging lower spreads and extending credit to more marginal or less well capitalized developers. However, contrary to the claims of many Vancouver developers, lenders in Central Canada did not limit credit to British Columbia when their home real estate markets turned down in the late 1980's and early 1990's. Rather the opposite, the lending volume and market share in the Vancouver market of lenders based outside of British Columbia rose when the relative condition of their home markets worsened.

I. Introduction

Real estate development has traditionally been extremely dependent on debt financing. The relationship is significant enough that cycles in real estate lending have been repeatedly linked to instability in financial systems. Excessive lending to real estate development was responsible for the savings and loan debacle in the U.S. in the late 1980's, at the centre of the Japanese “bubble economy” in the early 1990's, and contributed to the financial problems in Southeast Asia following the flight of foreign capital in the late 1990's. Despite the great importance of development financing for financial systems, there is precious little academic work to help us to understand its dynamics. Nearly all research on mortgage lending looks at long term loans for the acquisition of existing assets, and that is overwhelmingly for residential mortgages. This paper addresses this imbalance by examining the characteristics and inter-regional patterns in lending for real estate development.

Here, we test whether lender type, as described by both home-office location relative to a market and institution type, matters. With the dropping of barriers to inter-state banking in the U.S. and mergers of financial institutions in the U.S. and Canada, the make-up of lenders is changing. If there are systematic differences by lender type, then changes in the financial system industrial organization in North America have potential implications for the structure of and participants in future real estate development activity. To understand the potential implications of these changes we use a unique data set of details on 1,366 senior and junior loans made between 1985 and 1987 in the Vancouver, BC Canada metropolitan area for the development and construction of new strata (condominium) buildings.

The analysis in this paper is structured around two hypotheses. The first is that smaller,

local lenders concentrate on relationship lending with smaller borrowers.¹ If larger lenders achieve scale economies in loan volume for loans that are easily processed, then to exploit their comparative advantage smaller lenders should lend to smaller, marginal borrowers. Here we compare loan and borrower characteristics for the large national lenders and smaller, local sources of capital such as credit unions and private mortgage providers. We find that local lenders do behave differently. Our empirical results are consistent with the claim that those lenders extend credit to more marginal or less well capitalized developers. The second is that lenders allocate capital “efficiently” across markets. We do not expect lenders to myopically make loan volume decisions in distant markets based on home market conditions. Instead reflecting either portfolio management or just the flow of capital to areas of greater demand, they should increase lending in more active markets. Our test is whether conditions in a lender’s home corporate office real estate market affects lender evaluation of loan quality in more geographically distant markets.² Explicitly, we determine if the lending volume and market share in Vancouver of lenders based outside of BC rose when the relative condition of their home real estate markets worsened.

The remainder of the paper is structured as follows. Section II provides a theoretical framework with references to the existing literature. The data are described in Section III, and the empirical analysis follows in Section IV. We conclude with a brief outline of future research in the conclusion in Section V.

¹ Relationship lending is where relevant measures of borrower risk are only observable through personal contact. This is in contrast to automated credit score based lending.

² This is an explicit test of the complaints made by BC developers in the early 1990's that Central Canada based lenders did not lend to viable projects in BC because Ontario and Quebec real estate markets were in such poor shape.

II. Framework for Analysis

In perfect markets, capital flows both within and outside the firm to equalize risk-adjusted returns across markets. Even though capital markets are closer to the perfect market ideal than are markets for other goods and assets, the presence of lender-level organizational rules and conduct and the existence of economies of scale and scope along with possible transaction specific assets in lending relationships can create frictions in the flow of capital. If these effects are specific to any given lender type, vary with firm size, or have a geographic components, we would expect to observe systematic differences in lending policies by lender type, size, and distance between the home-office and the market in question.

Our first prediction is that smaller lenders will concentrate on to relationship lending. The banking literature identifies “relationship” lending as when the borrower and market are “informationally opaque,” so that the lender must have first-hand knowledge of both the firm and local market to price its risk. We would except this type of lending to be without the scale economies that favor larger financial firms.³ Williamsonian organizational diseconomies can lead larger lending organizations to concentrate in certain types of financial activities. As well, we expect larger financial firms to focus on activities such as activities such as trading, international banking, and credit card services that have greater economies of scope or scale. Smaller firms, then, should have a comparative advantage and a greater presence in those areas

³See Ang (1992) for a theoretical motivation for relationship lending in the case of private firms, where asymmetric information problems may be more acute. Empirical analysis by Berger and Udell (1995), Blackwell and Winters (1997), Cole (1998), and Houston and James (1998) all show that it is smaller lenders who engage on relationship lending with small borrowers.

where the bigger lenders cannot leverage their size into operational advantages. Relationship lending is such an area.

Relationship lending is relevant because it describes much of real estate development finance. While no direct contact is necessary to get details on general market conditions or to evaluate the reported financial details of a project, avoiding problematic loans and successfully managing loans for projects that do encounter problems depends on an intimate understanding of the developer's ability to manage projects and micro-market details that are at the core of relationship lending. We expect that smaller developers, smaller projects, and more atypical projects will be financed by smaller, local lenders who have a comparative advantage in relationship lending.

The second broad area of investigation is whether lender headquarter - home market - location affects lending policies. Economic conditions in a lender's home market might influence lending behavior elsewhere in a number of different ways. First, if the lender's home market is their primary market, a reduction in bank capital or increase in reserves for troubled loans should reduce all lending. Second, loan officers might subjectively evaluate applications based on those conditions most familiar to them, i.e. home market conditions.⁴ This paper focuses on determining the validity of this second aspect. One argument for this is myopia. If the real estate market outside the loan officer's window is in a downturn, then the officer is more likely to believe this will happen elsewhere. A more theoretically sound argument relies on loss aversion.⁵ If the lender is already experiencing an increase in troubled real estate loans, then the

⁴Loans above a certain size, which varies over time and by lender, require approval from review boards at the lender's corporate headquarters.

⁵There is a developing theoretical (Rabin and Thaler 2001) and empirical (Genesove and Mayer 1997, 2001) literature on loss aversion.

loan officer may be more cautious for any given loan, even if the expected outcome is unchanged, because of the greater negative weight assigned to problem loans. The alternative, which is the null hypothesis here, is that lenders reallocate loans in their portfolio by expanding lending in more active and profitable real estate markets relative to their lending activity in less active ones.

This paper draws and builds on a number of different literatures because there is no academic literature on real estate construction and development lending. Searching for differences in loans for real estate development between the local and national banks actively lending in this area in British Columbia involves two separate aspects. The first is size differences, the largest local bank, Hong Kong Bank of Canada (now HSBC), has less than a tenth the total assets of the largest national bank, Royal Bank. The second is location itself, as identified by the location of the lender's headquarters. The more general banking literature does look at aspects of these issues.

There is a large body of work using U.S. data that examines differences between lending behavior of large and small banks. Berger, et al (1995), Berger and Udall (1995), and Keeton (1995), among others draw the clear link between bank size and differences in lending to small businesses. Peek and Rosengren (1998), though, argue that these observed patterns do not matter for the supply of credit. While, the aggregate impact on debt market equilibrium is still unclear, we do expect systematic variation in loan characteristics to reflect differences in underwriting policies.

The second hypothesis we explore in this paper is whether real estate market conditions in a lender's home market affects their lending decisions elsewhere. Berger and DeYoung (forthcoming) find mixed evidence for a relationship between distance between home and branch offices and bank efficiency. In general, cost and profit efficiency decline only marginally with

distance. However, the decline is most acute, i.e. distance matters the most, for smaller banks more likely to be involved in relationship lending. By extension, we can argue that even in large banks their activities most likely to be relationship lending oriented, which would include types of real estate development lending, would be the activities where distance would have an effect on their ability to evaluate and price loan risks. A related literature is that which tests the elasticity of the loan supply curve for real estate by examining whether bank systems shocks affect lending behavior. This is relevant, because finding differences by lender location or lender type will only have real effects if the supply curve is not perfectly elastic.

The work on bank shocks finds there are real effects. Hancock and Wilcox (1997) show that negative shocks to bank capital and deposits reduce residential construction in the affected U.S. states, though they do not fully control for endogeneity between the two. Peek and Rosengren (2000) use data on U.S. lending decisions of Japanese banks to isolate the effects of an exogenous bank system shock. They compare commercial real estate loans (loans for the acquisition of existing hotel, industrial, office, resort, and retail properties) in different US states depending on the degree of penetration by Japanese lenders. They find that total commercial real estate loans in a state fell more following the declines in bank capital in Japan, which they show in their 1997 paper led to reduced lending, in those states with a greater Japanese bank presence. This provides evidence that the supply of loans to real estate is not perfectly elastic.

III. Data

This paper uses a unique set of data of construction loans for new strata (condominium) buildings built in the Lower Mainland of British Columbia (approximately the Vancouver CMA) between 1985 and 1998. Most are mortgages, though some are debentures or other types of debt.

All are liens against the titles and are registered with the British Columbia Land Title Office (LTO). Our criteria for inclusion is that they be registered on the property's first strata title at the time the this title was created.⁶ Exclusion of projects with fewer than four units and those for which we were unable to obtain more detailed loan information, leaves us with a data set of 1,038 first or senior mortgages and 328 junior mortgages. The distribution of mortgages by year and seniority is shown in Table 1. By year, lending has two peaks, one in 1990, the end of the post-Expo boom, and then the mid-1990's as part of the wave of immigration to Vancouver from Asia, and in particular pre-handover Hong Kong.

We collected loan details such as lender name, interest rate charged, and some of the terms from inspections of each mortgage document on file with either the LTO or the British Columbia Registrar of Corporations.⁷ Spreads for fixed rate mortgages were calculated as the difference between prime and the contract rate at the time of issue. The spread may be a misleading measure of the cost of capital, particularly for junior loans that have large fees or provide lenders with a share of project profits. Unfortunately there is no reporting requirement for these details. Consequently, we cannot fully measure the cost of capital for all loans. A further challenge in the data is to calculate borrower size. Our count is imprecise because we only have data on projects in the Lower Mainland and some builders are active elsewhere. More critically, and almost uniformly, real estate developers create stand-alone, often numbered,

⁶This occurs during the construction period, near completion. The strata titles create the private undivided ownership of a unit in the project with the share of ownership of the land and public space. Strata title legislation was first enacted in British Columbia in September 1966 and the first units under this legal form were built in 1968. Over 95 percent of strata projects are residential. For a further discussion see Hamilton (1978).

⁷We have no details on pre-sales. This should not be a problem as British Columbia law requires that pre-sales monies be placed in escrow, rather than used as a source of financing. As well, lenders require pre-sales to issue loans, but there is no casual evidence that their presence affects spreads.

Table 1 Chronology of Loans

	Total		% Senior
	Count	%	
1985	34	2.6	64.7
1986	78	5.9	75.6
1987	94	7.1	70.2
1988	103	7.8	77.7
1989	117	8.8	71.8
1990	133	10.1	76.7
1991	36	2.7	75.0
1992	29	2.2	72.4
1993	65	4.9	67.7
1994	159	12.0	75.5
1995	209	15.8	72.2
1996	141	10.7	80.1
1997	125	9.4	88.0
1998	43	3.3	90.7

corporations for each project, so that we cannot define firms by the name listed in our data. We collected the name of the president of each corporation and use this to define a builder's size as the number of projects for which he or she was the corporate president.⁸

In Table 2 we present select descriptive statistics for distinct classes of lenders. These figures show clear mean differences across lenders. For instance, Schedule I banks make larger loans, for larger projects, typically to more experienced builders.⁹ Oddly, their spreads are higher too. In contrast, credit unions lend to less experienced builders for smaller projects, and are notably more likely to extend a loan to someone new to building in the Lower Mainland. Lender type is also quite closely related to size and home market location. Loans made by credit unions and the private lenders are overwhelmingly from BC based institutions, and because of HSBC the same is true for foreign subsidiaries. Schedule I banks, trust and insurance companies are on average much larger than the other lenders and almost exclusively headquartered out of province. As a result, in comparing the loan characteristics by lender type we will effectively be revealing information about the relationship between loan characteristics and both lender size and home office location. Unfortunately, the high degree of collinearity means that conditional tests are not possible and that we will have to make some inferences by visual inspection of the results.

We create a panel of lender aggregate annual loan information to test for the relationship between home real estate market conditions and lending in more distant markets.¹⁰ This panel is

⁸The existence of firms with multiple presidents will yield downward bias in our estimate of borrower size, nearly all developers are entrepreneurial so the likely effect is small.

⁹ The eight Schedule I banks must be widely held, with no single shareholder or group of shareholders holding more than 10 per cent of any class of shares. The 5 domestic and 34 foreign bank subsidiary Schedule II banks can be owned by eligible Canadian or foreign financial institutions.

¹⁰Market conditions are measured by house prices and residential construction permits. House price indexes are constructed from Royal LePage survey data. See Somerville (2001) for more detail.

Table 2: Descriptive Statistics - Individual Loan Data

By Lender Type

	Schedule I Bank	Trust Company	Credit Union	Insurance Co.	Lender w/ Foreign- Parent	Private Lender
Number of Loans	364	253	181	124	211	233
Share of All Loans	26.6%	18.5%	13.3%	9.1%	15.4%	17.1%
Avg. % Senior	80.5%	79.8%	80.6%	74.2%	83.4%	55.4%
Avg. Mortg Size	\$4,684,429	\$3,084,103	\$1,907,485	\$3,549,044	\$6,293,820	\$2,591,530
Avg. Spread Over Prime	2.36	1.57	1.68	1.77	2.06	3.59
BC Based Lender	1.1%	13.8%	100.0%	10.4%	72.5%	91.8%
Project Size	49.8	35.8	25.3	42.7	62.2	49.1
Borrower- Total Projects	9.8	7.9	5.0	8.1	6.0	8.5
Borrower's First Loan From Lender	68.4%	72.7%	72.9%	71.8%	67.3%	56.2%
Borrower's First Loan (All Institutions)	37.9%	39.5%	49.7%	25.8%	41.2%	21.9%
Avg Lender Assets (\$000000)	\$124,789	\$19,896	\$725	\$50,374	\$17,449	Not Avail

Notes:

Data on assets are not available for all lenders. We have the information for 99% of the loans from schedule I banks, 62% from trust companies, 64% from credit unions, 77% from insurance companies, 69% from lenders with foreign parents, and none of the private mortgage lenders.

limited to the 51 lenders who made at least ten loans over the period. The observations are loans by lender by year. The panel is unbalanced as some lenders went out of business while others were acquired. When possible we include annual lender financial details on assets, income, and loan losses to control for aggregate financial effects such as shocks to bank capital. The absence of financial data for smaller public and all private lenders limits the effective size of the panel. The descriptive statistics for this panel are presented in Tables 3A and 3B.

A striking aspect of the lender data is the variation in the variables across lenders. In all cases in Table 3A the standard deviation exceeds the mean and the range between minimum and maximum is large relative to the size of the mean. Much of this reflects the presence of the largest national lenders in this market, which dominate all other lenders in measures related to firm size. This effect is clear when we look at characteristics by home province in Table 3B. Eighty percent of principal lenders are headquartered in British Columbia and Ontario. The large Schedule I lenders are concentrated in Ontario and Quebec, giving lenders from these provinces dramatically higher mean firm size and larger annual lending volumes. The large trusts and insurance companies have a similar geographic distribution. The included credit union lenders are wholly from British Columbia and the private lenders are also principally local.

IV. Empirical Results

We address the two hypotheses in distinct sets of regressions. The first hypothesis is that for real estate development loans, smaller, local lenders will specialize in loans to borrowers most likely to depend on relationship lending. The empirical analysis examines the relationship between lender type and loan characteristics, borrower type, and real estate market conditions. The objective is to determine if there are systematic differences in these measures by lender type

Table 3A Descriptive Statistics
Lender Panel

	Number of Observations	Mean	Standard Deviation	Minimum	Maximum
Share of first mortgages	634	1.1%	1.9%	0.0%	14.6%
Share of all mortgages	634	1.2%	1.9%	0.0%	14.2%
Number of first mortgages	634	2.0	3.6	-	38.0
Number of all mortgages	634	2.9	4.9	-	49.0
Total assets (\$millions)	398	27,242	47,171	20	244,774
Net Income (\$millions)	392	293	569	(645)	2,889
Losses on all loans (\$millions)	297	106	242	(25)	2,050

Table 3B - Lender Descriptive Statistics by Home Province
Lender Panel

	Alberta	British Columbia	Manitoba	Nova Scotia	Ontario	Quebec	Sask.	TOTAL
Schedule I Bank	1	1			4	2		8
Schedule II Bank		1						1
Foreign Bank		2			1			3
Credit Union		7						7
Trust Company	1	4	1	1	10	1	1	19
Insurance Company		1			5			6
Private Lender		4			1	1		6
Government		1						1
TOTAL	2	21	1	1	21	4	1	51
Average number of loans (annual)	2.08	2.41	0.15	0.08	3.50	4.33	0.77	1.98
Average number of first loans (annual)	1.04	1.69	0.15	0.08	2.54	3.23	0.23	2.85
Average total assets (\$million) (Annual)	1,110	1,731	1,910	2,420	51,800	42,900	926	27,242

or home office location. Unfortunately, the small amount of within type variance in these two measures, for instance all credit unions are BC based and all are relatively small, force the treatment here to be of a descriptive nature rather than allowing for an explicit test of the above hypothesis. The second hypothesis is that lenders do not evaluate real estate market conditions, and thus risk, based on conditions in their home real estate market, but rather allocate capital across the markets efficiently, contingent on the total amount available for lending. This hypothesis we are able to test explicitly using the lender panel data. Our approach is to identify the conditional effects of home and lending real estate market conditions on both lending volume and market share in the target market.

A. Loan Characteristics and Lender Type

In Table 4 we present the results of a multinomial regressions for the allocation of loans to lenders. We choose this approach because the high degree of collinearity between size and home office location with certain types of lenders means that in a binomial discrete choice specification we cannot include the necessary lender fixed effects. The left hand side variable is a discrete variable indicating the type of lender, with categories for Schedule I banks, trust companies, credit unions, insurance companies, lenders with foreign parents, and private mortgage lenders. The regressions include a time trend measure, as this performs better than do year dummies with no effects on the other coefficient estimates.

We regress this discrete choice variable against measures of loans characteristics, borrower type, and market conditions. The formal specification is as follows for our $k=1$ to 6 discrete groups:

Table 4 - Multinomial Logit Lender/Loan Selection Model

Estimated Coefficients Describe Effect on Probability Relative to that for Schedule I Bank

	Trust Co.		Credit Unions		Insurance Co.		Foreign Owned Banks		Private Mortg. Lenders	
	(a)	(b)	(a)	(b)	(a)	(b)	(a)	(b)	(a)	(b)
Senior Mortgage	0.0169 (0.2232)	0.0674 (0.2221)	-0.0912 (0.2527)	-0.0950 (0.2511)	-0.1544 (0.2625)	-0.0949 (0.2613)	0.2483 (0.2421)	0.2191 (0.2394)	-0.9930 *** (0.2055)	-0.9266 *** (0.2033)
Spread Over Prime	-0.0864 ** (0.0347)	-0.0844 ** (0.0343)	-0.0674 * (0.0390)	-0.0688 * (0.0392)	-0.0395 (0.0388)	-0.0371 (0.0384)	-0.0040 (0.0272)	-0.0052 (0.0269)	0.0712 *** (0.0228)	0.0723 *** (0.0226)
Mortgage Amount (Real \$)	-5.92E-09 (2.07E-08)	-3.96E-09 (2.05E-08)	-9.65E-08 ** (4.24E-08)	-9.91E-08 ** (4.29E-08)	-1.95E-08 (2.52E-08)	-1.67E-08 (2.48E-08)	2.68E-08 * (1.49E-08)	2.67E-08 * (1.49E-08)	-1.13E-07 *** (2.69E-08)	-1.10E-07 *** (2.72E-08)
No. of Units in Development	-0.0021 (0.0025)	-0.0025 (0.0025)	-0.0146 *** (0.0045)	-0.0147 *** (0.0045)	0.0012 (0.0026)	0.0009 (0.0026)	0.0030 * (0.0018)	0.0029 (0.0018)	0.0039 ** (0.0019)	0.0034 * (0.0019)
No. of Projects by Borrower	-0.0077 (0.0081)	-0.0073 (0.0080)	-0.0239 * (0.0126)	-0.0236 * (0.0125)	-0.0191 * (0.0103)	-0.0192 * (0.0103)	-0.0377 *** (0.0099)	-0.0381 *** (0.0099)	-0.0180 ** (0.0084)	-0.0172 ** (0.0084)
Prime Rate	0.0217 (0.0516)	-0.0367 (0.0424)	-0.1275 ** (0.0590)	-0.1245 ** (0.0509)	0.1810 *** (0.0648)	0.1097 ** (0.0513)	0.1509 *** (0.0555)	0.1695 *** (0.0487)	0.0894 * (0.0544)	0.0085 (0.0459)
Real House Price	-0.0100 ** (0.0045)		0.0003 (0.0048)		-0.0114 ** (0.0057)		0.0023 (0.0045)		-0.0126 *** (0.0046)	
Real Estate Sold (Units)	0.00020 (0.00022)		-0.00057 * (0.00029)		0.00028 (0.00028)		0.00006 (0.00026)		-0.00001 (0.00024)	
Borrower's First Loan from Lender	0.0611 (0.2167)	0.0394 (0.2156)	-0.3458 (0.2467)	-0.3396 (0.2465)	0.2197 (0.2618)	0.1999 (0.2604)	-0.2867 (0.2271)	-0.3131 (0.2265)	-0.5008 ** (0.2124)	-0.5131 ** (0.2112)
Borrower's First Loan (All Lenders)	-0.3994 * (0.2180)	-0.3686 * (0.2169)	-0.0175 (0.2427)	-0.0309 (0.2410)	-1.0660 *** (0.2795)	-1.0353 *** (0.2788)	0.0530 (0.2271)	0.0561 (0.2261)	-0.7042 *** (0.2398)	-0.6705 *** (0.2384)
Trend	0.0265 (0.1001)	-0.1843 *** (0.0332)	-0.0807 (0.1076)	-0.0610 (0.0383)	0.1907 (0.1280)	-0.0550 (0.0433)	0.1000 (0.1025)	0.1398 *** (0.0446)	0.1921 * (0.1022)	-0.0706 * (0.0360)
Constant	3.2431 *** (0.8745)	2.4290 *** (0.7264)	3.1466 *** (1.0228)	2.5248 *** (0.8562)	0.3388 (1.0954)	-0.4464 (0.8990)	-3.5230 *** (1.1690)	-3.0150 *** (0.9136)	3.4619 *** (0.9317)	2.2199 *** (0.7652)
Number of Obs	1,366	1,368								
Log Likelihood	-2,136.85	2,153.19								
Pseudo R2	0.101	0.096								

Notes:

All regressions include monthly fixed effects

$$\Pr(i \in k) = \frac{e^{X\beta_k}}{\sum_{k=1}^6 e^{X\beta_k}} \quad (1)$$

Equation (1) is unidentified unless we set $e^{X\beta_1} = 1$. The estimated coefficients describe the odds ratio, the ratio of the probability that i *Ok* ($k \neq 1$) relative to the probability that i *Ol*, where 1 is the base category. Explicitly:

$$\frac{\Pr(i \in 2)}{\Pr(i \in 1)} = \frac{e^{X\beta_2}}{1 + \sum_{k=2}^6 e^{X\beta_k}} \bigg/ \frac{1}{1 + \sum_{k=2}^6 e^{X\beta_k}} = e^{X\beta_2} \quad (2)$$

In our results this base is that the loan is made by a Schedule I bank. Note that the estimated coefficients are not the marginal relative probability, which is $e^{X\beta}$.

The results in Table 4 do indicate some clear differences across lenders in the types of loans they make and who their borrowers are. First, controlling for loan size, seniority, and borrower type, relative to loans from Schedule I banks, those from trust companies and credit unions are likely to be cheaper, while private mortgage lenders charge higher rates. The larger a loan, the more likely it is from a Schedule I bank, as the relative probabilities for other lender types falls with loan size. A loan to a more experienced borrowers, as defined by the number of projects they've built, is more likely to be from a Schedule I bank. A first-time borrower has a greater relative probability of borrowing from a Schedule I bank. Finally, a loan made when real

estate transactions or prices are high, based only on those estimated coefficients that are statistically different from zero, is more likely to be from a Schedule I bank. This suggests that they are more aggressive in lending when markets are active.

The results in Table 4 are generally supportive of the hypothesis on relationship lending. The problem is that the precise link is hazy. For instance, local lenders do lend to smaller builders and smaller projects, but a large project may or may not require more relationship based analysis depending on elements of the project we do not observe. Less experienced developers, those with fewer projects and thus without a clear track record, will require a more relationship type approach to evaluating credit risk. However, first-time borrowers have no contact with a lender upon which to base a relationship. This may explain why those lenders we identify as relationship lenders are less likely to extend credit to first-time borrowers relative to the big Schedule I banks. To offset the greater uncertainty associated with a loan to a first time borrower, these developers must come to the larger banks with some combination of greater equity and better collateral. In the aggregate, the results in table 4 are quite suggestive of clear differences across lenders in both loan and borrower characteristics. The pattern is supportive of the hypothesis that smaller, local lenders to engage in more relationship-based lending for real estate development relative to those loans made by the large national Schedule I banks.

B. Home Market Myopia

The approach used here to test whether office real estate development market conditions affects real estate development lending elsewhere is to look at the effects of housing market conditions in a lender's home market on real estate lender share and volume in a target market using the lender panel data set. If lenders evaluate the riskiness of loans to other locales based on

experiences in their home housing market, then loan volume and share in the distant market will be positively correlated with conditions in the lender's home housing market. To control for the impact of negative banking shocks on lending that are correlated or endogenous with conditions in the home housing market, we include measures of lender financial health. Our basic specification uses lender fixed effects, though we also test for home province fixed effects. Lender dummies are excluded when we use provincial fixed effects because they are co-linear.

Table 5 presents the estimates of the annual loan volume for all loans. For robustness we test across different measures of housing market conditions and different specifications. The loan volume for a given lender in a given year between 1985 and 1997 is zero in approximately half of the observations.¹¹ We run both GLS, weighting by total lending, and a left censored Tobit specification.¹² The Tobit regressions do not converge with lender fixed effects, so we present the GLS regressions for both lender and province fixed effects. Our results are extremely robust across specifications, indicating that there is no sample selection or censoring effect from the lenders with no loans in a given year.

Uniformly, the number of senior loans made in the Lower Mainland falls as activity in a lender's home housing market rises. This holds for both permits and prices, though the elasticity for prices is about twice that of permits. Across specifications, the coefficient on home market price level are all within one standard deviation of each other and we cannot reject the hypothesis that volume is unit elastic. As one might expect, lending activity rises with BC housing market

¹¹If the lender has gone out of business or been purchased, and absorbed, by another firm the observation is missing and not zero.

¹² The Tobit specification better describes the lending process as zero loans can reflect a desire to have negative loans (asset sales). The data reject the Heckman specification: the coefficient on the inverse Mills ratio is not statistically different from zero, and the coefficient point estimates are similar to those from GLS and the Tobit.

Table 5 - Determinants of Lending Volume: Lender Panel

Dependent Variable: Number of All Loans (First to Fourth mortgages)

	(1)	(2)	(3)	(4)	(5)	(6)
Total Assets	0.404 *** (0.142)	0.042 (0.214)	0.260 *** (0.060)	0.234 *** (0.067)	0.361 *** (0.090)	0.312 *** (0.090)
Loan Losses	-0.089 * (0.052)	-0.071 (0.048)	-0.045 (0.045)	-0.046 (0.050)	-0.078 (0.069)	-0.045 (0.067)
Home Market Construction Permits	-0.565 *** (0.168)				-0.543 ** (0.228)	
B.C. Construction Permits	0.444 * (0.242)				0.334 (0.377)	
Home Market Price Index Level		-0.737 ** (0.297)	-0.630 ** (0.293)	-0.687 ** (0.320)		-0.626 (0.436)
B.C. Price Index Level		1.359 *** (0.356)	0.606 *** (0.220)	0.549 ** (0.244)		0.778 ** (0.329)
Constant	-5.021 (4.128)	-3.282 (3.534)	-3.410 ** (1.659)	-2.119 (1.841)	-3.292 (4.446)	-5.770 ** (2.498)
Regression Type	GLS	GLS	GLS	GLS	Tobit	Tobit
Fixed Effects	Firm	Firm	Province	Province	Province	Province
N	251	251	251	181	251	251
R ²	52.7%	53.6%	38.1%	33.7%	17.2%	17.2%
Log likelihood					-278.915	-278.958

Notes:

(1) All continuous variables in natural logarithm form.

(2) Provincial fixed effects are for lender's home province.

(3) Regression 4 omits observations where the dependent variable is zero.

(4) "****" indicates estimated coef. is statistically different from 0 @ 1% level, "***" @ 5% level, "**" @ 10% level.

conditions, though there is not a consistent point estimate or magnitude relative to the home market coefficient. As expected, volume rises with bank assets and falls with set asides for bad loans. However, the point estimate for the latter is only marginally statistically different than zero.

In Table 6 we look at the effect of market conditions and lender health on market share. To calculate shares we divide lender volume, the dependent variable in Table 5 with total lending development. Total loan activity is highly correlated with housing market activity, so BC housing permits are excluded from the regressions. Again we obtain remarkably robust results. Share of construction and development mortgages issued in BC falls as a lender's home market improves. The point estimates for home market price movements across regressions are again fairly close, though not as evenly distributed as in the loan volume regression in Table 5. Share rises with a lender's assets. It is somewhat surprising, however, that the coefficient on set asides for loan losses is not statistically different from zero in these regressions.

These results make a strong and very persuasive case that lenders neither behaved myopically nor dramatically altered their risk or loss aversion in response to downturns in the home office housing market. A downturn in a lender's home market does not result in a drop in lending elsewhere. Instead, holding housing market conditions in the target market constant, lending outside the home market rises in response to a downturn at home. This is consistent with the argument that capital flows efficiently within a firm and with models of loan portfolio allocation. Similarly, holding home market conditions constant, lending for projects in an outside real estate market rises with conditions in that market. These results clearly support the hypothesis that lending patterns follow relative market conditions in the target market. This behavior is consistent with both a portfolio approach and the flow of funds to areas of greater

Table 6 - Determinants of Market Share: Lender Panel
Dependent Variable: Share of Mortgages

	(1)	(2)	(3)	(4)	(5)	(6)
<i>Loans included in dependent variable</i>	<i>Senior</i>	<i>Senior</i>	<i>Senior</i>	<i>All</i>	<i>All</i>	<i>Senior</i>
Total Assets	0.584 *** (0.169)	0.696 *** (0.265)	0.319 *** (0.077)	0.296 *** (0.072)	0.340 *** (0.093)	0.379 *** (0.108)
Loan Losses	-0.005 (0.060)	-0.002 (0.060)	-0.054 (0.058)	-0.049 (0.054)	-0.060 (0.070)	-0.067 (0.080)
Home Market Construction Permits	-0.384 * (0.199)					
B.C. Construction Permits						
Home Market Price Index Level		-1.020 *** (0.367)	-1.133 *** (0.378)	-0.822 ** (0.354)	-0.791 * (0.454)	-1.170 ** (0.523)
B.C. Price Index Level		0.340 (0.440)	0.313 (0.284)	0.325 (0.266)	0.396 (0.342)	0.402 (0.394)
Constant	-7.714 (4.967)	-11.256 ** (4.370)	1.105 (2.144)	-0.174 (2.008)	-1.616 (2.581)	-0.445 (2.975)
Regression Type	GLS	GLS	GLS	GLS	Tobit	Tobit
Fixed Effects	Firm	Firm	Province	Province	Province	Province
N	251	251	251	251	251	251
R ²	56.4%	57.0%	37.3%	35.3%	13.7%	13.9%
Log likelihood					-338.050	-342.817

Notes:

(1) All continuous variables in natural logarithm form.

(2) Provincial fixed effects are for lender's home province.

(3) "****" indicates estimated coef. is statistically different from 0 @ 1% level, "***" @ 5% level, "**" @ 10% level.

demand. We cannot with these data distinguish between them.

V. Conclusion

In this paper we find clear evidence on two aspects of the distinctions between local and national lenders in real estate lending. First, the characteristics of loans made by smaller, local institutions differ markedly from those from larger firms with headquarters and primary markets out of province. Local lenders are more likely to extend credit to smaller, more marginal borrowers. This suggests that changes in banking regulations that increase the relative strength of larger national lenders may have negative effects on certain classes of borrowers. The second effect is that lenders allocate capital within the firm to more attractive markets. Controlling for housing market conditions in British Columbia, as market conditions in the lenders' home market worsen, they increase both their volume and share of development loans in Vancouver, rather than lowering lending activity.

These data and results suggest a number of possible avenues of future research. One would be to use these data to look at credit rationing by identifying which types of builders lose out when markets contract and whether lenders reduce all lending or only lending to new borrowers during periods of market contraction. A second topic is to determine whether access to capital has real effects on market outcomes. These loan data could be combined with information on the timing and prices of unit sales within the buildings to investigate the effect of access to capital on builder sales strategies.

Bibliography

Ang, J. On the Theory of Finance for Privately Held Firms. *Journal of Small Business Finance*. 1, 1992, 185-203.

Berger, Allen N. and Robert DeYoung. The Effects of Geographic Expansion on Bank Efficiency. *Journal of Financial Services Research*. Forthcoming 2003.

Berger, Allen N., Kashyap, A.K., and Gregory F. Udell. The Transformation of the US Banking Industry: What a Long, Strange Trip it's Been. *Brookings Papers on Economic Activity*. 2, 1995, 55-218.

Berger, Allen N. and Gregory F. Udell. Relationship Lending and Lines of Credit in small Firm Finance. *Journal of Business*. 68, 1995, 351-382.

Blackwell, D., and D. Winters. Banking Relationships and the Effect of Monitoring of Loan Pricing. *Journal of Financial Research*. 20, 1997, 275-289.

Cole, R. The Importance of Relationships to the Availability of Credit. *Journal of Banking and Finance*. 22, 1998.

Genesove, David and Chris Mayer. Equity and Time to Sale in the Real Estate Market. *American Economic Review*. 87 (3), 1997, 255-269.

_____. Loss Aversion and Seller Behaviour: Evidence From the Housing Market. *Quarterly Journal of Economics*. 116(4), 2001, 1233-60.

Hamilton, Stanley W. *Condominiums: a Decade of Experience in B.C.* Vancouver: The British Columbia Real Estate Association, 1978.

Hancock, Diane and James A. Wilcox. Bank capital, Nonbank Finance, and Real Estate Activity. *Journal of Housing Research*. 8 (1), 1997, 75-105.

Houston, J, and C. James. Do Bank Internal Capital Markets Promote Lending? *Journal of Banking and Finance*. 22, 1998.

Keeton, W.R.. Multi-Office Bank Lending to Small Businesses: Some New Evidence. Federal Reserve Bank of Kansas City Economic Review. 2nd Quarter, 1995, 45-57.

Peek, Joe and Eric S. Rosengren. The International Transmission of Financial Shocks: The Case of Japan. *American Economic Review*. 87 (4), 1997, 495-505.

_____. Collateral Damage: Effects of the Japanese Bank Crisis on Real Activity in

the United States. *American Economic Review*. 90 (1), 2000, 30-45.

Rabin, Matthew; and Richard Thaler. Anomalies: Risk Aversion. *Journal of Economic Perspectives*. 15(1), 2001, pp. 219-32.

Somerville, C. Tsurriel. 2001. Permits, Starts, and Completions: Structural Relationships vs Real Options. *Real Estate Economics*. 29 (1), 2001.