

Fund Flows and Commercial Real Estate Investment: Evidence from the Commercial Mortgage Market

Authors

Ron Donohue and Patric H. Hendershott

Abstract

This paper addresses the issue of the impact of fund flows on real investment. In the classical world, fund flows affect investment by changing the cost of funds or through the weighted average cost of capital. In a less perfect world, fund flows can directly alter investment through a rationing mechanism, where even presumably profitable investment is choked off.

This paper examines the commercial mortgage market over the last quarter century. The findings indicate an effect of constrained flows on investment in the early 1990s, but an independent impact of higher flows to the commercial mortgage market in the middle 1980s is not found.

Periodically concerns arise that commercial real estate activity is being choked off by a shortage of financial capital (Mejia, 1999). At other times, too much financial capital is alleged to cause overbuilding (Hendershott and Kane, 1992; and Giliberto, 1992). This paper analyzes the commercial mortgage market over the last quarter century to determine periods of credit crunches or credit gluts.

Commercial real estate is one of many real investments in the economy. And this investment is undertaken by a number of different types of business entities that are funded by a wide range of financial institutions, who themselves obtain funding from savers. Thus, understanding the funding of commercial real estate investment requires examination of the financial behaviors of many economic sectors. Presenting a broad framework for understanding the interactions of these behaviors and the funding of commercial real estate investment is the place to start. The U.S. flow of funds accounts constitutes the framework.

Under what circumstances do security flows determine (affect) the volume of commercial real estate investment? In general, the supply of funds can have an independent impact on commercial real estate investment only when “disturbances” emanate from the financial system or within the funds flows matrix. Such disturbances begin by affecting the distribution of saving and the

portfolio decisions of financial institutions and then spill over onto real investment decisions. The different financial intermediaries [*e.g.*, banks, thrifts, real estate investment trusts (REITs), insurance companies, etc.] have different proclivities to invest in commercial real estate either directly or indirectly; thus shocks that alter the distribution of funds among the intermediaries or the allocation of investments of the intermediaries will affect the financing of real estate unless the total supply of funds is completely elastic. Thus, the paper considers factors affecting the demands for commercial real estate equity and debt instruments.

The major debt vehicle for financing commercial real estate is commercial mortgages. Clayton (2003) suggests that increases in net commercial mortgage issues lead to greater commercial property returns (as measured by the NCREIF Commercial Property Index), which presumably triggers greater commercial real estate investment. Thus, the paper analyzes sectoral issues and purchases of commercial mortgages over the last quarter century. The paper concludes with a brief summary and some thoughts on future work in this area.

The Flow of Funds Matrix and Commercial Real Estate Investment

The flow of funds in an economy can be viewed as a pipe system with water (saving) flowing in one end and out the other (as nonfinancial investment). Exhibit 1 pictures such a system, where the left inflow represents saving in the economy and the right outflow represents investment in real assets (nonfinancial capital). Because changes in inventories are defined as investment/disinvestment, the saving and investment flows are equal; an unanticipated increase/decrease in saving (decrease/increase in consumption) increases/decreases inventories equally.

Both investment and saving consist of a number of component parts. Total saving is portioned into household (or personal), business and government plus foreign (henceforth called “other”). In addition, three kinds of nonfinancial investment—household (owner-occupied housing and consumer durables), commercial real estate and other business (industrial plant and equipment and changes in inventories) are considered. In some cases, saving flows directly into nonfinancial investment. For example, households can channel funds directly into houses, and businesses can put retained earnings directly into plant and equipment (other structures and other business, respectively).

But most saving first flows into primary securities (stocks and bonds, broadly defined) and secondary securities (debt of financial intermediaries), and then is moved into real or nonfinancial investments. For simplicity, Exhibit 1 contains a single primary security market and only one financial intermediary class. Thus, saving flows either directly into nonfinancial investment, into primary securities, or to the financial intermediary. Of course, funds going to the intermediary then

Exhibit 1 | Flow of Funds

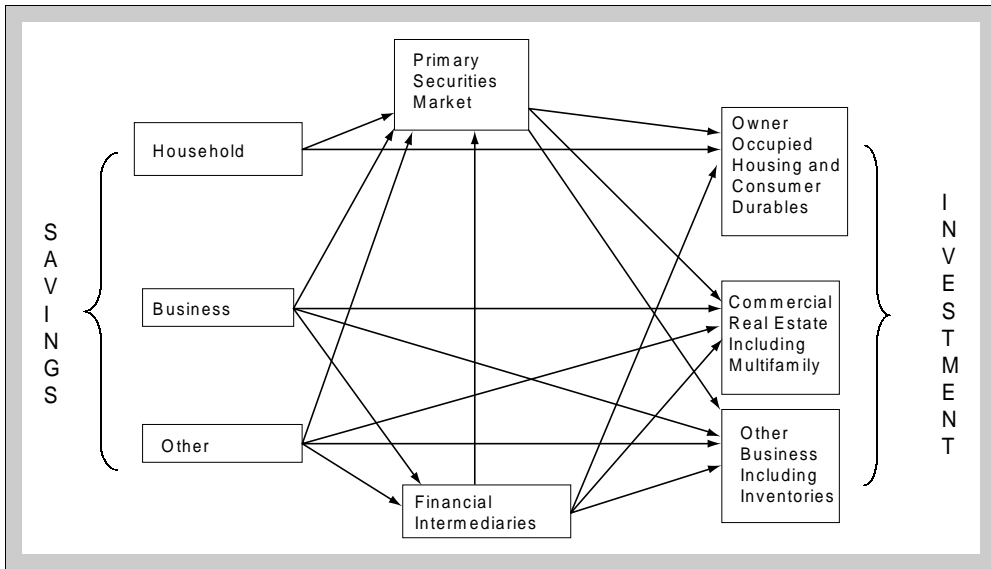


Exhibit 1 is a diagram of the flow of funds, with the left side representing saving in the economy, the middle representing instruments and intermediaries through which funds flow, and the right side representing investment in real assets.

flow into either nonfinancial investment or primary securities. In the end, all the saving channeled into primary securities or through the intermediary finances nonfinancial investment.¹

Just as saving equals investment, security purchases equal security issues. The arrows in Exhibit 1 from Household, Business and Other to Primary Securities and Financial Intermediaries are security purchases by the nonfinancial sectors. Purchases of the intermediary claims are, of course, matched by issues of the intermediaries. The primary security purchases are also matched by issues, in this case those of the Household, Business, Other and Financial Intermediary sectors. These issues are not shown in the exhibit.

The size of the fund that flows into a particular investment is more often determined by a pulling from the investment side than a pushing from saving. To illustrate, the most important determinant of the flow of funds into commercial real estate is surely the demand for commercial space. Increased demands for space will drive vacancy rates down and real rents and values up. As a result, developers will build (Brainard and Tobin, 1968; and Gentry and Mayer, 2002), and funds will be diverted from other uses (nonfinancial capital investments) to finance the development. In terms of Exhibit 1, changed space demands magically alter the composition of investment outlays on the left.

The composition of nonfinancial investment also depends on tax law and the perceived risk of the different types of investment. A significant input into the user cost of capital is the weighted (debt and equity) average cost of financing nonfinancial investments (WACC). This is the after-tax risk-free interest rate plus a risk premium. The higher the risk premium for a type of investment, the greater the WACC and thus the user cost, and therefore the smaller the fraction of total investment in this component. Put another way, the higher the risk premium for an investment, the higher is its cap rate and the lower are valuations and thus incentives to supply more of the component.

And taxes affect WACC of different types of investment differentially. For example, the returns (cash flow and capital gains) on owner-occupied housing (and consumer durables) are not taxed and home mortgage interest is largely deductible. As a result of this non-taxation, the user cost of capital (the annual rental cost) is lower for owner-occupied housing than other nonfinancial investments, thus getting more of the former and less of the latter, including commercial real estate. A large literature exists on the resultant over-investment in household capital relative to business or industrial capital (for early contributions; see Hendershott, 1983, and Hendershott and Hu, 1983). Another tax example is the extremely generous tax depreciation allowances that existed in the early 1980s and the meager allowances that existed after the 1986 tax reform act (Follain, Hendershott and Ling, 1987, 1992). As a result, the user cost for commercial real estate and other fixed business investment (but not inventories or household real capital) was first relatively low and then relatively high.

Determinants of Commercial Mortgage Portfolio Demands

Taxes can also affect the distribution of saving among financial intermediaries. For example, if household saving at banks directly lowered taxable income and if the return on this saving were exempt from taxation (*e.g.*, 401-type retirement plans), saving in this form would certainly increase relative to saving through other intermediaries or primary security markets. And if banks were more likely than other intermediaries to invest in commercial real estate, the flow of funds to it would increase. More fundamentally, the 1960 decision to exempt REITs from taxation at the firm level likely has affected both the distribution of saving and the share of nonfinancial investment in commercial real estate.

Risk premia for different nonfinancial investments can presumably change in fundamental ways over time as private markets develop or government regulation becomes more or less restrictive. The securitization of first residential and then commercial mortgages, and the changes in risk-based capital requirements of financial institutions in the early 1990s are likely illustrations.

Premia might also change over the business cycle owing to changes in business risks. For example, one might conjecture that the required equity risk premium

fell and rebounded in response to the boom and bust in the stock market since 1997, with offsetting shifts in the demand for real estate.

Different investor classes have different assessments of the risk premium for commercial real estate or securities issued to finance it. For example, a fully diversified investor will have a low risk premium because nonsystematic risk is not an issue, while a nondiversified investor will charge a premium for nonsystematic as well as systematic risk. Thus, the development of a diversified REIT sector could lower the risk premium on commercial real estate, increasing the flow of saving to it.

If a specific financial intermediary has a lower commercial real estate risk premium and this intermediary receives more/fewer funds, investment in commercial real estate will increase/decrease. Thus, the taxation/regulation of financial intermediaries, as well as of households supplying funds to intermediaries, matters. If taxation/regulation of an intermediary is lowered/loosened, then it will be able to attract a larger share of household saving. Again, if the intermediary has a relatively low/high commercial real estate risk premium, investment in commercial real estate will increase/decrease. As noted below, the 1982 expansion of thrift asset powers to allow investing in commercial mortgages and the increase in financial intermediary risk-based capital requirements for whole loans or mortgages in 1993 were important regulatory changes for commercial real estate.

Similarly, the efficiency of primary securities markets matters. If a primary securities market becomes more liquid (bid–ask spreads shrink), then more funds will flow directly to this market and less to other primary security markets or through intermediaries. And if the now more efficient primary market favors/disfavors commercial real estate, then investment in commercial real estate will rise/fall.

To summarize, the relative flow of funds to commercial real estate depends importantly on taxes, regulation and risk. Taxation of nonfinancial investment components, of household saving and of financial intermediaries all matter. Examples of important tax legislation in the last fifty years include the 1960 exemption of REITs from taxation at the firm level, the incredibly generous and then stingy tax depreciation allowances for structures in the 1980s and the general expansion of tax exempt retirement savings vehicles for households. Examples of potentially important changes in risk premia are harder to identify because these premia are not observed.

Documenting the impact of these factors on commercial real estate investment is a formidable task. The main difficulty is that other factors are likely far more important. To illustrate, say that one wished to identify the impact of home mortgage securitization on housing. One would effectively have to estimate what the increase in the housing stock would have been in the absence of securitization and then obtain the securitization impact by subtraction. This would entail

accounting for demographic changes over time, as well as changes in real income, in variables determining the user cost of capital (household marginal tax rates, expected house price appreciation, etc.).

And what about the impact of the REIT tax-exemption status? One would need estimates of the impact on the REIT industry's share of savings and of how much the increase in this share fuelled additional commercial real estate investment—most of the increase likely just replaced investment that would otherwise have been financed by some other sector.

Contrast these analyses with determining the impact of changes in tax depreciation allowances. Here all one needs to know is how the tax depreciation changes affected the user cost of capital for investment and how investment responds to such changes. This makes the point that the further the tax/regulatory intervention is away from the end nonfinancial investment, the more difficult it will be to identify the impact because more other factors will have to be accounted for.

Net Issues and Purchases of Commercial Mortgages

Exhibit 2 plots total commercial mortgage issues over the last quarter century, as well as those of nonfinancial corporate business, noncorporate business and REITs. Total issues equal the sum of those issued by these three sectors and nonprofit organizations.² As can be seen, total issues increased five-fold between the late 1970s and the late 1990s, about twice the increase in nominal GNP. However, the real growth occurred entirely in the early 1980s; the recent \$100 to \$120 billion

Exhibit 2 | Commercial Mortgage Issues

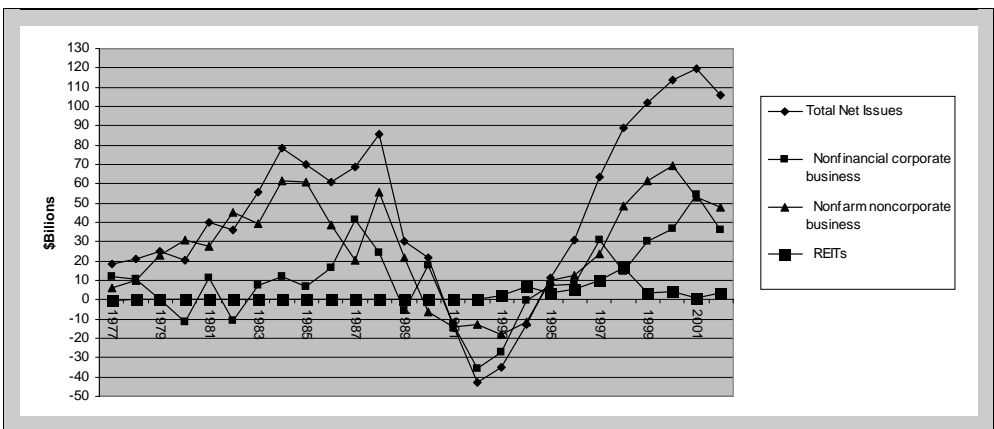


Exhibit 2 plots annual net commercial mortgage issues in billions of dollars. Total net issues are reported, along with three major classes of issuers. Data are drawn from the Federal Reserve Flow of Funds Accounts.

total annual issues are less in real terms than the \$60 to \$85 billion issues during the 1983–1988 period.

Historically, the major issuer has been the noncorporate business sector, and that sector fully accounted for the early tripling of the market. Corporate business issues are the most cyclical, being negative during the recession periods of 1980, 1982 and 1991–1993 (but not 2000). Except for these declines and large issues in the late 1980s, corporate issues have been in the \$5 to \$15 billion range until recent years. REITs were a negligible factor in the market until the second half of the 1990s.

The major questions here are the causes of the early 1980s surge in issues and, especially, the subsequent cycle in this market. Have issues simply reflected swings in the demand for real estate financing or have changes in the supply of funds sometimes driven the market? That is, have fund flows altered commercial real estate investment or have the flows simply been pulled along by the investment? To assist in this assessment, the annual average commercial mortgage issues and purchases during the 1977–2002 period have been computed for two to four year segments. These segments capture the major shifts in the market. Purchases are given for commercial banks, saving institutions, life insurance companies, asset-backed security issuers (ABSs) and all other. These data are shown in Exhibit 3.

As can be seen, purchases of all the major investors (except ABSs) plummeted in the early 1990s, although those of nonbank savings institutions (SAVs) fell first. SAV purchases were small (\$4 billion per year) during the 1977–1988 period except for a surge to \$16 billion during 1983–1985. In contrast, SAVs liquidated \$15 billion a year during the next six years. After purchasing \$35 billion commercial mortgages annually during the 1984–1990 period, commercial banks bought none during the 1991–1994 period. Life insurance companies (LICs) averaged annual purchases of \$17 billion a year during the 1985–1990 period, but liquidated \$11 billion a year during the 1991–1994 period and another \$5 billion annually during 1995–1996.³ The post–1994 data indicate that of these three sectors, only commercial banks have come back into the market in a significant way. Rather, the LICs and SAVs have been replaced by ABSs and greater bank purchases.

While examination of the security issues and purchases in the flow of funds accounts is certainly useful, and one obviously would not want to work in a framework where these adding up constraints or identities did not hold, the data have their limitations. In particular, if issues and purchases in a market increase, did greater demand or supply of the security cause the increase? Similarly, if investment in commercial real estate rises, what was the role played by real estate financing? Did easy financing encourage the increased investment or did tight financing restrain it? Simply put, in order to infer causation, one generally needs to observe prices as well as quantities or flows. In general, if the price of funds

Exhibit 3 | Commercial Mortgage Issues and Purchases

	1977–1979	1980–1982	1983–1985	1986–1988	1989–1990	1991–1994	1995–1996	1997–1998	1999–2002
Net Borrowing	21.6	32.2	68.0	71.8	26.0	-26.1	21.2	76.2	110.2
Issues									
Household sector	0.8	1.0	5.1	5.7	11.8	4.7	-2.5	4.1	9.7
Nonfinancial corporate business	7.6	-3.7	8.8	27.6	6.1	-18.9	7.7	22.8	39.4
Nonfarm noncorporate business	13.2	34.8	54.0	38.2	7.8	-14.2	11.5	36.0	58.1
REITs	0.0	0.0	0.1	0.2	0.3	2.4	4.4	13.3	2.9
Purchasers									
Commercial Banking	8.6	9.8	25.2	39.9	30.4	-1.0	17.6	29.4	62.0
Savings Institutions	3.9	2.8	16.1	5.2	-16.1	-13.8	-0.6	0.1	7.1
Life Insurance Companies	7.4	7.5	11.4	20.0	13.8	-11.3	-4.8	1.8	6.6
ABS Issuers	0.0	0.0	0.2	1.6	3.3	6.3	8.4	34.9	36.0
Others	1.7	12.1	15.2	5.1	-5.5	-6.3	0.6	9.8	-1.6

Note: Annual net commercial mortgage flows in billions of dollars from the Federal Reserve Flow of Funds Accounts.

(the interest rate) increases when the volume of issues is rising, the supply of issues is likely leading the demand. On the other hand, if the price of funds decreases, greater demand is likely inducing supply.

In the case of commercial mortgages, the relevant price is the spread between the yield on commercial mortgages and the yield on comparable maturity Treasuries. Exhibit 4 contains the annual spread over ten-year constant maturity Treasuries, where the yield on commercial mortgages is from the ACLI.⁴ The spread was highly volatile over the 1978–1990 period and averaged 1.35 percentage points. The spread then jumped to 2.22 percentage points in 1991–1993, before falling back to 1.59 during the 1994–1997 period. The spread again rose sharply, averaging 2.14 during 1999–2002. It is interesting that the greatest spreads occurred both when commercial mortgage issues were at their lowest (1991–1993) and at their highest (1999–2002). This alone suggests that supply constraints developed during the 1991–1993 period, whereas demand was pulling a responsive supply in 1999–2002.

Issues

Exhibit 5 provides some aggregated data on sources and uses of funds by corporate (top) and noncorporate (bottom) business for the nine sub-periods. The net acquisition of financial assets consists of three netted items (see the Appendix),

Exhibit 4 | The Commercial Mortgage–Treasury Yield Spread

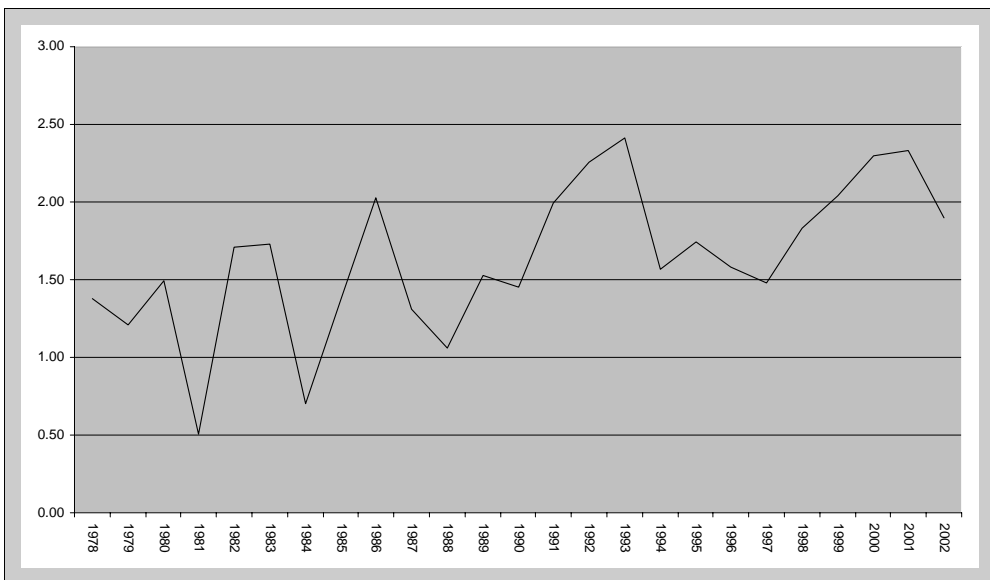


Exhibit 4 plots the annual spread of commercial mortgages over ten-year constant maturity Treasuries. The commercial mortgage yield data are from ACLI and are based on annualized quarterly data.

Exhibit 5 | Sources and Uses of Nonfinancial Businesses

	1977–1979	1980–1982	1983–1985	1986–1988	1989–1990	1991–1994	1995–1996	1997–1998	1999–2002
Panel A: Nonfarm Nonfinancial Corporate									
Total Internal Funds + IVA	188	247	350	392	425	498	648	722	767
Capital Expenditures	224	294	367	383	436	491	651	793	860
Net Acquisition of Financial Assets									
Net trade credit	16	8	28	20	11	–6	18	29	–5
Net miscellaneous asset plus discrepancy	14	17	20	81	24	8	96	72	37
Other assets less taxes payable	10	24	46	16	8	44	36	32	64
Net Increase in Liabilities									
Commercial mortgages	8	–4	9	28	6	–19	8	23	39
Corporate bonds	20	28	52	103	60	61	104	193	213
Other credit market instruments	51	72	98	73	80	–10	94	134	16
Net new equity issues	–2	0	–48	–97	–94	5	–53	–146	–79
ComMort / (ComMort+CorporateBonds)	0.27	(0.15)	0.14	0.21	0.09	(0.45)	0.07	0.11	0.16

Exhibit 5 | (continued)

Sources and Uses of Nonfinancial Businesses

	1977–1979	1980–1982	1983–1985	1986–1988	1989–1990	1991–1994	1995–1996	1997–1998	1999–2002
Panel B: Nonfinancial Noncorporate									
Gross Saving	32	48	60	76	90	97	108	122	144
Capital Expenditures	60	81	105	128	128	103	136	125	193
Net Acquisition of Financial Assets									
Other assets less taxes payable	7	9	17	5	-6	11	22	44	41
Net trade credit	2	0	2	4	1	3	1	6	3
Net miscellaneous assets	1	-10	-16	2	-8	1	15	15	29
Net Increase in Liabilities									
Commercial mortgages	13	35	54	38	8	-14	12	36	58
Other credit market instruments	29	16	42	46	12	-5	45	91	106
Proprietors' net investment	-4	-18	-47	-22	6	40	9	-60	-42
ComMort / TotalCredit Market Instruments	0.31	0.69	0.56	0.45	0.40	0.74	0.20	0.28	0.35
CorComMort / NoncorComMort	0.57	(0.11)	0.16	0.72	0.78	1.33	0.67	0.63	0.68

Note: Annual flows in billions of dollars from the Federal Reserve Flow of Funds Accounts. The specific series underlying the stated sources and uses are described in the Appendix. For corporations, the ratio is of net commercial mortgage issues to the sum of these issues and issues of corporate bonds. For noncorporations, the ratio is of net commercial mortgage issues to total issues of credit market instruments. The ratio of corporate to noncorporate commercial mortgage issues is also listed.

while the net increase in financial liabilities is divided into commercial mortgages, corporate bonds, other credit market instruments (CMI) and equity issues.⁵ Internal funds (or gross saving) and capital expenditure increase monotonically over the periods, while net financial asset purchases and security issues exhibit some volatility.⁶ The interest here is in commercial mortgage issues.

Beneath the corporate section of the table are listed the ratio of commercial mortgage issues to the sum of commercial mortgage and corporate bond issues. Beneath the noncorporate section are listed the ratio of commercial mortgage issues to total issues of credit market instruments. Also listed is the ratio of corporate to noncorporate commercial mortgage issues. As can be seen, after 1985, corporate and noncorporate issues move largely in tandem, with corporate issues being about two-thirds of noncorporate. The only exception is 1991–1994, where issues are negative for both sectors, but more, rather than less, negative for corporations. Prior to 1985, corporate issues were modest and basically uncorrelated with noncorporate issues.

For corporate business, in the post–1985 period, the ratio of net commercial mortgage issues to the sum of these and bond issues ranged between 8% and 20% with the exception of the anomalous 1991–1994 period. Here commercial mortgages were liquidated at a rapid rate, while bond issues continued at the same rate as in the previous two years. For noncorporate businesses, commercial mortgage issues averaged 40% of total CMI issues over the quarter century. The ratio ranges from 20% to 74% over the sub-periods, with commercial issues being particularly heavy during the first half of the 1980s. The largest ratio, however, is during the 1991–1994 period when commercial mortgages were liquidated at a relatively greater rate than other debt.

It appears that the sharp liquidation of commercial mortgages in the early 1990s was not driven solely by general factors affecting business total issues. Whereas commercial mortgage net issues of noncorporate business were generally about two-thirds of other CMI issues during the periods of positive issuance, three times as much commercial mortgage debt as other debt was repaid during the early 1990s. And corporations sharply liquidated commercial mortgages while continuing to grow their bond debt. Much of the collapse in commercial mortgage issues, then, must have been due to changes in the supply of funds to this market. This analysis is consistent with the sharp increase in the commercial mortgage-Treasury rate spread during the early 1990s.

Exhibit 6 provides data on REIT sources and uses of funds. Here the 1989–1992 period is taken as the base low level of activity to show how REIT behavior has evolved. As can be seen, the annual fixed investment of REITs jumped in the 1993–1996 period, triggered by creation of the umbrella partnership UPREIT structure. Annual investment then quadrupled in 1997–98, before settling back to half of the 1993–1996 period activity. At the bottom of the table are listed the ratio of commercial mortgage issues, other debt issues and equity funds raised (internally and externally) to the total sources of funds. As can be seen,

Exhibit 6 | Sources and Uses of REIT Funds

	1989–1992	1993–1994	1995–1996	1997–1998	1999–2002
FixedInvestment	2.4	14.1	15.9	69.8	6.7
NetAcqFinAssets	-0.1	-0.2	4.0	8.5	5.7
MiscAssets-MiscLiab	0.0	0.2	-2.3	-3.4	-1.8
Disc	2.8	10.1	6.6	10.7	8.8
Savings+Equity Issues	3.8	14.9	14.0	33.7	7.2
ComMort	0.3	4.5	4.4	13.3	2.9
OtherCMI+SecRPs	1.0	4.9	5.8	38.6	9.2
Total Funds	5.1	24.2	24.2	85.5	19.3
Savings+Equity/TotalFunds	0.74	0.61	0.58	0.39	0.37
ComMort/TotalFunds	0.06	0.19	0.18	0.16	0.15
OtherCMI+SecRPs/TotalFunds	0.19	0.20	0.24	0.45	0.48

Note: Annual flows in billions of dollars from the Federal Reserve Flow of Funds Accounts. The specific series underlying the stated sources and uses are described in the Appendix. Also listed are the ratios of the three uses of funds (savings plus equity issues, commercial mortgages, and net issues of credit market instruments other than commercial mortgages plus security repurchases) to total funds raised.

commercial mortgage issues constituted a roughly 15% to 20% share of REIT fund sources, although the averaging in the table disguises significant annual variation. Equity funds, in contrast, declined from roughly 60% of sources during the 1993–1996 period to 40% since then.

Purchases

As noted earlier, nonbank savings institutions (SAVs) were the first to pull out of the commercial mortgage market. By the early 1980s, many of the thrifts were bankrupt owing to the combination of their having borrowed short term and lent long (federally-chartered thrifts were barred from making adjustable rate loans) and a significant increase in the level of interest rates. The Depository Institutions Deregulation and Monetary Control Act of 1980 and the Garn-St. Germain Depository Institutions Act of 1982 encouraged thrifts to grow out of their problem. The former sharply raised deposit insurance limits (from \$40,000 to \$100,000) and phased out the Regulation Q ceiling rate on time and savings deposits (Barth, Benston and Wiest, 1990). Both acts expanded asset powers of federally-chartered thrifts, hopefully leading them to earn large positive margins on the newly invested funds. Further, many states (*e.g.*, California and Texas) went well beyond the federal deregulation (Carron, 1988).

And grow thrifts did, raising \$122 billion in funds annually during the 1983–1988 period, twice the rate during the previous six years (see Exhibit 7). A major new

Exhibit 7 | Sources and Uses of Savings Institution Funds

	1977–1979	1980–1982	1983–1985	1986–1988	1989–1990	1991–1994	1995–1996	1997–1998	1999–2002
Commercial Mortgages	3.9	2.8	16.1	5.2	-16.1	-13.8	-0.6	0.1	7.1
U.S. Treasuries	-0.7	1.6	6.0	0.9	-4.5	0.3	-4.9	-3.6	-0.2
Other CMI	61.4	28.2	91.4	96.8	-112.1	-50.1	11.6	19.2	43.7
Other FinAssets	6.6	19.8	21.0	8.8	6.0	-15.6	2.3	10.5	16.8
Total Funds	71.2	52.3	134.4	111.7	-126.6	-79.2	8.5	26.2	67.3
Deposits	52.4	41.5	97.9	51.6	-71.2	-79.1	-6.1	-14.1	36.9
SecRPs + Other CMI	12.4	10.0	20.7	45.3	-53.7	-6.4	13.6	39.8	18.8
OtherLiab + Sav - Inv - Disc	6.3	0.9	15.7	14.8	-1.7	6.3	1.0	0.6	11.7
ComMort/TotalFunds	0.05	0.05	0.12	0.05	0.13	0.17	-0.07	0.01	0.11

Notes: Annual flows in billions of dollars from the Federal Reserve Flow of Funds Accounts. The specific series underlying the stated sources and uses are described in the Appendix. Also listed is the ratio of net commercial mortgage issues to total funds raised.

power in the Garn-St. Germain Act was the ability to invest in commercial mortgages, and this triggered a surge in purchases of commercial mortgages—\$16 billion annually during the 1983–1985 period, quadruple the rate during the previous six years. However, given the increased supply of securities to fund tax-induced commercial real estate investment, these expanded purchases did not lower the commercial mortgage–Treasury rate spread. That is, the increased supply of funds was simply a response to a greater demand for funds.⁷

Unfortunately, overbuilding of commercial real estate occurred in response to both the tax sheltered syndicates stimulated by the 1981 Tax Act and the lending of bankrupt thrifts.⁸ This led to increases in vacancy rates and declines in rents and values, especially in the Southwest, and negative margins on much of the thrifts' new business. Congress then enacted the Financial Institutions Reform, Regulatory and Enforcement Act of 1989, which partially reversed the expansion in asset powers, sharply raised capital requirements, tightened limits on holdings of commercial real estate loans and extended regulation of federally-chartered thrifts to state-chartered institutions (Barth, Benston and Wiest, 1990). The end result was the closing of many thrifts. In 1989–1990, this sector lost funds at a \$127 billion annual rate, and it lost another \$80 billion annually during the 1991–1994 period.

The Federal Deposit Insurance Corporation Improvement Act of 1991 completed the restructuring of the industry by introducing risk-based capital requirements on whole real estate loans including commercial mortgages of savings institutions and commercial banks. As a result of this introduction and liquidation of these thrifts, thrift sector holdings of net sales of commercial mortgages fell by nearly \$15 billion annually during the 1989–1994 period.

Commercial bank aggregate annual sources and uses statements are shown in Exhibit 8 for sub-periods that are close to those used in Exhibits 3 and 5. Slight changes have been made to make the sub-periods correspond more closely to the periods of faster or slower growth in the bank sector. More specifically, 1984–1986 was the period of most rapid annual asset accumulation until 1995 and was funded by the largest increase in small deposits until 1997. The post–1994 jump in asset accumulation was funded by record net security (including large time deposits) issues.

From the late 1970s until the late 1980s, the share of commercial bank net asset accumulation directed to net commercial mortgage purchases increased fairly steadily, rising from 8% to 24%. During the 1991–1994 period, the increased risk-based reserve requirements (and reduced real estate development) lowered net purchases to zero. During the last six years, net purchases have been 16% of net asset accumulation and, given the large accumulation, have averaged \$51 billion per year. Note also the large purchases of bonds, 40% of which have been corporates. A significant fraction of these may have consisted of CMBS tranches. Counting both direct and indirect CMBS derivative purchases, commercial bank supply of funds to the commercial mortgage market may be back to its 1984–1990 peak in real terms.⁹

Exhibit 8 | Commercial Banking

	1977–1979	1980–1983	1984–1986	1987–1990	1991–1994	1995–1996	1997–2002
Gross Saving	8	12	20	24	31	30	48
Fixed Nonresidential Investment	7	14	16	20	19	18	26
Portfolio Uses							
Commercial mortgages	9	12	34	34	–1	18	51
Bonds	12	36	44	26	64	22	110
Other loans	92	64	117	90	72	189	174
Total portfolio	113	112	194	150	135	229	335
Fund Sources							
Deposits (small time and checking)	50	91	136	85	60	78	175
Securities (including large time)	56	50	49	34	15	133	200
OtherLiab – OtherAssets	6	–27	6	27	47	5	–61
Checksum	0	0	0	0	0	0	0
ComMort/Total	0.08	0.10	0.17	0.24	0.00	0.08	0.16
Bonds/Total	0.11	0.32	0.22	0.18	0.55	0.09	0.35
Other/Total	0.82	0.58	0.61	0.58	0.45	0.82	0.48

Note: Annual flows in billions of dollars from the Federal Reserve Flow of Funds Accounts. The specific series underlying the stated sources and uses are described in the Appendix. Also listed are the ratios of the three uses of funds (commercial mortgages, bonds and other loans) to total funds raised.

Life insurance companies (LICs) also moved sharply out of commercial mortgages during this period. Exhibit 9 plots the share of net funds raised by LICs that were allocated to commercial mortgages, other credit market instruments (CMIs) and corporate equities (including mutual funds).

During the 1977–1989 period, the allocation was roughly 20% to commercial mortgages, 5% to corporate equities and 75% to other CMI. The commercial mortgage share dropped off in 1990 and then was negative until 1998, averaging –11% of total net funds raised over the 1992–1994 period, as LICs shifted into corporate equities. The latter shift continued through 2000; during the 1998–2000 period, LICs put nearly 60% of their net funds into equities, backing off to 25% in 2001–2002 when the stock market collapsed.

LICs are regulated by states rather than a federal entity. To assist in this process, the National Association of Insurance Commissioners (NAIC), an association of the chief insurance regulators of each state, has been established. States have long delegated to the NAIC the responsibility for establishing financial reporting requirements and developing “model” laws and regulations, models that states generally adopt (Fenn, 2001). The NAIC adopted risk-based capital requirements in December 1992 to take effect at the beginning of 1994. Not only did this action occur long after the LIC liquidation of commercial mortgage holdings began, but relatively few LICs were constrained by the new requirements (Fenn, 2001). Obviously one must look elsewhere for the cause of the LIC liquidation.¹⁰

Exhibit 9 | Life Insurance Companies

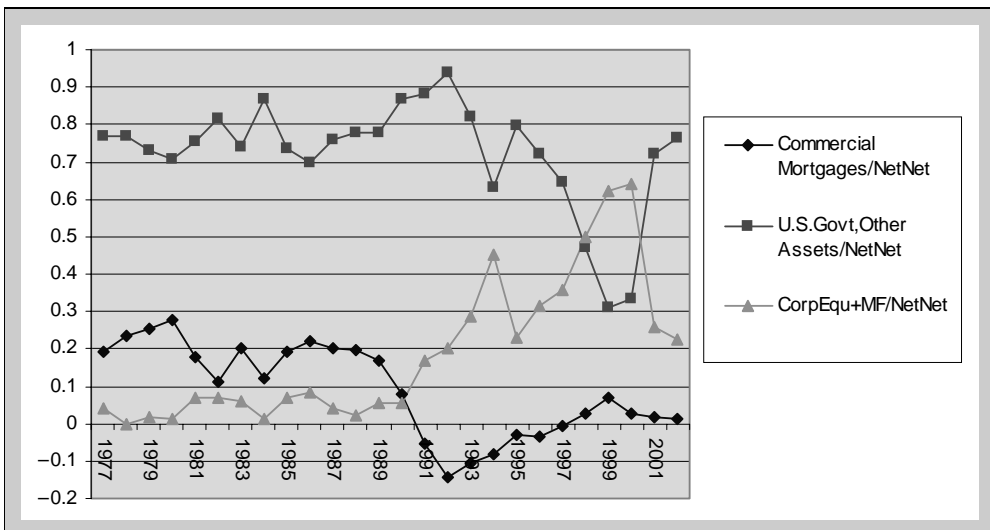


Exhibit 9 plots the annual share of LICs net funds invested in commercial mortgages, other credit market instruments (CMIs), and corporate equities (including mutual funds). The data are drawn from the Federal Reserve Flow of Funds Accounts and the data aggregation methodology is explained in the Appendix.

Exhibit 10 | Asset Purchases by Asset-Backed Securizers

	1986–1988	1989–1991	1992–1994	1995–1996	1997–1999	2000–2002
Agency Securities	32	–5	5	14	28	38
Residential Mortgages	4	21	37	28	75	87
Commercial Mortgages	2	3	8	8	35	36
Other Loans	1	32	25	93	108	97
NetAcqFinAssets	39	52	75	143	245	258
Agency / NetAcqFinAssets	0.82	–0.10	0.06	0.10	0.11	0.15
ResMort / NetAcqFinAssets	0.10	0.41	0.50	0.20	0.31	0.34
ComMort / NetAcqFinAssets	0.04	0.06	0.10	0.06	0.14	0.14
Other / NetAcqFinAssets	0.04	0.63	0.33	0.65	0.44	0.37

Note: Annual flows in billions of dollars from the Federal Reserve Flow of Funds Accounts. The specific series underlying the stated and uses of funds are described in the Appendix. Also listed are the ratios of the four uses (agency securities, residential mortgages, commercial mortgages, and other loans) to total funds raised.

Fenn (2001:382-84) argues that events indicating major asset-quality problems in the industry in 1990–1991 led companies to fear a negative response of policyholders to companies with large holdings of junk bonds and commercial mortgages. To illustrate the problems, Travelers, the seventh largest LIC, reserved \$650 million for anticipated losses in its commercial real estate portfolio in October 1990 and the industry’s largest failure ever, Mutual Benefit, which had invested heavily in commercial real estate occurred in 1991. Reducing exposure to such losses protected LICs from declines in both market share and share prices.

During 1992–1993 alone, banks and life insurance companies liquidated \$50 billion of commercial mortgage holdings. In spite of a record \$85 billion repayment of business commercial mortgage debt in these two years, the spread between commercial mortgages and ten-year Treasuries averaged 233 basis points, a full 100 basis points greater than during 1987–1990.¹¹ Clearly, supply restraints were affecting the market in 1992–1993.

Issuers of asset-backed securities are special purpose vehicles (SPVs), entities established by contractual arrangement to hold assets and to issue debt obligations backed by the assets. The SPVs are similar to federally-related mortgage pools in that they are not actual institutions but are created for bookkeeping purposes. The financial assets of the sector are federally-related mortgages pool securities, mortgages, and other loans (autos and the like). These “securitized assets” have been transferred from the balance sheets of the sectors that originated the loans to the balance sheets of the SPVs. The obligations issued by the SPVs (*e.g.*, CMBS tranches) are classified as corporate bonds as well as commercial paper and represent claims against the assets that have been pooled as collateral.

Exhibit 10 reports the asset flows into these SPVs over the last seventeen years broken down into agency securities (agency mortgage pools), residential mortgages, commercial mortgages and other loans. The first assets securitized were the mortgage pools in 1986–1988. This level of activity was not matched again until the late 1990s. Total securitized assets nearly doubled from \$75 billion in 1992–1994 to \$143 billion in 1995–1996 and doubled again by 2001–2002. Net commercial mortgage purchases did not reach \$10 billion until 1996 and then quickly accelerated to the \$30–\$50 billion dollar range in 1998–2002 as the CMBS market exploded. By then, 14% of securitized assets were commercial mortgages.

Conclusion

The Federal Reserve’s flow of funds accounts is a marvelous “closed loop” system with incredible detail on financial flows. For each sector, total sources and uses of funds are equal (up to a discrepancy item), and for each market, issues and purchases of the security are equal. Thus all investment is financed and all securities issued are purchased.¹² This data is used to better understand changes in the commercial mortgage market over the last quarter century and how these

changes may have affected commercial real estate investment. These data are supplemented by the spread between commercial mortgage and Treasury yields.

This study has analyzed commercial mortgage sectoral issues and purchases to determine if there were periods where unusual sectoral purchases seemed to generate unusual sectoral issues (*i.e.*, where purchases were driving issues rather than the other way around). Two periods were noted. The first period is when thrifts were encouraged to grow out of their negative-net-worth problem in the early 1980s and were given authority to invest in commercial mortgages. During 1983–1985, savings institutions added to commercial mortgage holdings at the annual rate of \$16 billion versus a modest \$4 billion a year during the previous six years. However, the fact that the commercial mortgage–Treasury interest rate spread did not decline suggests that these purchases were simply a response to greater than normal net issues by noncorporate businesses, rather than a trigger for them.

The second period is 1991–1994, when higher risk-based capital requirements were imposed on commercial mortgage holdings of banks and life insurance company losses on junk bonds and commercial mortgages induced them to shift out of risky corporate and commercial real estate debt. Seemingly in response, noncorporate businesses paid down commercial mortgage debt at a faster rate than other debt, in spite of the fact that the latter had grown much faster the former in earlier years, and nonfinancial corporations liquidated substantial commercial mortgage debt while continued to issue corporate bonds at the rate of earlier years. Here, the shrinkage in credit supply—the liquidation of holdings by commercial banks and life insurance companies—seemed to have a direct impact on commercial mortgage issues (and possibly on commercial real estate investment).

Future research might quantify the unusual business commercial mortgage issuance behavior econometrically, using seemingly unrelated regression analysis. Presumably issuance would be well above predicted in the early 1980s and below during the early 1990s. Research could also usefully be directed at the direction of causation between sectoral commercial mortgage purchases and issues, the key questions being when were specific financial institution purchases driving business issues and when issues were driving purchases. Perhaps a vector autoregression analysis, such as that recently used by Ling and Naranjo (2003) to determine whether REIT capital flows were causing equity REIT returns or vice versa, could be undertaken.

Alternatively, an analysis of the relationship between commercial mortgage issues and commercial construction itself is a possibility, where the key would be to determine when issues were driving construction rather than the reverse. These analyses could also be used to determine the effect of recent developments in the market, such as greater REIT issues and the securitization of commercial mortgages into CMBSs. Finally, other factors that drive construction should be included in these analyses. For example, general macro economic shocks as well as tax law changes are certainly relevant to real estate construction.

Appendix

Aggregating Flow of Funds Sectoral Sources and Uses of Funds

This is a short description of how sector sources and uses were aggregated or combined. First a brief aggregate identity is given, followed by a breakdown of the aggregates and finally a reaggregate up.

Noncorporate

The basic identity can be written as:

$$\text{CapCons (or gross inv or gross saving)} = \text{CapExp} + \text{NetAcqFinAssets} - \text{NetIncreaseLiab}$$

These are divided into the following components:

$$\text{Net IncreaseinLiab} = \text{ComMort} + \text{OtherCMI} + \text{PropNetInv} + \text{TradePay} + \text{MiscLiab} + \text{TaxesPay}$$

$$\text{NetAcqFinAssets} = \text{MiscAssets} + \text{TradeRec} + \text{OtherFinAssets}$$

Substituting and rearranging:

$$\text{ComMort} + \text{OtherCMI} + \text{PropNetInv} = \text{CapExp} - \text{GrossSaving} + (\text{TradeRed} - \text{TradePay}) + (\text{MiscAssets} - \text{MiscLiab}) + (\text{OtherAssets} - \text{TaxPay})$$

Corporate Nonfinancial

The basic identity can be written as:

$$\text{InterFunds} + \text{IVA} = \text{CapExp} + \text{NetAcqFinAssets} - \text{NetIncreaseinLiab} + \text{Disc}$$

These are then divided into the following components:

$$\text{NetIncreaseinLiab} = \text{ComMort} + \text{CorBonds} + \text{OtherCMI} + \text{NetEquIssues} + \text{TradePay} + \text{TaxPay} + \text{MiscLiab}$$

$$\text{NetAcqFinAsset} = \text{TradeRec} + \text{MiscAssets} + \text{OtherAssets}$$

Substituting and rearranging:

$$\text{ComMort} + \text{CorBonds} + \text{OtherCMI} + \text{NetEquIssues} = \text{CapExp} - \text{InterFunds} + \text{IVA} + (\text{TradeRec} - \text{TradePay}) + (\text{MiscAsset} - \text{MiscLiab} + \text{Disc}) + (\text{OtherAssets} - \text{TaxesPay})$$

REITs

The basic identity is:

$$\text{FixedInv} + \text{NetAcqFinAssetsexceptMisc} + (\text{MiscAssets} - \text{MiscLiab}) + \text{Disc} = (\text{Saving} + \text{EquityIssues}) + \text{ComMort} + (\text{otherCMI} + \text{SecRPs})$$

Life Insurance Companies

The basic identity is:

$$\text{Inv} - \text{GrossSaving} + \text{NetAcqFinAssets} + \text{Disc} = \text{NetIncLiab}$$

where:

$$\text{NetAcqFinAssets} = \text{ComMort} + \text{OtherCMI} + (\text{CorEqu} + \text{MF}) + \text{Cash} + \text{MiscAssets}$$

Rearranging:

$$\text{ComMort} + \text{OtherCMI} + (\text{CorEqu} + \text{MF}) = \text{GrossSaving} - \text{Inv} + \text{NetIncLiab} - \text{Cash} - \text{MiscAssets}$$

Savings Institutions

The basic identity can be written as:

$$\text{NetAcqFinAssets} = \text{NetIncLiab} + (\text{Sav} - \text{Inv}) - \text{Disc}$$

These are divided into the following components:

$$\text{NetAcqFinAsset} = \text{ComMort} + \text{USTreasuries} + \text{OtherCMI} + \text{OtherFinAssets}$$

$$\text{NetIncreaseinLiab} = \text{Deposits} + (\text{SecRPs} + \text{CMI}) + \text{OtherLiab}$$

Substituting and rearranging:

$$\text{ComMort} + \text{USTreasuries} + \text{OtherCMI} + \text{OtherFinAssets} = \text{Deposits} + (\text{SecRPs} + \text{CMI}) + (\text{OtherLiab} + \text{Sav} - \text{Inv} - \text{Disc}).$$

Asset-Backed Security Issuers

$$\text{NetAcqFinAssets} = \text{AgencySec} + \text{ComMort} + \text{ResMort} + \text{OtherLoans}$$

where:

$$\text{NetAcqFinAssets} = \text{NetIncLiab} + \text{Saving} - \text{FixedInv} - \text{Disc}$$

Commercial Banks

Three asset items, two liability items and a catchall net everything else are created. The asset and liability items are as defined; the catchall is the rest.

“Portfolio” = ComMort + OtherTotalLoans + “Bonds”(US + Munis + Cort&Foreign)

“Funds” = “Deposits”(Checking + Smalltime + “Securities”(LargeTime + FedFunds + CMI)

OtherLiab – OtherAssets (Catchall)

Endnotes

- ¹ It is worth noting that net investment and saving flows are recorded. That is, if some households dissave while others save, it is the difference between the two that appears in the accounts. Similarly, if some corporations decide to purchase buildings from, say, pension investors, and stop leasing space, this appears as corporate structures investment (and pension disinvestment).
- ² The accounts record net, not gross, issues and purchases. Thus, if some corporations issue commercial mortgages, while others retire an equal amount, no issues will be recorded for the sector.
- ³ LIC commercial mortgage holdings decreased by 25% between the end of 1990 and the end of 1996.
- ⁴ Quarterly mortgage contract rates are averaged to get annual values and are then converted to bond equivalents. Some variation in the spread is expected because the quality of the underlying mortgages (loan-to-value ratio, debt-coverage ratio, etc.) varies over time. Also, the market’s assessment of expected credit losses for a given quality mortgage may vary.
- ⁵ Proprietor’s net investment is computed as the residual to make total sources of noncorporate business funds equal to total uses.
- ⁶ For a lucid discussion of changes in corporate sector finances, especially the enormous retirement of equity in the 1995–2000 period, see Teplin (2001).
- ⁷ While Giliberto (1992) found a positive correlation between mortgage supply and construction, it is not clear that causation was running from supply to construction rather than vice versa. In fact, the failure of the interest rate spread to rise suggests the causation was from construction to supply.
- ⁸ In Exhibit 5, the especially sharp 110% increase in noncorporate capital expenditures between 1977–1979 and 1986–1988. In contrast, capital expenditures of corporations increased by only 75%.
- ⁹ Given that the reserve requirements on all CMBS tranches are the same and equal to those on whole commercial loans, commercial banks likely do not hold the higher quality tranches.
- ¹⁰ A reviewer has suggested an alternative explanation. According to the individual, when the NIAC announced a review of LIC reserve requirements in 1990, it stated that

investments made after the announcement would be subject to the new requirements. That is, tougher standards could apply to all new investments. This would obviously deter gross investment in commercial mortgages and thus start the slide in LIC holdings.

- ¹¹ The rise in the spread was accompanied by increased debt-coverage ratios on commercial mortgages (Ambrose, Benjamin and Chinloy, 1996).
- ¹² For an early use of these data and these market-clearing relationships to explain the levels of three market interest rates, see Hendershott (1977).

References

- Ambrose, B. W., J. Benjamin and P. Chinloy, Credit Restrictions and the Market for Commercial Real Estate Loans, *Real Estate Economics*, 24, 1996, 1–22.
- Barth, J. R., G. J. Benston and P. R. Wiest, The Financial Institutions Reform, Recovery, and Enforcement Act of 1989: Description, Effects and Implications, *Issues in Bank Regulation*, 1990, Winter, 3–11.
- Brainard, W. C. and J. Tobin, Pitfalls in Financial Model Building, *American Economic Review*, 58, 1968, 99–122.
- Carron, A. S., The Thrift Crisis of the 1980s: What Went Wrong?, *The Future of the Thrift Industry*, Federal Home Loan Bank of San Francisco, 1988.
- Clayton, J., Capital Flows and Asset Values: A Review of the Literature and Exploratory Investigation in a Real Estate Context, Paper presented at the Homer Hoyt May Meetings, 2003.
- Gentry, W. and C. Mayer, What Can We Learn about Investment and Capital Structure with a Better Measure of q ?, Working paper, December 2002.
- Fenn, G. W., Flight-to-Quality in Life Insurance Company Investments, In J. R. Barth, R. D. Brumbaugh and G. Yago (Eds.), *Restructuring Regulation and Financial Institutions*, Kluwer Academic Publishers, 2001, 365–409.
- Follain, J., P. H. Hendershott and D. Ling, Real Estate Markets Since 1980: What Role Have Tax Changes Played?, *National Tax Journal*, 1992, 253–66.
- ., Understanding the Real Estate Provisions of the Tax Act: Their Motivation and Impact, *National Tax Journal*, 1987, 363–72.
- Giliberto, M., A Note on Commercial Mortgage Flows and Construction, *Journal of Real Estate Research*, 7, 1992, 485–91.
- Hendershott, P. H., Government Policy and the Allocation of Capital Between Residential and Nonresidential Uses, *Financial Analysts Journal*, 39, 1983, 3–8.
- ., *Understanding Capital Markets: Volume I: A Flow of Funds Financial Model*, Lexington Books, D.C. Heath and Company, 1977.
- Hendershott, P. H. and S. Hu, The Allocation of Capital Between Residential and Nonresidential Uses: Taxes, Inflation, and Credit Market Constraints, *Journal of Finance*, 1983, 795–812.
- Hendershott, P. H. and E. J. Kane, Causes and Consequences of the 1980s Commercial Construction Boom, *Journal of Applied Corporate Finance*, 5, 1992, 61–70.
- Ling, D. and A. Naranjo, The Dynamics of REIT Capital Flows and Returns, Paper presented at Homer Hoyt May Meeting, 2003.

Mejia, L. C., Availability of Credit and Loan Default: A Look at the Commercial Mortgage Supply Cycle, *Journal of Real Estate Research*, 18, 1999, 175–96.

Teplin, A. M., The U.S. Flow of Funds Accounts and Their Uses, *Federal Reserve Bulletin*, 2001, July, 431–41.

The authors thank James Barth, Patrick Corcoran and Lynn Sagalyn for helpful discussions and the Homer Hoyt Advanced Studies Institute for financial support.

Ron Donohue, Homer Hoyt Institute, North Palm Beach, FL 33408 or rdonohue@hoyt.org.

Patric H. Hendershott, University of Aberdeen Business School, Aberdeen, Scotland or Phh3939@uslink.net.

