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NEW FRONTIERS OF CAPITAL

A Geography of Commercial Real Estate Finance

by

David Persson Lindahl

A dissertation submitted in partial fulfillment of the
requirements for the degree of

Doctor of Philosophy

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1997

Approved by William B. Ray
Chairperson of Supervisory Committee

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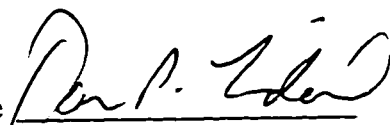
David Persson Lindahl

Doctoral Dissertation

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Abstract

NEW FRONTIERS OF CAPITAL

A Geography of Commercial Real Estate Finance

by David Persson Lindahl

Chairperson of the Supervisory Committee: Professor William B. Beyers
Department of Geography

The recent development experience of modern economies demonstrates the increasing role and impacts of financial activities on regional and national economic systems, effects which remain largely overlooked by current theory and empirical work. This dissertation contributes to this gap in knowledge by addressing the geographical flow of capital into commercial real estate markets.

Three main research questions are addressed: 1) does capital flow freely over space into commercial real estate markets in accordance with neo-classical expectations of market equilibrium or is the flow spatially uneven?; 2) how and why have spatial patterns of capital flows changed over time, and 3) what are the implications of these changing spatial on local commercial real estate markets and regional economies? To answer these questions, the dissertation develops a theoretical framework to describe the decisions made by investors in their allocation of funds to particular places. This framework begins with a neo-classical process driven by spatial differences in rates of return on assets. Then, additional components are added which modify this simple process, including barriers and costs of distance, management of risk and uncertainty, organizational characteristics, industry specific factors and norms, path dependence, serendipity, and shocks and long-term structural change. Spatial outcomes are then tested empirically through analysis of investment behaviors by institutional, real estate investment trusts (REITs), and foreign investors in the US over the 1980 to 1996 period. This evidence shows a high degree of spatial differentiation amongst these players in their investment and also demonstrates a dispersal of capital to smaller metropolitan areas. In addition,

there is a convergence of capitalization rates across regions. Empirical work in Stockholm Sweden illustrates the dramatic effects of a regulatory barrier on local property markets and the regional and national financial system in addition to the channeled flow of investment, particularly to central London, when these barriers were suddenly removed.

The dissertation concludes that structural change and shocks have led to the dispersal of capital across places, yet there is no end to geography, as changes in individual and organizational behavior and increasing financial complexity will never allow a state of spatial equilibrium.

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GLOSSARY

Absorption. The rate at which commercial space is leased in a given market, often represented in square feet per year or month.

Bullet Loan. A mortgage typically with a 5 to 10 year term and no amortization. Full amount of loan is due at the end of the term.

Capitalization rate. The ratio of annual net operating income of a real estate asset to the value of that asset, expressed as a percentage.

Commercial Mortgage-Backed Securities (CMBS). An investment instrument sold on a secondary market backed by single or multiple commercial property mortgages, which may also be segmented into various components. Modelled after securities collateralized by residential mortgages.

Construction Loan. A short-term loan (typically 6 months to 2 years) usually provided by a commercial bank to a developer or builder used for new construction or improvements, to be refinanced at the end of a term often by a permanent, or takeout, loan.

Discount Rate. The rate applied to calculate net present value of a stream of future cash flows; in financial analysis, the rate represents the riskless cost of capital plus premiums to account for risk, management, and other opportunity costs of investing in a given asset.

Discounted Cash Flow Analysis. A method of investment analysis in which anticipated future cash income from the investment is estimated and converted into a net present value (NPV) when the required rate of return/discount rate is specified, or, conversely, a rate of return when the amount of investment is known.¹

Efficient Frontier. The continuum of points representing the highest return for a given level of risk based on a portfolio of assets.

Hurdle Rate. The minimum rate of return required by an investor before adding in other opportunity costs; can also be interpreted as the investor's cost of capital.

Internal Rate of Return. The discount rate at which net present value equals zero in a discounted cash flow analysis; the yield to the investor based on a series of existing and future cash flows.

Loan-to-value (LTV) ratio. The ratio of the value of a mortgage and the value of the property securing the mortgage.

¹ Friedman (1993, p. 96)

Modern Portfolio Theory. A method of asset portfolio management where optimal combinations of assets are calculated which minimizes risk and maximizes return, based on the work of Markowitz (1959).

Net operating income (NOI). Net revenues of an income property (potential gross rental income less vacancies and other non-collectibles) less operating expenses.

Net Present Value. The result calculated from a discounted cash flow analysis from a series of future cash flows, discounted at a required rate of return on investment (the discount rate).

Permanent Loan. A long-term mortgage loan (typically 15 to 30 years), traditionally provided by life insurance companies on larger scale commercial property. Known also as a takeout loan, if used to refinance a construction loan on a newly developed project.

Real Estate Investment Trust (REIT). A legal real estate ownership entity in the US where income proceeds pass through to shareholders without corporate taxation. Most often sold on a public stock exchange.

Workout Company. Bank subsidiaries and other entities to manage and dispose of problem bank assets as a result of foreclosures or bankruptcy.

LIST OF ABBREVIATIONS

- CMBS.** Commercial mortgage-backed security(ies).
- CMSA.** Consolidated Metropolitan Statistical Area.
- ERISA.** Employment Retirement Income Security Act of 1974.
- FDI.** Foreign Direct Investment.
- FIRREA.** Financial Institutions Reform, Recovery and Enforcement Act of 1989.
- FREIT.** Finite REIT.
- GDP.** Gross domestic product.
- IPD.** Investment Property Databank.
- IRR.** Internal rate of return.
- KTH.** Kungliga Tekniska Högskolan (Swedish Royal Institute of Technology).
- LTV.** Loan-to-value.
- NAIC.** National Association of Insurance Commissioners.
- NAREIT.** National Association of Real Estate Investment Trusts.
- NCREIF.** National Council of Real Estate Investment Fiduciaries.
- NOI.** Net operating income.
- NPV.** Net present value.
- OREO.** Other real estate owned.
- REIT.** Real estate investment trust.
- RELP.** Real estate limited partnership.
- SEK.** Swedish Kronor.
- SIPA.** Swedish International Property Association.

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DEDICATION

For my mother, Harriet, and my father, Rudy.

INTRODUCTION

As a traveler verges upon a city by land, sea, or air, there is but one discernible feature that distinguishes the approaching landscape as distinctively urban — its buildings. Yet, the built forms that dominate a skyline are but one visible outcome of tremendously dynamic economic and social processes. Behind every skyscraper, high-rise condominium, smokestack, and shopping mall are hundreds and thousands of stories — stories of the people and organizations who occupy, visit, own, and build them. These stories permeate far beyond the property lines and business districts where the visible forms end. While practically all activity and production that occurs within a metropolitan region takes place in the domain of what we deem as “real estate”, or its land and buildings, the exchange and production of real estate — the investment process — represents a group of social and economic activities in themselves, where movements of capital, people, and ideas create and maintain linkages in a national and increasingly global system of cities and other settlements.

This dissertation addresses contemporary business activity related to the process of investment in commercial property (or real estate²), processes that determine the linkage of these activities between places, and impacts of these linkages on real estate markets and regional economies. While the study of land use has long been a central theme of study for geographers, planners, and other urban scholars,³ the process of property investment

² The terms “commercial property” and “commercial real estate” are used interchangeably throughout this dissertation and are generally defined as all land and property used towards commercial purposes, particularly as an investment asset. Chapter One provides further clarification of this definition.

³ The treatment of property in geography and regional studies can be divided into demand-oriented studies of urban form (e.g., Harris and Ullman, 1945; Alonso, 1964; Vance, 1964; Mills, 1972; Baerwald, 1978; Hartshorn and Muller, 1989); behavioral analyses of the development process (Massey and Catalano, 1978; Ganderton, 1994; see Gore and Nicholson, 1991 for a review); structuralist, post-structuralist, and political economy perspectives (e.g., Harvey, 1978; Harvey, 1982; Smith, 1984; Harvey, 1985; Feagin, 1987; Logan and Molotch, 1987; Feagin and Beauregard, 1989; King, 1989; Beauregard, 1991; Knox, 1991; Wilson, 1991; Beauregard, 1994; Fainstein, 1994; Healey, 1994; Olds, 1994; Pryke, 1994c); and recent work in finance geography and the 1980s real estate boom (e.g., Thrift, 1987; Logan, 1993; Ball, 1994; Coakley, 1994; Leitner, 1994; Pryke, 1994a; Warf, 1994; Edgington, 1995a; Lizieri, 1995a).

remains “embarrassingly unexamined,”⁴ particularly in light of the wild rides that regional and national economies have recently taken on the backs of real estate markets with an especially bad case of mad cow disease (Case, 1992; Ball, 1994; Downs, 1994a; Renard, 1996). Property cycles are not new (Kuznets, 1930; Marriott, 1969; Harvey, 1985; Berry, 1991; Ball, Morrison et al., 1996). Yet, the most recent cycle, which began in the early 1980s and has just been completed within the past couple of years, was unprecedented for its global extent, striking synchronicity across places, and substantial impact upon financial markets and economies (Ball, 1994; Coakley, 1994; Leitner, 1994; Lizieri, 1995a). Although this boom and subsequent bust was indeed a global phenomenon, its extent and effects were spatially differentiated, at all levels of scale (i.e., national, regional, intraregional).

We know that this most recent cycle (or, actually, a family of many cycles), like those that preceded it, came about as a result of an oversupply of capital, which led to a vast surplus of new construction, unsustainable property valuations, and a financial system heavily dependent upon the behavior of both local and distant real estate markets (Logan, 1993; Ball, 1994; Leitner, 1994; DeBondt, 1995; Dohrmann, 1995). What we are still uncertain about is exactly why this oversupply of capital occurred. Many argue that it was the result of greed and irrational behavior on the part of developers and lenders (Daniels and Bobe, 1993; Pryke, 1994b; Warf, 1994); moral hazards, in part due to regulatory action or inaction (Mayer, 1990; Ball, 1994; Warf and Cox, 1994); global financial deregulation (Logan, 1993; Coakley, 1994); favorable tax laws (Sanger, Sirmans et al., 1990; Browne and Rosengren, 1992; DiPasquale and Wheaton, 1992a; Mills, 1995); oversupply of capital in the “primary circuit” or “productive” sectors of the economy (Feagin, 1987; Wilson, 1991; Beauregard, 1994); the long lag-lead response of construction times (Wheaton, 1987; Barras, 1994); the relaxation of urban planning laws (Ball, 1994); interest rate changes (Downs, 1985; Hallsworth, 1993); and a general increase in the popularity of real estate as an important asset in a well-diversified investment portfolio (Dohrmann, 1995; Bajtelsmit and Worzala, 1996). Others argue that the behavior was entirely rational, given the circumstances with which investors and property owners are faced (Grenadier, 1995; Dokko, Edelstein et al., 1996).

⁴ Beauregard and Haila (1995).

The recent body of empirical research that has explored these and other factors suggests that all of these factors, to various extents, have played a role in explaining the enormous flow of capital during the recent real estate boom. Yet, while this research has greatly helped in explaining the general phenomenon of increased capital flows overall, it lacks in its treatment of the spatial characteristics of these flows. Why, for instance, did some markets during the worst of the bust, such as Detroit, experience similar declines in office rents and vacancies as other markets, such as San Francisco, yet only suffer value losses half as severe? What factors led banks in Massachusetts to funnel over 70% of their loans into real estate while banking institutions in other fast-growing regions such as Washington, DC and Virginia were far more restrained? Why did pension funds place more money into Boston office buildings than in New York, even though the market is one-third its size? And what effect did this behavior have on these markets?

This dissertation represents a significant step in answering these questions from both theoretical and empirical standpoints. From a theoretical perspective, I develop a comprehensive framework for understanding the spatial behavior of investors (individuals and organizations). While recognizing the time, place, and environment in which investment choices are undertaken, this framework places the decisionmaker(s) as the ultimate catalysts influencing the flow of capital over space. This perspective, in many ways, stands in contrast to both neo-classical (e.g., Borts and Stein, 1964; Romans, 1965) and structuralist views (Harvey, 1978; Harvey, 1985; Feagin, 1987; Wilson, 1991) where capital is often subsumed as a faceless force, without recognition of its vast institutional and social complexity. From an empirical standpoint, this dissertation offers data and analyses which have been extremely difficult to come by, particularly with respect to property markets (Leitner, 1994): time-series capital flows at the metropolitan level of analysis, differentiated by types of investors. These patterns are then matched with the behavior of real estate market variables, particularly that of property value changes, to demonstrate the critical importance of understanding the geography of capital flows — at the highest level of detail — in order to understand property markets and their cyclical behavior. This knowledge of the influence of capital flows on value, and not just on construction, has been the most lacking component of research on regional property cycles (e.g., Rosen, 1984; Wheaton, 1987; Pollakowski, Wachter et al., 1992; Barras,

1994; Sivitanidou, 1995; Stephenson, 1995; Dokko, Edelstein et al., 1996; Gordon, Mosbaugh et al., 1996).

While real estate is the topical focus of this dissertation, the research documented here speaks to a deeper set of issues surrounding the spatial implications of a new “finance economy.” As Table 1 demonstrates, the growth of financial assets has exploded over the past two and half decades, from a total value in the US of \$14.0 trillion in 1970 to \$40.8 trillion in 1996 (constant 1987 dollars), a nearly threefold increase. Even after considering the relative growth of the US economy during this period, the ratio of the value of these financial assets to gross domestic product (GDP) has increased from 4.62 to 7.44. There are multiple components of this growth, with much of it occurring only since 1990. Much can be attributed to the now 15-year old bull market on Wall Street, where the value of stocks, bonds, and mutual and money market funds has grown by \$12.0 trillion, with over 50% (\$6.7 trillion) occurring in only the past six years! Other significant components of this growth include important sources of capital for real estate, including pension fund and insurance company reserves as well as mortgages.⁵ Checking and savings deposits, in contrast, have increased modestly (and even declined in recent years) reflecting the rapid disintermediation by banking institutions, as they struggle to compete with new financial instruments, such as mutual funds (Holly, 1987; Hess and Smith, 1988; Lord, 1992).

⁵ Miscellaneous claims and trade payables are the other major component experiencing rapid growth in Table 1. These include the value of financial assets in foreign direct investment abroad, deferred and unpaid life insurance premiums and reserves, borrowed securities, non-official foreign currencies, and other claims.

Table 1 Total value of US financial assets: 1970 - 1996
(in billions of constant 1987 dollars)

	1970	1975	1980	1985	1990	3Q 1996	% Chg. '70-'96	'70 Share	'80 Share	'90 Share	'96 Share
Checking, Savings and CDs	2,023	2,506	2,641	3,185	3,285	2,967	47%	14%	14%	11%	7%
Equities	2,463	1,786	2,087	2,444	3,064	6,797	176%	18%	11%	10%	17%
Bonds	2,024	2,345	2,642	4,180	5,910	7,627	277%	14%	14%	19%	19%
US Treasury Securities	1,000	1,162	1,390	2,340	3,400	4,549	355%	7%	7%	11%	11%
Corporate and Foreign Bonds	598	712	701	932	1,480	2,142	258%	4%	4%	5%	5%
Municipal Securities	426	471	551	907	1,029	935	120%	3%	3%	3%	2%
Mutual Funds and Money Market	137	99	191	516	958	2,215	1,517%	1%	1%	3%	5%
Mortgages, Loans, and Other	2,664	3,188	3,885	4,884	6,062	6,493	144%	19%	20%	19%	16%
Credit Instruments	1,378	1,661	2,013	2,464	3,306	3,583	160%	10%	11%	11%	9%
Mortgages	777	949	1,155	1,413	1,521	1,493	92%	6%	6%	5%	4%
Bank Loans, n.e.c.; Other Loans	391	437	490	628	705	854	118%	3%	3%	2%	2%
Consumer Credit	118	141	226	378	530	563	378%	1%	1%	2%	1%
Open Market Paper	1,599	2,048	2,624	2,399	2,285	2,007	26%	11%	14%	7%	5%
Equity in Proprietorships	1,126	1,337	1,622	2,448	3,291	4,806	327%	8%	9%	11%	12%
Life Ins. and Pension Reserves	383	352	298	271	331	418	9%	3%	2%	1%	1%
Life Insurance Reserves	743	985	1,324	2,177	2,960	4,388	491%	5%	7%	10%	11%
Pension Fund Reserves	404	357	366	406	480	579	43%	3%	2%	2%	1%
Bank Personal Trusts	1,279	1,953	2,642	3,995	5,281	6,372	398%	9%	14%	17%	16%
Misc. Claims and Trade Payables	291	250	349	532	709	976	236%	2%	2%	2%	2%
Other Financial Assets	136	69	50	29	110	175	29%	1%	0%	0%	0%
Interbank Transactions	73	60	85	139	119	226	211%	1%	0%	0%	1%
Security Credit	2	5	21	43	46	42	1,705%	0%	0%	0%	0%
Foreign Deposits	80	116	192	321	433	533	566%	0%	1%	1%	1%
Other Government and Monetary Financial Assets	14,011	15,868	19,047	24,987	31,324	40,839	192%	--	--	--	--
TOTAL FINANCIAL ASSETS	4.62	4.74	4.96	5.66	6.27	7.44	61%	--	--	--	--
Total Value Relative to GDP											

Source: US Federal Reserve, Flow of Funds Accounts of the United States, Tables L.4 and L.5.

A key theme emerging from the new area of finance geography is a debate over how market integration and the remarkable increase in financial activities nationally and worldwide plays out in the economic experiences of specific places (Sassen, 1991; Amin and Thrift, 1992; Dow, 1992; O'Brien, 1992; Clark and O'Connor, 1994; Martin, 1994; Thrift, 1994; Martin and Minns, 1995; Porteous, 1995). In grossly simple terms, the crux of the debate revolves around the following two extremes.

The first extreme is that the rapid integration of markets and financial systems will spell an "end to geography"⁶, where place becomes less and less important as a factor constraining economic activity. Further, this interpretation holds that the "annihilation of distance"⁷ leads to increasing convergence in various measures of economic and social performance, as capital, labor, and technology are allowed to flow more freely, and behave more and more according to neo-classical assumptions of market efficiency (Borts and Stein, 1964; Romans, 1965; O'Brien, 1992).

The other extreme — and there are various combinations and subtleties along this spectrum — holds that global change, integration of markets, technological developments, increased mobility, and a host of other factors will, instead, lead to increased regional imbalances. This perspective — whether couched in terms such as "cumulative causation" (e.g., Clark, Gertler et al., 1986), "core-periphery," (e.g., Dow, 1990; Martin and Minns, 1995) or "global cities" (e.g., Castells, 1989; Sassen, 1991) — argues that capital, power, economic activity, and other measures, fueled by the increase in finance activities, will concentrate in the largest urban areas at the expense of a more marginalized periphery.

The commercial real estate industry is an excellent case in which to examine these theoretical debates, as it is in a process of rapid maturation, lying smack in the middle of rapid global economic, technological, social, and regulatory change. There are multiple facets to this maturation. These include: a) the replacement of the familiar local real estate moguls by national and global real estate companies, conglomerates, and the world's

⁶ O'Brien (1992).

⁷ Castells (1989).

most prominent financial institutions (Thrift, 1987); b) the proliferation of global networks of market information, which in the past either never existed or was never available to those not privy to closed, highly localized, social networks (Keogh and D'Arcy, 1994; Stearns, 1995; Baen and Guttery, 1996); c) the adoption of highly sophisticated methods of financial analysis once reserved for the most complicated of Wall Street securities, supplanting investment decisions that were more frequently made on the basis of highly simplified rationales or even gut instinct (Firstenberg, Ross et al., 1988; Mueller and Ziering, 1992); and d) the dramatic shift in a few short years from traditional debt and equity financing of real estate on a property by property basis that typically involved only a few entities with a financial interest, to publicly traded securitized instruments consisting often of hundreds of properties and tens of thousands of investors (Gorlow, Parr et al., 1993; Coakley, 1994; Leitner, 1994). While other industries have gone through similar processes of change over the past few decades, commercial real estate has been jettisoned into this world in less than ten years.

The two overriding questions this dissertation addresses, then, are as follows: 1) how does capital market integration and the emergence of new financial instruments shape the flow of capital over space (specifically, is this flow becoming more concentrated or dispersed)? and 2) what are the implications of these new spatial patterns on commercial real estate markets and, to a lesser extent, on regional economies? Answering these questions requires a thorough understanding of the complex players and mechanisms behind the financing of commercial real estate as well as empirical data on capital flows to specific places, the motivations behind the organizations and individuals ultimately responsible for these investment decisions, and measures of property markets to determine the impacts of these spatially differentiated capital flows.

The argument is organized as follows. Chapter One provides a background on the commercial real estate industry, the role of the capital markets in this industry, and a review of the major players that constitute these capital markets. Chapter Two has three sections which provide an overall framework for understanding the empirical evidence which follows. It first describes the conceptual framework of DiPasquale and Wheaton (1992b) for understanding the role of capital markets in the use, production, and investment process for commercial property assets. The chapter then provides an

overview of the discounted cash flow method of valuing real estate assets. Finally, it establishes a theoretical framework with which to understand the flow of capital over space as a behavioral process undertaken by firms and individuals. This understanding is critical in both recognizing why capital does not flow freely over space, and, secondly, how spatially uneven capital flows can affect the behavior of local real estate markets. Chapters Three, Four, and Five present empirical evidence addressing elements of the conceptual framework developed in Chapter Two. Chapter Three focuses on the flow of capital into commercial real estate across US metropolitan areas for three important segments of the capital markets: institutional investors (i.e., pension funds), real estate investment trusts (REITs), and foreign investors. Chapter Four presents evidence on changes in office real estate values across major US metropolitan areas to determine where there was substantial “herding” of investment (overaccumulation of capital when markets were expanding) and “fleeing” (massive flight of capital when the markets were falling in the late 1980s and early 1990s). These place-specific value cycles are then compared to the spatial investment patterns identified in Chapter Three. Chapter Five focuses on Stockholm over the recent real estate cycle, identifying the consequences of an overheated capital market, the behavior of investors when spatial regulatory barriers are suddenly relaxed, and how the Stockholm real estate industry, and general economy, has restructured in the wake of a severe financial crisis precipitated by the real estate boom and bust. Finally, Chapter Six concludes the dissertation.

CHAPTER 1: BACKGROUND AND TRENDS IN COMMERCIAL REAL ESTATE CAPITAL MARKETS

The aim of this chapter is threefold. First, I would like the reader to have a clear understanding of what, exactly, commercial real estate is and the general processes that surround its use, development, management, and financing. This background is particularly appropriate for those readers who are largely unfamiliar with the nomenclature of the industry, while also providing a context for the analysis of the financing, or capital markets, aspects of this broad and complex topic. Second, I focus more specifically on trends in the finance portion of this industry. Here, I review the major factors that led to a vast supply of capital to the commercial real estate markets during the 1980s followed by the substantial restructuring of the traditional sources of capital in the wake of the real estate collapse and ongoing recovery. The third and last aim of the chapter is an overview of each of the 15 major components of the commercial real estate capital markets, with an emphasis on the emerging securitized forms. Such an understanding is essential in order to comprehend ramifications of these players' investments and the resulting geography, which is the topic of the empirical analyses in Chapters Three, Four, and Five.

This background focuses largely on the US commercial real estate industry.⁸ In Chapter Five, I will provide further context of these changes outside the US, with a case analysis of Stockholm, Sweden.

DEFINING COMMERCIAL REAL ESTATE

Definitions of what constitutes "commercial" real estate property are often inconsistent. Commercial real estate in its broadest definition includes all land and buildings used for investment or commercial purposes (e.g., Arthur Andersen, 1991). This covers all office, industrial, retail, warehouse, hotel, and entertainment uses (and vacant land where

⁸ The total value of US real estate (commercial and residential) represents approximately 28% of the value of all real estate globally (Ibbotson and Associates, 1991).

there is the intent for such uses) in addition to residential properties owned for “investment” purposes. These investment residential properties would typically include most multi-family rental units but may also encompass condominiums, mobile home complexes, co-ops, or even single-family units part of large planned development tracts.⁹

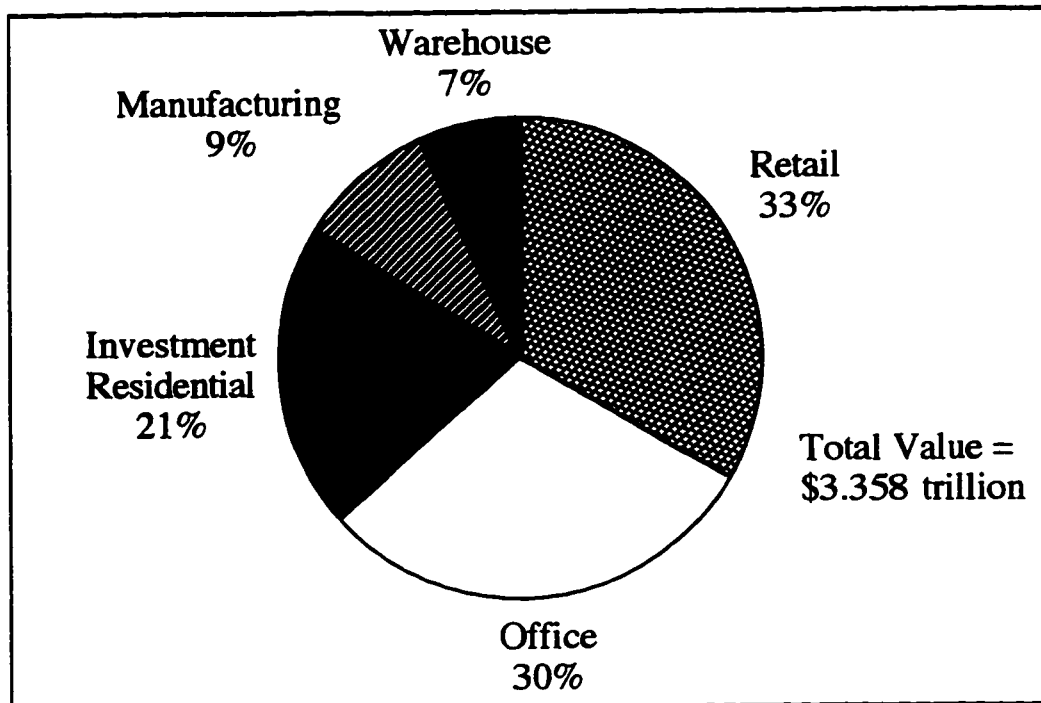
For purely non-residential uses of real estate, the definition of “commercial” real estate is often murky as well. Most non-residential real estate is owned by corporations, approximately 2/3 of which would not be considered an active “investment”, since the primary purpose of these properties is to aid in the production process (Arthur Andersen, 1991). Boeing’s aircraft assembly facilities in Seattle or Kellogg’s Battle Creek cereal processing plant are but two examples where the property is not actively part of the “market” (for lease or sale) as well as being so specific to the needs of the user that any lease or sale would require a substantial transformation for subsequent users. These types of properties are typically not considered part of the active “commercial real estate” universe. However, just because a property is owner-occupied does not mean that it should be excluded from a definition of commercial real estate. The decision of a business to purchase the property where it undertakes its operations often revolves around a “buy or rent” calculus (Apgar, 1993). The ambiguity of this calculus means that these “owner-occupiers” could just as easily decide to lease a property, and thus enter the world of investment real estate, or, if they do make the decision to purchase, take a building off the market that could have just as easily been a rental property.

Another area of ambiguity is what exactly constitutes the “real estate” portion of a commercial property. For some properties and uses, the definition is very clear. The “real estate” of an office building owned by an investor and leased to a variety of users would include the land and the structure, not including any furniture or equipment that are not an essential component of that building. The exact nature of the business of any particular user of the space is not important: it would not matter whether a law office or an advertising agency occupied a given block of space in that building, provided they paid the same level of rent. For other properties the definition again becomes blurred, particularly in the case of hotels. The “real estate” of a hotel is intricately intertwined with

⁹ One could also make the argument that most single-family homes are partly “commercial”, under such a broad definition, as they hold both a “use” and an “exchange” value (Logan and Molotch, 1987).

the operation of the business occupying the land and buildings. Any purchase of a hotel property will most often include ownership of the personnel, equipment, fixtures, and goodwill value comprising any other business. Thus, the purchase price of a hotel property will often include these other attributes and not just the “real estate” portion.

With all of these caveats in mind, the definition of commercial real estate in this dissertation will remain “flexible”, to reflect both the ambiguity as the industry defines it as well as being pragmatic with respect to important available data sources which vary in their definitions. In general, I will use the term “commercial real estate” to constitute properties in which active real estate investors (e.g., banks, institutional investors, developers, and the other sources outlined in detail below) are involved. This includes most office, retail, hotel, warehouse, and apartment properties and excludes most industrial and single-family uses. Figure 1 provides a breakdown of the most comprehensive estimate of US commercial real estate value by use (defined in the study as “investment real estate”; Arthur Andersen/IREM Foundation, 1991).



Source: Arthur Andersen/IREM Foundation (1991, p. 30).

Figure 1 Investment real estate by use, 1991

Retail and office are the dominant types, followed by investment residential, then industrial uses. Hotel uses are not included in this inventory, but most likely would represent no more than 5% to 7% (see Miles, 1990, for a review of other studies, including estimates by Salomon Brothers on hotel property value).

Now that we understand what constitutes the universe of commercial real estate, the next section discusses the role of the capital markets in the ownership and development process of these types of property.

THE COMMERCIAL REAL ESTATE CAPITAL MARKETS - AN OVERVIEW

The capital markets for commercial real estate provide financing for both new construction and the purchase, maintenance, and refinancing of existing properties. This financing occurs through both *equity* (owned share of a property, net of any outstanding loans) and *debt* (lending) arrangements. The sources of this capital are varied and are often categorized into two components (see Figure 2): *private sources* (shares are not traded on a public exchange) and *public sources* (shares available for purchase on a public exchange; note that “public” in this case does not have any connotation of government-sponsored sources of capital). This four quadrant taxonomy of the commercial real estate capital markets is widely accepted and useful, although there are criticisms of such a taxonomy (Hudson-Wilson and Guenther, 1995). For instance, while corporations are identified as “private equity”, the source of capital to these corporations for their property acquisitions will accrue from a variety of sources including banks (private debt), corporate bonds (public debt), and stock offerings (public equity). In spite of these shortcomings, I will use this taxonomy in order to provide an understanding of these capital markets.

	Private	Public
Debt	<ul style="list-style-type: none"> • Banks • Savings and Loans • Mutual Savings Banks • Mortgage Companies • Insurance Companies - Debt • Pension Funds - Debt • Finance Companies 	<ul style="list-style-type: none"> • Commercial Mortgage-Backed Securities (CMBS) • Mortgage Real Estate Investment Trusts (REITs) • Public Real Estate Limited Partnerships (RELPs) • Government Credit Agencies
Equity	<ul style="list-style-type: none"> • Pension Funds - Equity • Insurance Companies - Equity • Foreign Investors • Corporations • Other Private Equity (e.g., individuals, partnerships, joint ventures, real estate and development companies) 	<ul style="list-style-type: none"> • Equity and Hybrid REITs • Public Real Estate Limited Partnerships • Publicly Held Property Companies

Figure 2 The four quadrants of the commercial real estate capital markets

Figure 3 presents a simplified diagram of the relationships between these various capital markets segments and the production and ownership of commercial property. This diagram identifies the flow of capital from their ultimate sources to the various segments identified in Figure 2, to the types of possible property and non-property investments, and the returns that accrue from these investments eventually back to the original sources. The following paragraphs provide a detailed discussion of this diagram and the dynamics of the property investment process.

Beginning at A, the leftmost part of Figure 3, the ultimate sources of capital stem from the savings, deposits, and investments of households, businesses, and government. Banks and savings institutions, for instance, rely upon deposits to provide the necessary capital to make loans. Life insurance companies receive premiums from individuals and invest these proceeds in assets that will fund existing and future liabilities in the form of claims payments. Pension funds receive regular contributions and, like life insurance companies, balance their investments with current and anticipated future withdrawals. The other segments are funded in a similar manner, although there will be a large amount of interchange between external and internal sources of capital (e.g., the proceeds of a

pension fund's investments and operations can be used for other investments without ever having to flow back to its members).

Once funds are available by the various capital supply segments (identified in the box labeled "Capital Supply for Investment"), these funds can be invested in one of three ways: 1) to fund new property development (or land speculation prior to development), 2) to invest in existing commercial properties, or 3) to invest in other assets such as stocks, bonds, cash instruments, or other types of loans and instruments (see **B**). This latter choice would typically be only available to the private sources of real estate capital as the public sources are, by definition, almost exclusively real estate-oriented entities.

Funds that are designated for new construction of property are identified in **C** and **D**. Here, a developer or similar entity responsible for the development and property management process, will act as the intermediary between the investors and the activities associated with the property. Equity, or ownership, investment (**C**) will most often act in tandem with debt financing (**D**), first in the form of a short-term construction loan (most often provided by banking and/or savings institutions), followed by a long-term permanent or "takeout" loan, which pays down the principal owed on the construction loan. This long-term type of financing has most often been provided by life insurance companies for larger-scale commercial projects, although banks, savings institutions, REITs, pension funds, and public limited partnerships also will provide long-term debt financing.

Although not represented in Figure 3 explicitly, there is a host of other activities and players involved in the process of development (as well as the ongoing management of existing properties), such as architects, lawyers, brokers, appraisers, construction companies, and numerous other individuals and entities (see Massey and Catalano, 1978; Gore and Nicholson, 1991, among others, for a more comprehensive discussion of the land development process; Miles, Malizia et al., 1991; Ganderton, 1994). In some cases, the entities which are financing the projects will be intricately involved in the development activities. For most, however, there will not be this close connection.

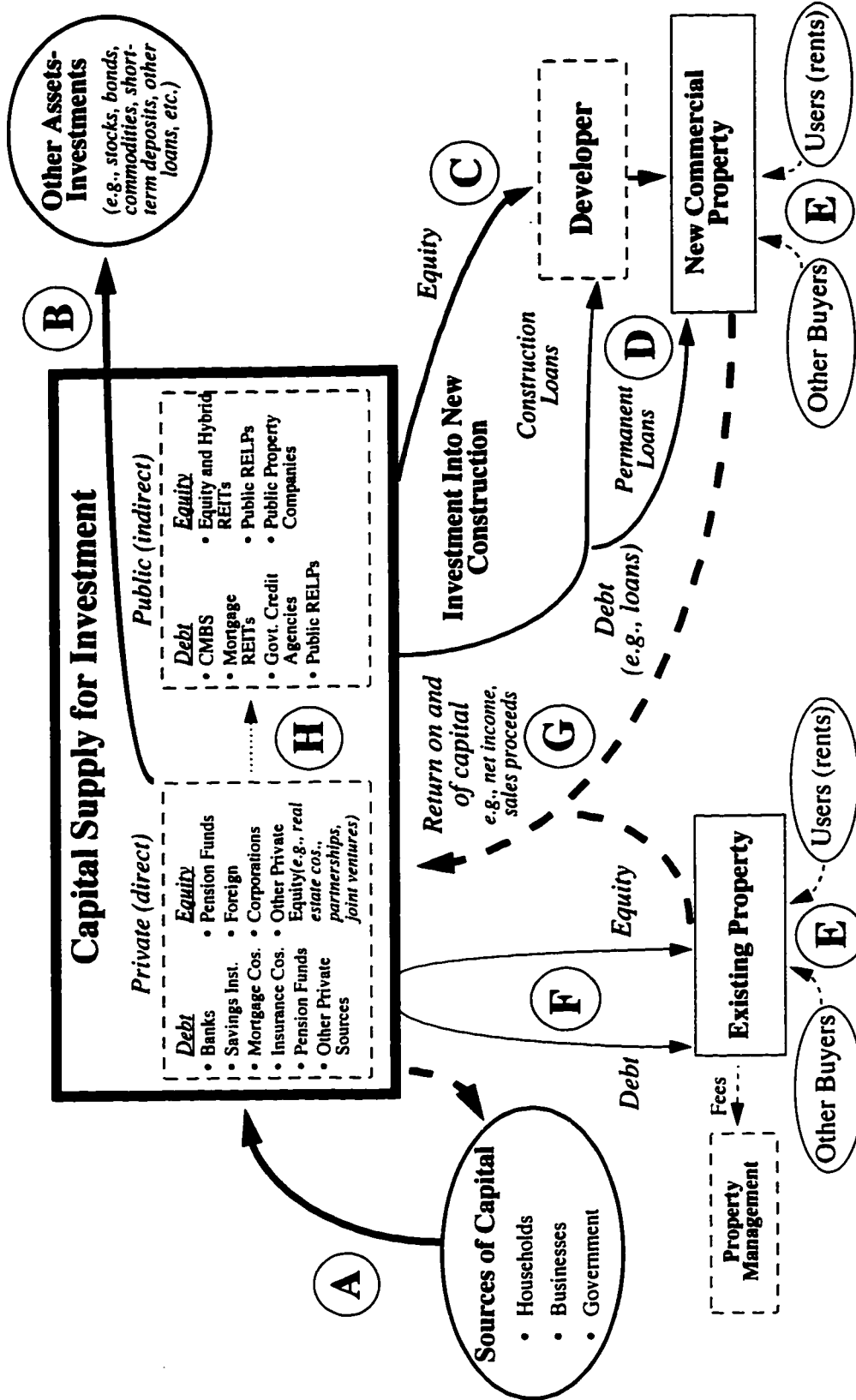


Figure 3 The commercial real estate capital markets

Although a real estate development company will almost always make an equity contribution to the project, often this contribution is in the form of value-added equity accrued via the land acquisition and development process, with a limited amount in direct cash contributions. Further, the developer will accrue fees as part of the expenses associated with the project's development.

Once the property has been built and, in the case of leased space, is occupied based on the demand for that space at a given level of rent, proceeds accrue (G) back to the capital suppliers in the form of net operating income (NOI), debt service payments, or other revenues after all other obligations have been satisfied. If the project is sold, the sales proceeds are used to pay any remaining balances on outstanding debts or obligations, and if there is a capital gain, this amount accrues to the equity financiers.

In (F), there is a flow of capital into existing properties, again in the form of both debt and equity arrangements. As with newly constructed properties, returns on and of capital accrue from payments by users and the net proceeds from the sale of the property (G). Instead of a developer as the primary intermediary, a property management company (often part of a real estate development company as well) is the primary intermediary between the property and the owners/investors. Often, this property management company will also be an operating entity of the owners/investors. What is critically important to understand here is that these flows far outweigh the flows to new construction. Although no comprehensive data source exists on the exact dollar flow of capital to new versus existing properties in any single year, a calculation of this relationship based on available data indicates a ratio of about 1:4 between 1984 and 1988 (a period of high construction activity).¹⁰ In other words, for every \$1 flowing into new commercial construction, there were \$4 flowing into existing properties (including land, which will be a small portion). As will be made clear later in this dissertation, this fact is significant since it has a tremendous impact not just on the *supply of space* (from new

¹⁰ This number was calculated by dividing the total value of new industrial, office, hotel/motel, other commercial, and multi-family construction between 1984 and 1988, according to the U.S. Bureau of the Census *Current Construction Reports*, series C30 and press release CB-91-14 (as listed in the *American Almanac, 1992-1993*, Austin: Reference Press, Tables 1204 and 1205) divided by the total real estate capital flow activity as identified in the Roulac Group's proprietary capital flows database plus life insurance equity (*Life Insurance Factbook, 1995*) and net changes in corporate equity (from Equitable Real Estate Investment Management *Real Estate Capital Flows, 1989*).

construction) but also on the increase and subsequent decline in property values. Much of the research on the impact of the real estate boom during the 1980s has been on massive overbuilding and the resulting effects on vacancy rates, rents, and property income (Case, 1992; Pollakowski, Wachter et al., 1992; Corcoran, 1993; Ball, 1994; Leitner, 1994; Warf, 1994; Mills, 1995; Hanink, 1996), while little has been done to study the impact of the flow of capital to existing properties. Chapter Two and the empirical data in Chapter Five will further elaborate upon this distinction.

The proceeds that accrue back to the capital supply intermediaries (in the “Capital Supply for Investment” box) eventually accrue back to the original sources of capital (A), after fees and other expenses are paid to the intermediaries. This final flow may be in the form of interest on bank deposits, insurance claims, pension fund withdrawals, dividends, and other direct and indirect means of distributing this capital.

Finally, (H) denotes the fact that many of the capital supply segments identified as “direct” investors in property are investing in the public, or “indirect” forms of property ownership themselves. For instance, it is estimated that as much as 60% of the shares of REITs are held by institutional investors, such as pension funds and insurance companies¹¹. As will be discussed at greater length in this section, many of these public forms of investment are the offspring of what once were direct real estate holdings by private segments of the capital markets (the same ones who are purchasing the public instruments).

TRENDS IN THE SUPPLY OF CAPITAL TO COMMERCIAL REAL ESTATE

With this overview of the general operation of the commercial real estate capital markets, we can review the relative importance of the capital market segments identified in Figure 2 and Figure 3. First, Table 2 summarizes a recent attempt at inventorying the total ownership structure of commercial real estate in the US. Depending in part on the

¹¹ Figure from The Roulac Group based on sample of institutional ownership figures reported in REIT Securities Exchange Commission (SEC) documents from website www.1.stocksmart.com.

definition of commercial real estate, estimates of its value range widely, from less than \$1 trillion (Ibbotson and Associates, 1991) to almost \$5 trillion (Miles, 1990), or anywhere from less than 10% to approximately 25% of the nation's total wealth. The study from which Table 2 is derived estimates a value of \$3.777 trillion in 1990 (including investment residential real estate), of which approximately 70% is for investment purposes (Arthur Andersen and IREM Foundation, 1991). Table 2 provides a breakdown of the total ownership of the \$3.777 trillion figure (includes owner-occupied non-residential property).

Table 2 Commercial real estate ownership, 1990

Ownership Category	Dollar Value (Billions)	Percent	Estimated % in Investment Real Estate
Corporation	\$1,699	45.0%	33%
Partnerships	1,011	26.8%	90%
Not for Profits	411	10.9%	NA
Government	234	6.2%	80% (mainly gov. subsidized housing)
Institutional Investors	128	3.4%	93%
Financial Institutions	114	3.0%	43%
Other	92	2.4%	NA
Individuals	<u>88</u>	<u>2.3%</u>	<u>NA</u>
TOTAL	\$3,777	100.0%	NA

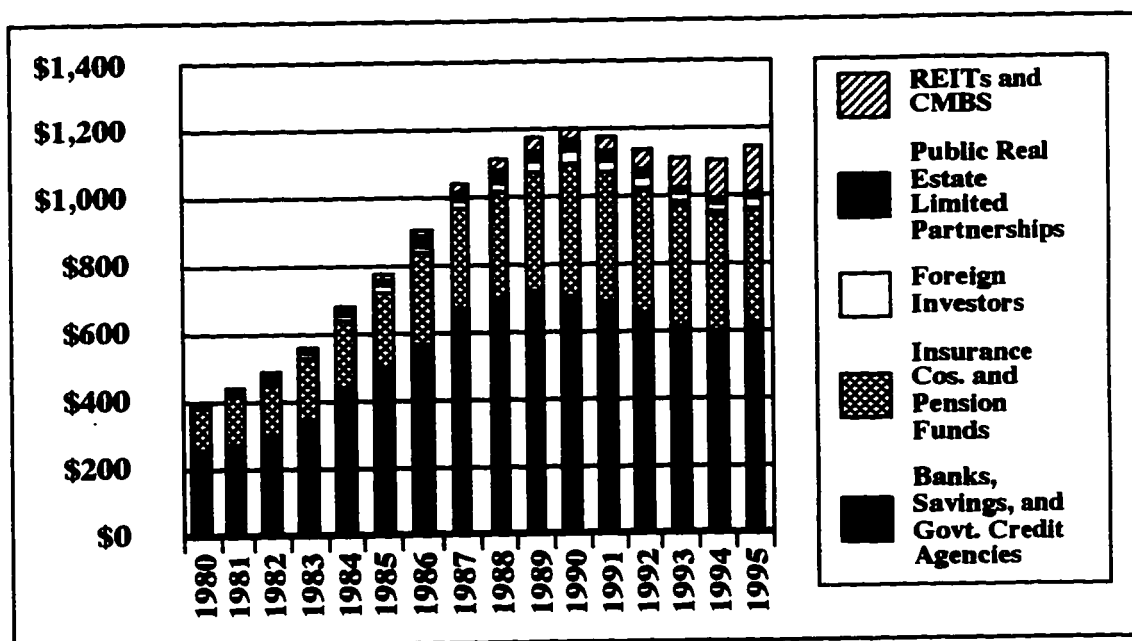
Source: Arthur Andersen and IREM Foundation, 1991.

Note: Includes all non-residential, non-farm properties plus investment residential uses.

While corporations dominate the ownership patterns in Table 2 at \$1.7 trillion, approximately 2/3 of that amount is not considered investment property (i.e., owner-occupied). Partnerships, at \$1.0 trillion, constitute a large black box that will include a variety of private owners, a sizable portion of which will include foreign and "institutional" investors. "Other" includes foreign investors, REITs, and other miscellaneous holders; however, they do not reflect current figures. Today, for instance, there is close to \$90 billion alone in REIT capitalization and at least \$30 billion in foreign assets. In sum, Table 2 understates the relative importance of institutional, foreign, and securitized (public) investments while also not showing any of the dynamics in the financing of this property. However, there exists no other reliable source of ownership

data for the entire inventory of US commercial real estate.

Table 2 represents only a cross-section of commercial real estate ownership patterns. Figure 4 and Figure 5 provide a closer examination of growth in the supply of capital by the segments identified earlier in Figure 2 and Figure 3. Noticeably absent from these figures are data for corporations and private sources of equity, as no reliable source exists for such data historically. Also, debt and equity have been combined for some sources to contrast graphically the recent growth of securitized instruments (REITs and commercial mortgage-backed securities - CMBS), the continued growth of institutional sources (insurance companies and pension funds), and the retraction in bank and foreign sources.



Source: Roulac Capital Flows Database; Life Insurance Factbook, 1995.

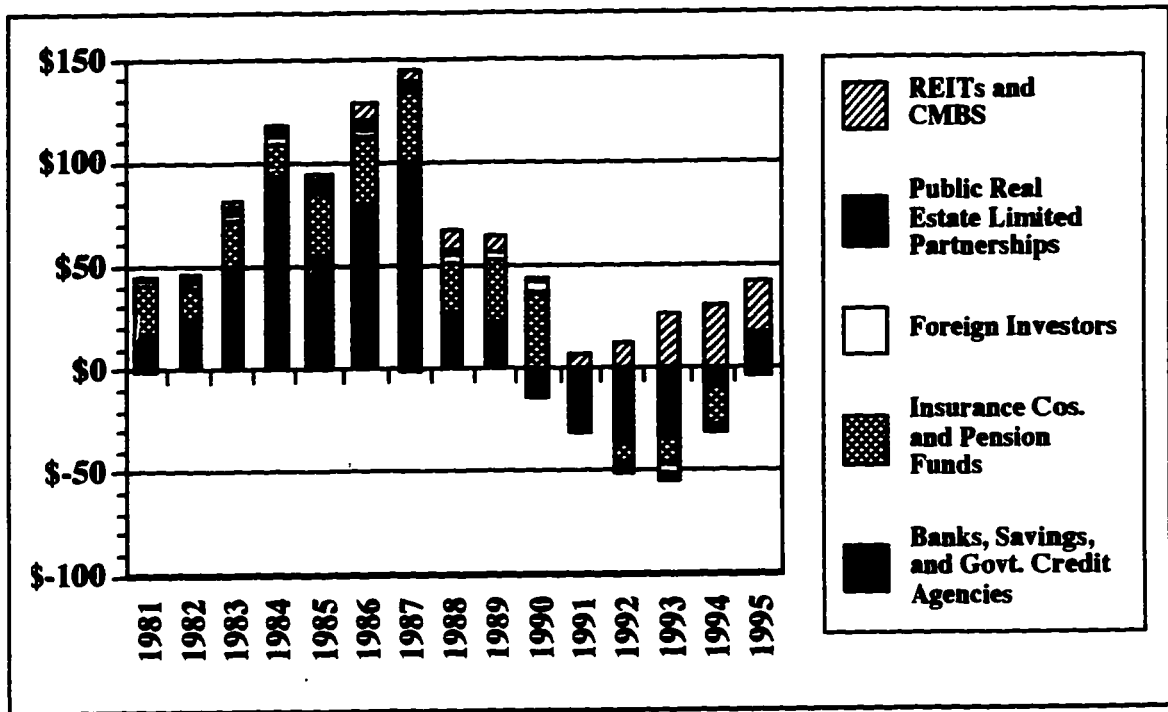
Figure 4 Aggregate market size of major debt and equity commercial real estate capital sources, 1980-1995 (in billions of current dollars)

Banks and savings institutions represent the largest component of the capital markets shown in Figure 2, although their share has diminished from 64% in 1980 to 54% in 1995. Institutional investors (insurance companies and pension funds) are the next largest share, remaining relatively stable at 30 to 32% throughout the period. Within this category, however, pension funds have experienced a dramatic increase in share -- from approximately 2% of total market size to almost 8% by 1995. In contrast, while life

insurance equity investment has remained stable at approximately 3%, life insurance mortgages have decreased substantially from 25% in 1980 to 17% in 1995. Public real estate limited partnerships, which were favored during the 1980s because of favorable tax laws, experienced a boom period, peaking at 3% in 1988, and declining to just over 1% in 1995. Foreign investors, contrary to popular views, have never represented more than 3% (although this figure is likely understated because of the manner in which foreign investments are reported by the Bureau of Economic Analysis). This is not to discount, though, the impact that foreign investment has had on certain markets, particularly in New York, Los Angeles, Washington DC, and Hawaii, as will be discussed in further detail in Chapter Three.

Finally, securitized forms of investment, mainly REITs and commercial mortgage-backed securities (CMBS) are experiencing the greatest amount of recent growth, from less than 2% until as late as 1985 and growing to almost 13% by 1995, at \$144 billion in value (this number has increased to at least \$175 billion at the time of this writing). CMBS are a relatively new phenomenon that consist of re-packaged mortgages which are segmented into various components, then sold publicly like a bond. Like REITs, they have become a popular alternative for direct property investment and lending. A majority of the purchasers of these instruments are institutional investors (estimated at 60%), who in many cases have also been the issuers of these securities, particularly CMBS.

Figure 5 provides another perspective on these data, again highlighting the recent growth of securitized segments of the capital markets. These securitized instruments filled the credit needs during the early 1990s as the other traditional sources attempted to restructure their holdings (Downs, 1994c; Dohrmann, 1995).



Source: Roulac Capital Flows Database; Life Insurance Factbook, 1995.

Figure 5 Change in aggregate market size of major real estate capital sources, 1981-1995 (in billions of current dollars)

In sum, then, the 1980s boom and bust in real estate has led to a restructuring of the capital markets, with the emergence of securitized forms. Banks and financial institutions, while still highly important, have gradually been supplanted by other forms, including the equity investments of institutional sources (pension funds and life insurance). The next section provides a more detailed description of each of the major capital market players in order to understand their role in the past real estate boom and how they have restructured since the collapse and recovery of the commercial property markets.

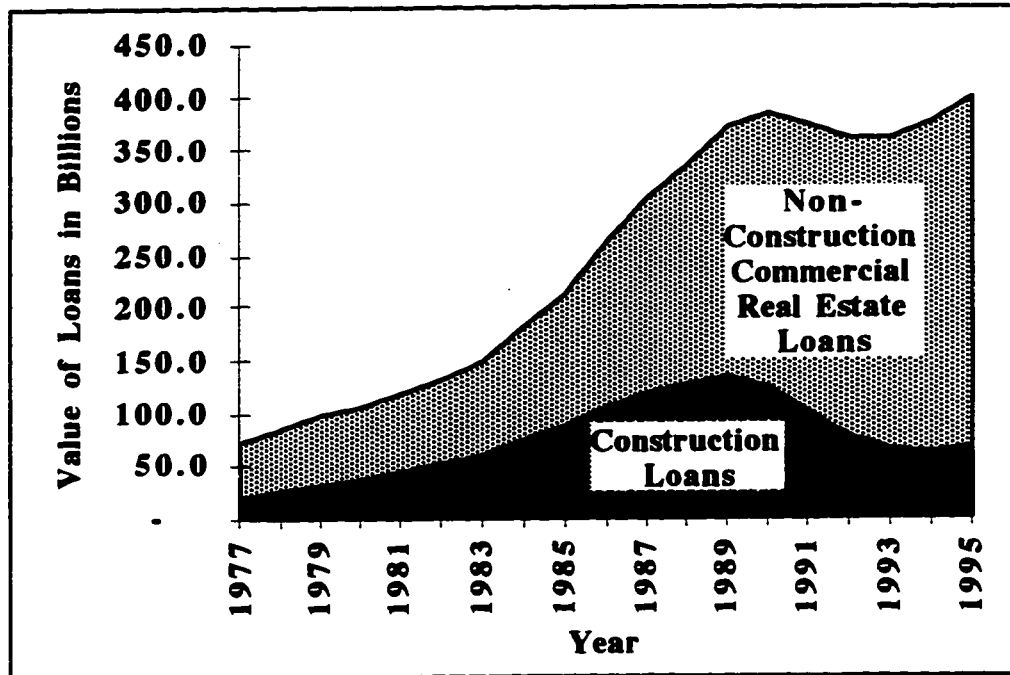
A DETAILED LOOK AT THE PLAYERS IN THE COMMERCIAL REAL ESTATE CAPITAL MARKETS

COMMERCIAL BANKS, SAVINGS INSTITUTIONS, AND MORTGAGE COMPANIES

Commercial Banks

Commercial banks have traditionally provided short-term financing for commercial real estate projects during the land development and construction phase, with a permanent lender, most notably a life insurance company, carrying the role of long-term mortgage holder. Beginning in the late 1970s, however, this role of commercial banks began to shift. A combination of high interest rates, the competition brought on by the introduction of money market mutual funds, the slowdown in the commercial paper market, and congressional deregulation of banks (Depository Institutions Deregulation and Monetary Control Act of 1980) and savings and loans (Garn-St. Germain Act of 1982) which further spurred competition for depositor's funds all led banks to pursue more lucrative lending opportunities (Downs, 1985; Holly, 1987; Lord, 1992; Warf, 1994; Warf and Cox, 1994; Dohrmann, 1995; Warf and Cox, 1995). As Figure 6 illustrates, commercial banks increased substantially their lending to commercial real estate, particularly non-construction lending. Loan to value (LTV) ratios increased from 50 to 75% to as high as 100% or greater. Banks entered the "mini-perm" and even the permanent lending market, providing "bullet" loans of 5 year terms and higher, a market once mainly reserved for life insurance companies.¹² Nationally, the percentage of commercial loans to the gross value of loans increased from approximately 10% in the late 1970s to over 18% at the peak of the boom in 1987 (these numbers reflect the current value of loans and not loan origination activity). In some states, this figure was substantially higher: Texas, Florida, Arizona, New Hampshire, Vermont, Nevada, New Jersey, Maryland, the District of Columbia, and South Carolina, among other states, each had figures above 25 and even 30% during the 1980s (Federal Deposit Insurance Corporation, various). Combined with other real estate lending (i.e., single family residential), this figure exceeded 70% in a number of states, particularly New England.

¹² A bullet loan is typically a 5 to 10-year term mortgage with no amortization, the balance being due at the end of the loan period (Friedman, Harris et al., 1993).



Source: Federal Deposit Insurance Corporation (FDIC) historical data series from web address <http://www.fdic.gov>, tables CB-11-ST and CB-12-ST, based on FDIC Call Reports.

- Notes:
- a) Construction loans will include residential and non-residential construction lending (no further breakdown is available).
 - b) Non-construction commercial real estate loans include the value of non-residential plus multi-family loans.
 - c) Data are based on FDIC insured commercial banks and will reflect changes in the loan values of member institutions, the addition of new members, and the withdrawal of former members.

Figure 6 Value of commercial bank construction and commercial real estate loans, 1977-1995 (current dollars)

By the late 1980s, when property markets began to decline in a “rolling recession”-like manner across the country, the level of non-performing real estate loans increased substantially, resulting in defaults and high levels of “other real estate owned” (OREO) on banks’ balance sheets. In some cases, this resulted in outright bank failures (Warf and Cox, 1995); in most, however, the result was significant write-downs, the establishment of separate “workout” companies, responsible for the disposition of the bad assets, and the general weakening of many banks that had been highly exposed during the 1980s. This has contributed to the rapid merger and acquisition activity already occurring in the industry.

There have been numerous explanations offered as to why banks became so active in real estate lending during this period, not only in the US but around the world. Lewis (1996) provides an inventory of some of these factors which include:

- *Monetary policy*, which resulted in excess liquidity and a high demand for financial assets as opposed to goods and services.
- *Deregulation and competition*, where depositor interest rate controls were eliminated, savings and thrift institutions were allowed to compete aggressively with banks in their traditional strongholds, and “disintermediation” of depositors ability to invest in financial assets such as money market funds all created high incentives for banks to maintain high lending levels and in assets with potentially high returns. Commercial real estate was considered a viable option to meet these needs.
- *Too much regulation*, where the existence of FDIC guarantees for depositor liability created a moral hazard for banking institutions: if loans all of a sudden went bad, the safety net of the government insurance programs would be there to bail them out (which, ultimately, did occur; see Warf and Cox, 1995).
- *Attraction of property-based collateral*, where, unlike many businesses, real estate loans included a tangible, slowly-depreciating asset (unlike an automobile, for instance) which had an income stream, that, at the time, lenders and most players in the industry considered stable and predictable. Furthermore, construction lending during the 1980s was often granted on the basis of the borrower's credit rating, often superseding the actual feasibility of the project.
- *Managerial ambitions, incentives, and controls*, where there is a high incentive on the part of loan officers to originate high volumes. Since a bad loan may not appear as non-performing or default until some distant future date, when the loan officer may be long gone from the organization, there may be a short-term myopia on the part of the decisionmakers granting the loans.

- *Collective behavior (herding)*, where banks merely followed what others were doing in a “lemming-like” process (Browne, 1993). Although there is empirical evidence that banks followed a purposeful, high-risk strategy in their lending behavior (Browne, 1993), such behavior was not recognized for its possible collective implications. Browne (1993) sums it up this way:

“... the dangers of growth are greatest when everyone is growing. Perhaps, too, the dangers of real estate lending -- or any other form of lending -- are greatest when everyone is doing it.”
(Browne, 1993, p. 27)

Each of these factors likely played a significant role in the behavior of banks and their real estate lending practices during the 1980s. The problem real estate loans of the last boom have generally been worked through the banking system. Banks are again active in the commercial real estate lending arenas; and their once geographically-constrained activities (where interstate banking regulations curtailed multi-state branching and had a similar effect on interstate lending practices) are being supplanted by the national (and global) activities of larger holding companies, who can practice multi-regional lending strategies. New risk-based lending requirements, under the Basle Accord of 1987 and the Financial Institutions Reform, Recovery and Enforcement Act of 1989 (FIRREA), have been established which has curtailed many of the risky practices of the 1980s. The industry remains in a great deal of flux, as banks compete with other financial institutions, but there is a sense that the lessons of the 1980s will remain for some time.

Savings and Thrift Institutions

The crisis in the US savings and loan industry has been well-documented (Mayer, 1990; White, 1991; Warf and Cox, 1994; Izzo and Chen, 1996), and is not the focus here, particularly as S&L's influence in the commercial real estate capital markets has diminished considerably (though still active). In general, many of the factors identified above with respect to banks were magnified many times in the S&L industry. Sudden deregulation, combined with continued Federal Savings and Loan Insurance (FSLIC) deposit guarantees, led to intense competition, risky lending practices without geographic constraints, and an interest rate crunch, where the S&Ls were unable to manage the risks of being long-term lenders while having to pay short-term borrowers (depositors).

Combined with a good dose of corruption (Mayer, 1990; Izzo and Chen, 1996) and the collapse of oil prices in the mid 1980s which devastated the southwest economies where so many of the S&Ls were concentrated, the industry's implosion and \$231 billion government bailout (Warf and Cox, 1994) has had a lasting effect on commercial real estate capital markets in the US and around the world, even though the original crisis began over a decade ago.

The establishment of the Resolution Trust Corporation (RTC) in 1989 to dispose of the problem loans, property, and other assets of the failed thrifts resulted in not only a massive real estate firesale, where many opportunistic buyers acquired often quality properties at bargain prices, but initiated the commercial mortgage-backed securities (CMBS) market (described below), which has become a preferred vehicle for a host of other mortgage lenders, including banks, insurance companies, and even pension funds.

At one point, savings institutions represented nearly 30% of the entire commercial real estate capital markets (not including corporate or private equity); today, that figure has fallen to under 10% (FDIC historical data). It is likely this number could increase as consolidation in the industry continues, surviving institutions continue to grow, and willingness for real estate lending returns. Events resembling a repeat of the 1980s are all but impossible, as the memory of the S&L debacle remains firmly imprinted and the entire nature of real estate finance has changed, partly due to the restructuring after the last cycle but also due to lasting changes with the growth of securitized instruments.

Mortgage Companies

Finally, *mortgage companies* and *mortgage bankers* represent an established and growing component in the capital markets, particularly as functions associated with the origination and servicing of loans are further segmented (Hess and Smith, 1988). Mortgage bankers initiate loans after receiving a commitment from a secondary mortgage market agency, such as the Federal National Mortgage Association (FNMA or Fannie Mae), Government National Mortgage Association (GNMA or Ginnie Mae), Federal Home Loan Mortgage Corporation (FHLMC or Freddie Mac). These loans are then sold in multiple packages and sold as securities. Originally established as a means to circulate funds from capital-rich regions to capital-poor regions as well as to provide credit during

periods of credit constraint (Wurtzebach and Miles, 1994) in the single-family residential area, these agencies, and the role of mortgage bankers and brokers are becoming an important component of the commercial finance market. Mortgage brokers also initiate loans on behalf of other lenders, most notably life insurance companies, receiving a fee for these origination services or the sale of the loan.

LIFE INSURANCE COMPANIES

Life insurance companies have long been a player in the commercial real estate capital markets, mainly as a provider of long-term mortgages. Although banks hold a greater number of commercial mortgages, life insurance companies are the primary players for larger scale commercial properties. Their participation in these assets stems from the large amount of capital reserves held and a stable net flow of funds in the form of premium payments offset by claims made to policyholders. As early as 1917, real estate mortgages and holdings represented 37% of US life insurance company assets (Life Insurance Fact Book, 1995). Life insurance companies are largely regulated by state-based agencies, who place restrictions on the kinds of assets in which they can invest. In the 1940s, a number of states where many of the largest life insurance companies were based, led by New York state, loosened restrictions on investing in real estate. This led to the continued expansion of life companies into commercial real estate; from the 1940s to the 1970s, life companies were the dominant source of both debt and equity financing for commercial property (Zinngrabe, 1994).

During the boom period of the 1980s, life companies continued to expand in their lending activities (as well as some equity participation), but these activities were much more restrained than some of the other segments of the capital markets. Between 1980 and 1989 (the year in which many view as the peak of the 1980s boom), total life insurance commercial mortgages outstanding plus investment real estate owned increased from approximately \$115 billion to \$260 billion (Life Insurance Factbook, 1995). Yet, the value of these holdings as a percentage of total assets decreased from 24% to 20%, the continuation of a downward trend since the mid 1960s. With the massive write-down and selling off of many of these portfolios over the past seven years (many bundled into mortgage-backed securities), this percentage has fallen to 12%, as of 1994. The total

value of these holdings actually declined for the first time since these figures have been tracked regularly, beginning in the early part of this century. Delinquency rates increased from a low of 0.85 in 1994 to 6.62% in 1992, declining back to 3.38% by 1994.

The shift away from direct debt and equity holdings of commercial real estate has in large part been promulgated by new risk-based capital requirements put forth by the National Association of Insurance Commissioners (NAIC), a regulatory organization composed of state regulatory agencies. These new requirements assign capital reserve ratios (similar to banking requirements) associated with different types of assets, as shown in Figure 7. In addition, lower ceilings on loan-to-value (LTV) ratios (60% to 70%) were put forth to discourage the highly leveraged investments of the 1980s (where LTV ratios would be as high as 100% — or higher).

Asset Type	Risk Factor (required capital reserve as a % of value held in asset)
<i>Stocks and Bonds</i>	
Common stock	0.0% - 30.0%
Preferred stock	2.3% - 30.0%
US govt. bonds	0.0%
Bonds - A or higher	0.3%
Bonds - BBB to BB	1.0% - 4.0%
Bonds - B, CCC, D	9.0% - 30.0%
<i>Mortgages</i>	
1 to 4 family residential	0.6% - 1.0%
Commercial and multi-family - current	1.0% - 3.0%
Commercial and multi-family - delinquent	3.0% - 6.0%
In foreclosure	20.0%
<i>Real Estate Held</i>	
Occupied by company	10.0%
Joint ventures and limited partnerships	20.0%
Investment property	10.0%
Foreclosed property	15.0%

Source: National Association of Insurance Commissioners, after (Zinngrabe, 1994; Dohrmann, 1995)

Figure 7 NAIC risk-based capital requirements for insurers

Even before these requirements were put into effect, insurance companies were paring their real estate holdings. The life insurance industry in general has seen flat growth, as

baby boomers are showing a preference for retirement planning in lieu of traditional life insurance policies (Scism, 1996a). Many of the large insurers which are publicly sold have not only shifted their investments because of the regulatory changes but to assuage shareholders and Wall Street analysts, who are scrutinizing their holdings in the wake of declining balance sheets and well-publicized scandals in other parts of the insurance business (such as deceptive sales of limited partnerships combined with the more long-term restructuring of the industry) (Scism, 1996b; Scism, 1996a; Trachtenberg, 1997). Property is still viewed by insurance companies as an important component of large, well-diversified portfolios, but the ways in which they choose to participate is shifting to indirect investments, specifically REITs and CMBS. CMBS, in particular, allow the insurance companies to enjoy many of the same benefits of direct mortgage lending, but with perceived greater liquidity and, most importantly, far less stringent capital requirements (as seen in Figure 7; CMBS are treated as a bond investment under these guidelines).

The issuance of mortgage-backed securities by the insurance companies (who represent nearly 15% of CMBS issuers; Evans and Stein, 1996), combined with the sell-off of direct holdings, has led to a profound shift in commercial real estate holdings from this once dominant source of real estate capital. Many of the properties being sold are being purchased by the new players on the block: REITs (Trachtenberg, 1997). Although insurance companies have again reentered the marketplace in their traditional lending roles, their restrained participation as a direct holder of mortgages and property, in lieu of greater involvement in indirect forms of ownership, represents a lasting, structural shift.

One final note about insurance company real estate investment is that many of their research, asset and property management, acquisition/disposition, and other functions are endogenized within these organizations. Real estate is a highly cost and labor-intensive activity, and insurance companies will often have a large portion of their personnel devoted to these activities. Because of their historical role in real estate, many insurance companies have subsidiaries which serve other clients in real estate advisory, brokerage, management, and other functions. This is particularly important to understand as pension funds, discussed below, outsource most of these real estate investment activities, often to the subsidiaries of these life insurance companies.

PENSION FUNDS¹³

Pension funds and other tax-exempt financial institutions represent the greatest potential source of commercial real estate capital in years to come (Equitable Real Estate and Roulac Real Estate Consulting Group, 1989; Dohrmann, 1995). As Table 1 demonstrated, pension fund reserves have increased nearly 500% since 1970 (constant dollars) increasing from less than 1% of the value of total US financial assets to 11%, at approximately \$4.4 trillion in 1987 dollars (\$6.1 trillion in current dollars). At least an estimated \$140 billion is currently invested in direct debt and equity real estate assets (Roulac Capital Flows Database, 1996).¹⁴ This amount is a relatively small proportion of total assets (estimated at 2 to 5%) and will increase as a result of both an expansion in total pension fund assets (forecasted by Dohrmann, 1995 at over 7% annually) and a higher allocation to real estate assets, although not likely to be higher than 10%.

Pension funds are typically managed by a board of trustees, an investment committee, a staff of in-house managers, and/or outside pension fund investment advisers. Like life insurance companies, pension funds are charged with managing a stream of contribution inflows offset by beneficiary payments, or liability, outflows (see Clark, 1993, for a thorough discussion of this balancing act by corporate sponsors). Thus, the ways in which they manage their portfolios, and the assets they choose to include in these portfolios, will not only reflect a desire to maximize returns but to ensure that there is a sufficient pool of available capital to fund the stream of beneficiary claims. The biggest enemy of pension funds is portfolio volatility, as opposed to less than desired total returns. Clearly, no plan wants to experience volatility on the downside, as dramatic losses will threaten their ability to fund liabilities, and will require higher contributions on the part of their employer and employee members. On the other hand, high volatility on the upside can overfund a plan, whereby surplus must be distributed to the members, an administrative nightmare (Dohrman, 1995, p.35). For this reason (and regulatory

¹³ Much of the following discussion is taken from Dohrmann (1995), who provides an excellent review of pension fund investment in real estate.

¹⁴ Dohrmann (1995, p. 33) estimates \$167 billion in tax-exempt fund real estate investments as of January 1, 1993, including equity, mortgages, and mortgage-backed securities based on Institutional Real Estate, Inc. estimates.

reasons discussed below), pension fund administrators tend to be very conservative in their asset choices, seeking a diversification strategy of various asset types (e.g., stocks, bonds, property) and categories (treasury versus corporate bonds, retail versus office real estate, etc.) which will minimize fluctuations. In sum, pension funds prefer an environment of predictability rather than maximized returns.¹⁵

This conservatism in investment practices is further strengthened by the regulatory requirements of the Employment Retirement Security Act of 1974 (ERISA) as well as the organizational structure of these plans, whereby many decisions are made by the plan's trustees or an investment committee. There are three main types of pension plans: corporate (\$1.5 trillion in total assets in 1993), public (\$1.1 trillion), and multi-employer¹⁶ (\$0.2 trillion). ERISA applies only to corporate and multi-employer plans, although many states have adopted similar guidelines for public plans. Prior to the adoption of ERISA, corporate plans had a wide degree of flexibility in their asset management. After its adoption, plan "fiduciaries" (trustees, managers, committee members) were liable for the investment decisions and overall financial management of the funds. The dual implications of this for real estate investment on the part of pension funds, which prior to the adoption of ERISA was very limited, were that real estate was legitimized as an acceptable asset that contributed to portfolio diversification, while at the same time creating a risk-averse attitude towards the type of real estate assets in which the pension fund fiduciaries were willing to choose (Equitable Real Estate and Roulac Real Estate Consulting Group, 1989; Dohrmann, 1995). Numerous cases against pension fund fiduciaries have been brought to court under ERISA by the US Department of Justice (the agency responsible for administering Title I of ERISA), clarifying the diversification requirements set forth in Section 404 of the legislation.¹⁷ This clarification

¹⁵ The conservative behavior on the part of pension funds may vary considerably, however, depending upon whether the plan is over or underfunded. Underfunded plans (i.e., a contribution and asset return stream insufficient to meet expected future liabilities) are likely to be more risk-willing in their portfolio management strategies, according to Dohrmann (1995, p. 35), as they will avoid having to increase the contribution of their members. Also, because these underfunded plans are more cash-rich (due to higher required contributions), they are more likely to invest in real estate, according to Dohrmann.

¹⁶ Also known as Taft-Hartley or labor union plans.

¹⁷ Some of these cases include *Marshall v. Glass Metal Association and Glaziers and Glassworkers Pension Plan*, 507 F. Supp. 378 (D. Haw. 1980); *Brock v. Citizens Bank of Clovis*, 841 F.2d 344 (10th Cir. 1988); and *Reich v. King*, 861 F. Supp. 379 (D. MD. 1994).

has furthered the conservative behavior of these corporate plans, leading to what Dohrmann (1995) calls a “herd instinct”:

“The passage of ERISA effectively promoted a ‘herd instinct’ among pension fund investors. Absent a clearer definition of what constitutes ‘prudent’ behavior, what the majority elected to do became the standard. The fact that the majority of funds were invested in equities, for example, actually defined stock investment as a prudent thing to do. Conversely, if fewer than 51 percent of the funds were invested in a relatively new area like real estate, the burden of proof that investing in that area indeed was a prudent thing to do rested on the pension fund’s shoulders... This herd instinct would become a critical factor in the decision-making processes pension funds would exercise over... their real estate investment strategies. *Ironically, the herd instinct actually worked against the best interests of the funds by promoting concentration rather than diversification.*” (Dohrmann, 1995, p. 51-52; italics added)

This “herding”, or conservatism, as a result of ERISA is compounded by the ways in which investment decisions are made within pension funds, especially with respect to their real estate decisions. Very few pension funds actually manage their own investments, particularly their real estate investments. Instead, pension fund advisers will manage their assets, in the form of *direct holdings* (property ownership by the pension fund, managed by an outside entity), *separate accounts* (assets are owned in the name of the adviser, but all benefits accrue to the pension fund), or *commingled real estate investment accounts* (where there are multiple investors in either an open- or closed-ended, or limited subscription, structure). The advisers who manage these assets fall into three categories (Wurtzbaach and Miles, 1994): 1) life insurance companies, such as Prudential, Aetna, Equitable (now part of Lend Lease), and MetLife (now MetRealty); 2) bank trust companies, such as First Wachovia Corporation, Citicorp, and Wells Fargo Realty Advisors; and 3) independent investment advisers, such as LaSalle Partners (now merged with Galbreath), JMB Institutional Realty Corporation (now JMB-Heitman), and Aldrich, Eastman, and Waltch (now merged with Copley Advisors and New England

Section 404[a] of ERISA is a key provision with respect to portfolio diversification, which in part states: “[the fiduciary] shall discharge his or her duties solely in the interest of plan participants or beneficiaries and...(B) with care, skill, prudence and diligence under the circumstances then prevailing that a prudent man acting in a like capacity and familiar with such matters would use; (C) by diversifying the investments of the plan so as to minimize the risk of large losses, unless under the circumstances it would be prudent not to do so.”

Investment Cos., Ltd.).¹⁸

The use of these advisors on the one hand can contribute valued expertise to pension funds who have not traditionally had a history of real estate investment. But the use of these advisors can also add another layer of bureaucracy to investment decisions and portfolio management to institutions which already have numerous hierarchical and committee-based decision making structures. This can create a “stickiness” in decisionmaking, where there are both slow reaction times and a tendency for even more conservatism in the actual implemented strategies. However, as a recent report noted, this behavior can be problematic:

“In an increasingly competitive capital environment, timeliness and responsiveness become important differentiating attributes. Investment managers who are slow in finding deals and pension funds who are slow in acting upon opportunities lose out as other, more responsive investors consummate transactions more quickly.” (Equitable Real Estate and Roulac Real Estate Consulting Group, 1989, p. 9)

Many pension funds, like other segments of the capital markets, are thus modifying their investment strategies, as a result of more attention to risk-management, a recognition that direct property ownership and lending has its drawbacks given pension funds’ organizational and regulatory environment, and the sting of recent property asset losses. This has generated a tremendous amount of interest in finding other means of participating in property markets without the high risk and illiquidity exposure (i.e., purchase of securitized equity and debt instruments). As Table 3 shows, pension funds demonstrate different strategies in the exact investment structure of their real estate holdings (direct equity, mortgage, or indirect securities), but what is clear is their purchasing of these securitized instruments.¹⁹ Thus, the capital markets cannot be viewed as separate components because there are often many incestuous relationships between them.

¹⁸ There have been numerous mergers and acquisitions in the advisory area at a seemingly quickening pace, as an explosion of new firms in the late 1980s has led to consolidation; see Pacelle (1997a).

¹⁹ Figures on ownership of REITs were not available, but, as already mentioned, informal surveys indicate that 60% or higher of REIT ownership is by institutional holders, the majority of which are pension funds; see footnote 11.

Table 3 Top 10 pension funds investing in real estate (defined benefit/contribution plans)

Pension Fund	<i>Millions of Dollars</i>			
	Total Real Estate Holdings	Direct Equity Holdings	Mortgages	Mortgage-Backed Securities
TIAA-CREF ²⁰	\$37,284	\$7,169	\$19,426	\$10,689
California Public Employees (CalPERS)	15,233	5,304	3,177	6,752
New York State & Local	6,736	1,122	1,792	3,822
Texas Teachers	6,733	492	1,465	4,776
Ohio State Teachers	5,815	1,840	875	3,100
New York City Retirement	4,854			4,854
California State Teachers	4,826	1,455	649	2,722
Ohio Public Employees	4,200	1,197	524	2,479
Florida State Board	4,187	912	---	3,275
AT&T	3,814	3,714		100

Source: The Roulac Group, compiled from various sources including *Nelson's Directory of Institutional Real Estate*, *Money Market Directories*, and Merrill Lynch.

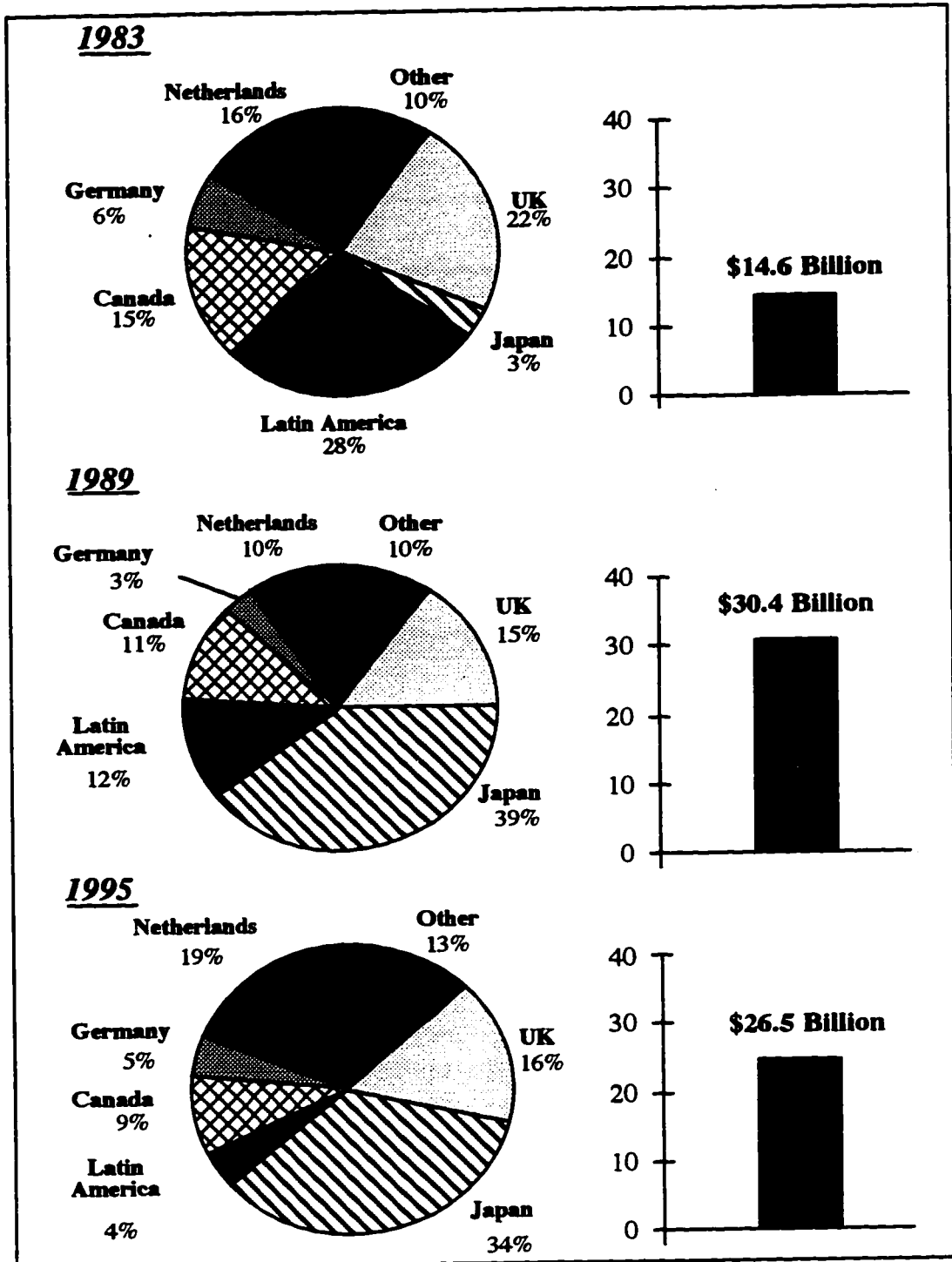
FOREIGN INVESTORS

Foreign sources of capital have been an important segment for certain types of uses in certain places; however, in the aggregate, foreign investment has remained relatively small, even during the height of the 1980s real estate boom. Although data estimates vary due to the manner in which investment is calculated, foreign investment likely never represented more than 10% of total commercial real estate capital flows, even during the height of the last real estate boom. Further, the surge in foreign real estate investment during the 1980s was largely a function of increasing global investment in general and not necessarily an increase in the proportion of investment directed towards real estate, which has remained relatively stable at approximately 10% of total foreign direct investment (Bacow, 1987).

²⁰ Note that some pension funds will operate much like a 401(k) plan (like TIAA-CREF), where subscribers have choices for the types of investment funds available. This would reduce the problems associated with over and underfunding of funds, as the accounts are individually designated to beneficiaries.

As Figure 8 demonstrates, the most dramatic shift in foreign investment during the past decade was the entry of Japanese investors, growing from a negligible 3% of total share in 1983 to almost 40% only six year later. By now, the reasons for Japanese investment in US and global markets have been well-documented (Lindner and Monohan, 1986; Krause, 1989; Edgington, 1995b; Edgington, 1995a; E&Y/Kenneth Leventhal Real Estate Group, 1996). Between 1985 and 1987, a high Japanese savings rate, low cost of capital, yields of 2-4% on domestic properties, and a 40% decrease in the dollar relative to the yen led Japanese investors to seek property around the globe, particularly US properties where yields on the best properties ranged from 6% to 8% (Dohrmann, 1995). These investors included banks, insurance and other financial institutions, multi-national corporations, wealthy individuals, and property developers (Edgington, 1995a). The destinations for their investments were highly concentrated, particularly Los Angeles, Hawaii, New York, and prominent resort locations as Edgington (1995a) explores in detail (and further evaluated in Chapter Three).

Japanese activity peaked in 1988, with \$16.5 billion of net new investment into US real estate, declining rapidly beginning in 1992, with only \$5.1 billion (E&Y/Kenneth Leventhal Real Estate Group, 1996). By 1995, when the Japanese economy was in a tailspin and property values in the US had reached bottom, there were \$8.9 billion in dispositions of US holdings. Over the next three to five years E&Y/Kenneth Leventhal (1996) predict that as much as \$40 to \$50 billion of Japanese-held properties could be sold, representing nearly 2/3 of their portfolios. While Japanese banks and other investors in US real estate had been very reluctant in liquidating or writing down assets during the early 1990s, when other foreign and domestic investors were already restructuring their holdings, they are leaving the market almost as dramatically as they entered (although there are Japanese investors still purchasing US properties).



Source: Arthur Andersen/IREM Foundation, 1991; The Roulac Group; *BEA Survey of Current Business*

Figure 8 Value of foreign direct investment in US real estate, 1983-1995 (current dollars)

While Japanese investment was felt across the largest of US real estate markets, other investors, particularly British and Dutch, have maintained a US presence for a number of decades, and in spite of feeling the fall in property markets in the early part of this decade, continue to be active buyers in a number of US metropolitan areas (van Bommel, 1994). Motivations for these investors also included a weak dollar in the mid 1980s, but they have been driven increasingly by a desire for portfolio diversification (Worzala, 1994). Canadian investment, led by such companies as Campeau and the now restructured Olympia and York, has also remained high. Recent activity in the US property markets now includes Australian and German investors, in addition to a smaller amount of Middle Eastern companies and individuals, who were very active during the 1970s, flush with oil money.

Today, foreign investment is again on the rise, with nearly 65% of a large sample of foreign investors in 1995 indicating plans for increased US investment, up from only 25% two years earlier (Association of Foreign Investors in US Real Estate, 1993-1995). Moreover, foreign investors are expressing a strong desire to invest in securitized forms, particularly REITs. These trends, and their spatial implications, will be addressed empirically in further detail in Chapter Three.

REAL ESTATE COMPANIES, INDIVIDUALS, AND OTHER PRIVATE EQUITY

The most publicly prominent players in the real estate capital markets are the individuals and companies who are at the forefront of the development process. In the past, these players have most often been local figures, such as Trump and Helmsley of New York, the Cafritz and Carr families of Washington, DC, the Leventhal family of Boston, and Freeman and Selig of Seattle. While most of the financing of large-scale properties undertaken by such individuals and companies stems from many of the sources already discussed in this chapter, the “pyramiding” process of leveraged real estate ownership has allowed these real estate developers and companies to amass large amounts of wealth, particularly when property markets, and values, are expanding.

Increasingly, these real estate companies and other private sources of capital have become

more national and international in scope (Thrift, 1987; Knox, 1991; Logan, 1993; Olds, 1994; Beauregard and Haila, 1995), and by now many of their activities are well-known (especially Olympia and York). Data on these companies are scarce, as their holdings are often closely guarded and part of a vast web of partnerships held under numerous pseudonyms and shadow legal structures. This is shifting, though, as many of these companies have tapped the public markets, in the form of REITs and other public offerings, and information about their operations then enter the public domain.

CORPORATIONS

As Table 2 identified, corporations are the largest holders of commercial real estate in the US, with an estimated \$1.7 trillion in 1991, of which approximately \$560 billion is actively managed for “investment” purposes (Arthur Andersen and IREM Foundation, 1991). An estimated 25% to as high as 35% of a typical firm’s assets are in real estate; further, real estate, or the firm’s occupancy expenses, represents the second highest expense item for a typical firm (Zeckhouser and Silverman, 1987; Equitable Real Estate and Roulac Real Estate Consulting Group, 1989; Apgar, 1993; Wurtz bach and Miles, 1994). While in the past, firms have exercised a simple “rent or buy” decision when determining how to meet their space needs, they are increasingly creating positions and divisions devoted solely to its management, and not necessarily just a factor of production towards their core business. Many companies — such as Exxon, Weyerhaeuser, IBM, General Electric, and Mobil Corporation — have operating real estate subsidiaries, managing both surplus property (as is the case for many timber and railroad companies) but also actively trading and developing properties domestically and internationally. Outside the US, such as in Japan and Hong Kong, multi-national corporations (MNCs) are dominant players in real estate markets. Feagin (1987; 1989) has documented the emergence of this corporate real estate activity, especially as it applies to oil companies, and the “switching” of surplus profits generated in the productive areas of industry to be redirected to property investment (Harvey’s secondary circuit of capital: see Harvey, 1978; Harvey, 1982; Smith, 1984; Harvey, 1985; Wilson, 1991; Beauregard, 1994).

Although some corporations seek third-party sources of financing for their real estate activities, more often they can tap into their retained earnings, stock and bond offerings,

and even venture capital, giving them an advantage over other real estate investors, particularly when their costs of capital may be low (Wurtzebach and Miles, 1994). Also, many of the leveraged buy-outs of the 1980s have at least in part been spurred by the undervaluation of corporate property holdings as well as facilitated by property held as collateral to finance these buy-outs (Equitable Real Estate and Roulac Real Estate Consulting Group, 1989). In many cases, the value of corporate real estate is greater than that recorded on company balance sheets, as standard accounting procedure requires only a depreciated replacement cost value which will almost always be less than market value (except in periods of property market recession).

Wurtzebach and Miles (1994, p. 349) identify eight objectives for corporate real estate management including: 1) maximize value of the firm; 2) generate cash; 3) prevent takeovers by maintaining a strong balance sheet; 4) utilize tax laws more effectively; 5) minimize agency costs of property management; 6) use real estate financing as a “market signal” in its overall financial operations; 7) play local real estate markets by using the competitive advantage of having a longer time horizon than other real estate investors; and 8) maintain flexibility with the corporation’s space needs. As these objectives become increasingly incorporated into company strategy, corporations will continue to be more active players in the commercial real estate capital markets.

SECURITIZED REAL ESTATE ASSETS

Securitized real estate assets are instruments backed by property and sold in divisible, public shares like a stock or a bond.²¹ Although securitized instruments have existed in

²¹ Securitization is another term which is defined in various manners. Coakley (1994, p. 708), for instance, defines securitization as the “transformation of already existing financial assets,” distinguishing this process from that of “privatization”, which he defines as the “...transformation of hitherto physical and illiquid assets into types of financial assets.” Thus, such a definition would exclude REITs as securitized and instead be a form of privatization.

(Hess and Smith, 1988) restrict their definition of securitization within the mortgage financing arena, defining it as: “a wholesale financial intermediation process which rebundles individual principal and interest payments of existing financial instruments to create new securities.” (p. 331)

Within the real estate literatures, though, securitization usually encompasses REITs, mortgage-backed securities, and public limited partnerships (e.g., Gorlow, Parr et al., 1993; Hauser, 1994; Fiedler and Devoe, 1995; Pagliari and Webb, 1995).

some form since at least the nineteenth century with the formation of Massachusetts business trusts (Dohrmann, 1995), it is only recently that they have come to represent a significant component of the commercial real estate capital markets. Excluding corporate equity, securitized instruments today represent at least 15% of the aggregate market size of the commercial real estate capital markets. In 1985, this figure was approximately 4%. While the 15% share may still seem relatively small, especially in comparison to banks, the continued importance of life insurance mortgage lending, and the other components discussed above, their share of total flow over the past five years has been dominant, as Figure 5 indicated.

The three types of US commercial real estate assets which fall under a definition of “securitized” instruments are real estate investment trusts (REITs), commercial mortgage-backed securities (CMBS), and public real estate limited partnerships (RELPs). One could also include publicly traded property companies under a definition of securitized vehicles (companies such as Rouse Co. in the US, Skanska AB in Sweden, and Cheung Kong Holdings Limited in Hong Kong), as the balance sheets and operating cash flow of these companies will be dominated by investment commercial real estate and are also a means by which investors can participate in real estate without outright ownership. The importance of these property companies, however, is not substantial in the US; in many foreign markets, such as the UK (with property trusts), Sweden, and Hong Kong, these property-based companies are important if not dominant components (Lindorff, 1995).

In general, the attraction of securitized instruments have, on the one hand, been a short-term solution to a “capital crunch” which emerged in the traditional sources of real estate financing (Syron, 1991; Peek and Rosengren, 1992; Gorlow, Parr et al., 1993; Downs, 1994c; Hauser, 1994; Fiedler and Devoe, 1995). But, there are more important, structural aspects which hold promise for securitization’s long-term viability. These include: a) creation of liquidity of a once illiquid investment; b) a solution to the problem of asymmetric information, as publicly traded companies must disclose information as well as the greater attention paid to securities by analysts; c) a means to easily diversify portfolios; d) tapping capital that would have never been able or willing to invest in large-scale commercial property assets; e) better matching of investor risk and reward preferences with those of the assets; and f) a generally more efficient structure creating

lower costs and freer flows of capital. While there remains a debate as to whether these characteristics will pass the test of time, at the very least, no one can deny the rapid and pronounced entry of these instruments into the commercial real estate capital markets.

REAL ESTATE INVESTMENT TRUSTS (REITs)

The real estate investment trust is a legal ownership structure created by Congress under the Real Estate Investment Trust Act of 1960. Prior to this act, a corporation or trust whose primary purpose was the investment in real estate would be subject to both corporate and personal taxation (i.e., double taxation). REIT status eliminated the corporate taxation, thus only the dividend and capital gains income accruing to individual shareholders would be subject to taxes.

To qualify for REIT status, the following criteria must apply to the corporation or trust desiring such status (National Association of Real Estate Investment Trusts, 1995):

- Be a corporation, business trust, or similar association and be managed by a board of directors or trustees;
- Have shares that are fully transferable and owned by 100 or more persons;
- Not have more than 50% of its shares owned by five or fewer individuals in the last half of each taxable year;
- Invest at least 75% of total assets in real estate, derive at least 75% of gross income from real property income (rents) or mortgages, and derive no more than 30% of gross income from sales of property held less than four years (as well as other prohibited transactions); and
- Distribute at least 95% of REIT taxable income in the form of dividends to shareholders each year.

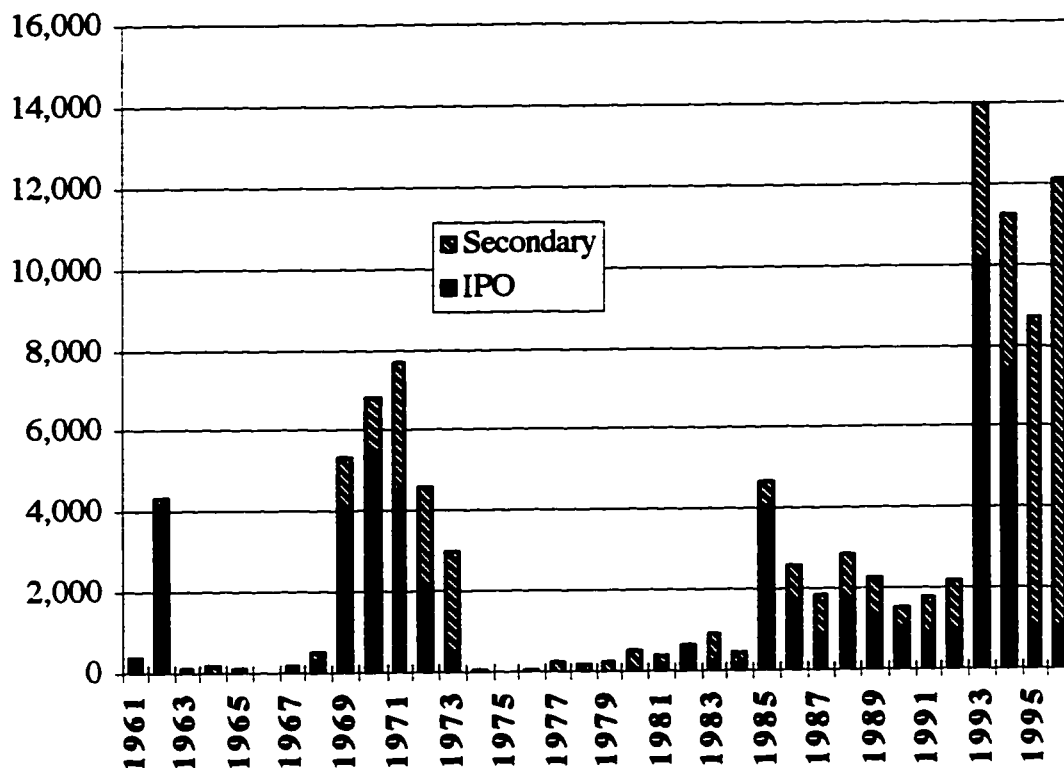
Such a structure encourages acquisition strategies which are longer term in nature (due to the restriction on property sales) and a focus on the value-added management of income-oriented properties. In other words, the legal status of REITs discourages highly speculative property ventures, such as undeveloped land.

There are four basic types of REITs: equity, mortgage or debt, hybrid (equity and debt), and finite-life (equity REITs organized for a stated term then liquidated; also known as FREITs). There are over 300 REITs, with over 70% being publicly traded on one of the three major stock exchanges. As of March, 1996, total capitalization of the 197 publicly traded REITs stood at \$94.5 billion, with \$84.84 billion in 172 equity REITs, \$4.86 billion in 17 mortgage REITs, and \$4.75 billion in 8 hybrid REITs (National Association of Real Estate Investment Trusts, personal communication). This mix of REIT types, with the heavy emphasis upon equity REITs, is a new phenomenon: in 1972, only 20% of the total REIT market capitalization was in equity REITs; today, that figure is 90%, and it was not until 1988 when it exceeded 50% (Dohrmann, 1995).

REITs have gone through their own boom and bust cycles, with the recent upsurge being the most pronounced and prolonged. Figure 9 shows these patterns, adjusted for inflation. The 1970s boom in the REIT market was borne out of a high interest rate environment, which created the demand for other sources of financing aside from traditional lenders, particularly for construction loans. At the peak of the first boom in 1972, over 50% of the REITs were focused primarily or solely on construction or development. Further, REITs became heavily leveraged, borrowing from banks (who had established some of these REITs themselves to expand their construction lending capabilities) and by issuing commercial paper (Dohrmann, 1995, p. 15). The combination of a national recession, further interest rate increases, and heavily overleveraged REITs (backed by speculative construction) led to a dramatic crash, with the NAREIT share price index falling 50% in 1973.

While the REIT market eventually recovered after this first sobering test of the REIT vehicle, Wall Street did not forget the pounding that had been unleashed upon them, and it took until the mid 1980s for REITs to again become a widely accepted vehicle of real estate investment. Between 1985 and 1987, 61 new initial public offerings (IPOs) were tendered, nearly twice as many in the 12 years since the first collapse.²²

²² Initial public offerings (IPO) represent the first stock offering of a company made to a public exchange; secondary offerings are additional issuance of stock from an existing security already on an exchange.



Source: Dohrmann (1995), p. 19 and NAREIT.

Figure 9 Equity REIT initial and secondary public offerings (IPOs and secondary), 1961-1996 (in constant 1996 dollars)

This resurgence was driven both by tax law changes in the Tax Reform Act (TRA) of 1986 — which lessened the attractiveness of the REIT's main securitized competitor, the public limited partnership — and the bull market on Wall Street, whose memory of the previous REIT boom and bust had all but disappeared. This second resurgence ended with the 1987 stock market crash, although certainly not in the dramatic fashion that had ended the first REIT euphoria. These newer REITs were far more likely than their 1970s predecessors to be of an all equity or a hybrid type, and they were also not nearly as devoted to new construction but rather to existing, operating properties. They had also become more specialized and sophisticated in their focus, a harbinger of what was to follow five year later, focusing on single property types in specified geographic regions and dabbling in the purchase of mortgage-backed securities (Dohrmann, 1995, p. 17).

By 1989, commercial real estate markets across the country had peaked or were already in a severe tailspin (such as New England). The S&L crisis had compounded into a banking crisis for many regions (Warf and Cox, 1995) resulting in a "credit" or "capital crunch" (Johnson, 1991; Syron, 1991; Peek and Rosengren, 1992; Fergus and Goodman, 1994; Peek and Rosengren, 1994). Property companies who had not succumbed to bankruptcy were in need of cash to refinance their properties, many of which were viable, income-producing assets but whose values could not support the debt ratios of the now heavily burdened lenders. As vacancies climbed, rents fell, and prices plummeted into the early 1990s, there was a sense that some markets offered tremendous buying opportunities. Moreover, the Resolution Trust Corporation was in the midst of a massive firesale. While many of these properties were the infamous housing tracts in the Arizona desert, many more represented quality real estate in established locations.

This capital crunch and the sense of property markets which had reached or were approaching their troughs coincided with another bull market on Wall Street. Investors were not only looking for any type of new offerings, but those which had bargain-like qualities and could offer diversification to the already skyrocketing medical, biotechnology, and high-tech equities. Further, the Gulf War had raised inflation fears, and investors were in search of assets which could offer such protection without having to leave the market entirely into cash or hard commodities (Arthur Andersen and IREM Foundation, 1991).

Enter, again, the REIT. The volatile combination of a strong demand for immediate capital infusions on the part of property owners with a willing supply of capital in the public markets exploded into a flurry of REIT IPOs in 1992, with initial offerings skyrocketing in value from \$919 million in 1992 to over \$10 billion a year later (see Figure 9). Initial offerings fell in 1994 to \$7 billion, but secondary offerings expanded from just over \$1 billion in 1992, to \$3.5 billion in 1993, \$3.6 billion 1994, \$7.5 billion in 1995, and \$11 billion by 1996 (all amounts in current dollars, while Figure 9 is in 1996 constant dollars). This recent boom is different from previous ones, as measured by both its magnitude and lasting strength, particularly in the secondary offerings. Because of the continued demand on Wall Street for these instruments, REITs which had issued shares in their initial offerings in the early 1990s are able to expand substantially in

these secondary offerings. Almost all of this capital is put towards new property acquisitions.

It is estimated that between 30 to 60% of the equity REITs brought to the market, at least during the first three years between 1992 and 1995, represent some form of restructuring due to financing pressures, avoidance of foreclosure and bankruptcy, or the mere desire to cash out at peak price levels (Lee, 1995). Even Olympia and York, rising from the ashes of Chapter 11, is looking for a possible public offering at the time of this writing, as the market's appetite for new public offerings has not diminished (Pacelle, 1997). Yet, there are a significant population of REITs which do not appear to have formed out of acts of financial desperation. Instead, they represent what some see as a fundamental change in the financing and ownership of real estate. Security Capital Group Inc., led by William Sanders, is an example of a real estate company which strives to mimic the model of tightly run companies in other sectors of the economy which have long been incorporated into a public ownership structure. Sanders, in a recent Wall Street Journal interview, asks the interviewer rhetorically, "What would you say are the five best financial-services companies in the world? What about real estate?" Pausing, he answers, "Well, that's just it, there are none" (Pacelle, 1997c, A1).

Sanders, like other property magnates who are either leading or quickly recognizing the rapid shift of the real estate industry from a world of local family magnates to an information-driven corporate business, predicts that the public ownership of real estate, evidenced by REITs, is not a passing phase of another cycle but the industry's future. While REITs represent only about 3 to 6% of total commercial real estate market capitalization, Sanders' view (and he is not alone) is that within 25 years, such forms will account for 40 to 60% of the entire industry (Pacelle, 1997c, p. A4).

The now five-year REIT "explosion", whether temporary or lasting, has not only introduced an entire new cadre of investors to ownership of commercial real estate properties once reserved only for players with the deepest of pockets (including the \$8.2 billion in mutual funds specializing in purchasing real estate securities)²³, but to the

²³ Figures based on market capitalization as of May 1, 1997, from website www1.stocksmart.com.

culture and methods of the stock markets (the “Wall Streetification” of real estate). Many industry participants and observers as well finance academics view this as a long overdue evolutionary process that will bring liquidity and stability to a once illiquid asset plagued by cyclical capital flows (e.g., Gorlow, Parr et al., 1993). In contrast, there are more cautionary and even critical observers who see REITs as a fundamentally different animal, an animal whose structure divorces its trading price from the underlying property assets which it is supposed to represent (e.g., Downs, 1994; Lizieri, 1995). Office REITs, for example, are trading at 35% more than the total value of their properties (Pacelle, 1997a). The causes of such a disparity could be twofold: on the one hand, these REITs could in fact be worth 35% more than the actual book values of these properties as current prices reflect a confidence in the promise of REITs as highly efficient operating entity, caused by the competitive pressures of performing for current and prospective shareholders. On the other more pessimistic hand, the overpricing could in fact be just that — an ignorance on the part of these new investors of real estate fundamentals, instead valuing them like any other stock, on the basis of current price to earnings (or FFO - funds from operations), book values, debt ratios, and other rules-of-thumb securities valuation methods, while ignoring the traditional yardsticks of the real estate industry, such as absorption, vacancy rates, capture rates, lease characteristics, and trends in regional capitalization rates, which ultimately determine the underlying asset values.

Anthony Downs (1994c), a long-standing and highly respected observer of real estate and urban growth trends, provides some other explanations as to both why REITs are different from the more traditional forms of financing and how these differences may spell trouble in a not-too-distant future. First, he argues that Wall Street investors, particularly mutual funds, are flush with capital — capital which needs to be invested quickly. “Whenever institutions are flooded with money that they must invest in a hurry, they are very likely to make imprudent decisions” (Downs, 1994c, p. 5). This money can leave a security, such as a REIT, just as quickly as it arrived, as these investors are “not patient investors who primarily are interested in the long-term value of their properties... [and] are quick to dump any investment that they believe might have a short-term downward price movement.” (Downs, 1994c, p. 5) This tendency, according to Downs, stands in contrast to the traditional investors in real estate who had more long-term perspectives.

A second area of concern expressed by Downs about the new bout of REITs is that there is a short-termism not only on the part of the investors in these REITs, but also by the army of investment bankers who underwrite these offerings (with fees up to 10% of the offering value) and administrators of the REITs themselves (who may delay necessary capital expenditures), striving for quarterly earnings growth, even if such behavior means sacrificing long-term viability. This short-termism is compounded by the fact that REIT managers own a smaller portion of properties than they would have under a traditional equity-lending relationship that prevailed during the 1980s. As Downs notes, “the REIT structure increases the separation between the actual management of the real properties involved and the knowledge and incentives of the people who ultimately own them” (Downs, 1994c).

A third concern is that, contrary to what one might believe about the introduction of liquid capital markets to a once-illiquid investment, the quality of information has decreased, at least for the ultimate owners of the properties (the shareholders). Under a “traditional” form of investment, lenders and financiers would evaluate properties on an individual basis, gathering the necessary market information and performing “due diligence”. This process, according to Downs, is now left to the REIT administrators (although no different from commingled portfolios managed for pension funds), and little knowledge is available, or even desired, by the investors. This situation is changing, however, as the Securities Exchange Commission (SEC) now requires more detailed information about individual properties to be reported by REITs, and there are now a number of information services which track this individual property information (such as Teleres, REIS Reports, SNL Securities, among others Stearns, 1995).

The debate over how these concerns will play out for REITs continues. Already, there has been a consolidation within the industry, where many of the smaller IPOs have been acquired by the larger, more established REITs (Pacelle, 1997b). However, one fact is clear: the REIT is a wholly different mechanism of real estate investment than previous forms of ownership, creating entirely different incentives for behavior, on behalf of the investors, who supply the capital, and the managers, underwriters, and administrators of the entities responsible for the acquisitions, management, and dispositions of the properties underlying these securities. As Chapters Two and Three will address in further

detail, these different incentives hold implications for the flow of investment into commercial real estate over space.

PUBLIC REAL ESTATE LIMITED PARTNERSHIPS (RELPs)

Real estate limited partnerships, also known as syndications or syndicated partnerships, are in some ways similar to a REIT in that they allow individuals or entities to have equity shares in a pool of commercial real estate properties (though, like REITs, there are single property RELPs). Shares in these partnerships are exchangeable, either privately or through public markets. RELPs were very limited in their popularity prior to 1981 when the Economic Recovery Tax Act (ERTA) was passed and established favorable tax treatment of commercial real estate, including depreciation, passive loss, and tax credit benefits. Because many real estate investors may not have a need for these tax benefits, RELPs are a means of including a combination of partners such that these benefits can be optimally transferred from those partners who cannot use them to those who can.

After passage of ERTA, registration of public RELPs increased from the approximately \$1 billion of offerings in 1980 to a peak of \$10 billion in 1984. In 1986, the Tax Reform Act of 1986 eliminated many of these tax benefits, and the popularity of RELPs quickly diminished, though remaining an important component of the capital markets. The favorable tax treatment of real estate in the 1981 laws has been credited with the flood of capital to commercial real estate markets in the early 1980s (Sanger, Sirmans et al., 1990; DiPasquale and Wheaton, 1992a; Alm and Follain, 1994; Dohrmann, 1995) in large part due to the role of the RELPs. Although at the time of the 1986 Tax Reform Act there were predictions that asset prices would fall because of the dramatic curtailment of these tax benefits (which included a devastating lengthening of non-residential depreciation schedule from 15 to 31 years), this period marked the increased role of pension funds, insurance companies, banks, and the explosive involvement by Japanese and other foreign investors.

Today, RELPs are a relatively minor player at approximately \$28 billion in total market

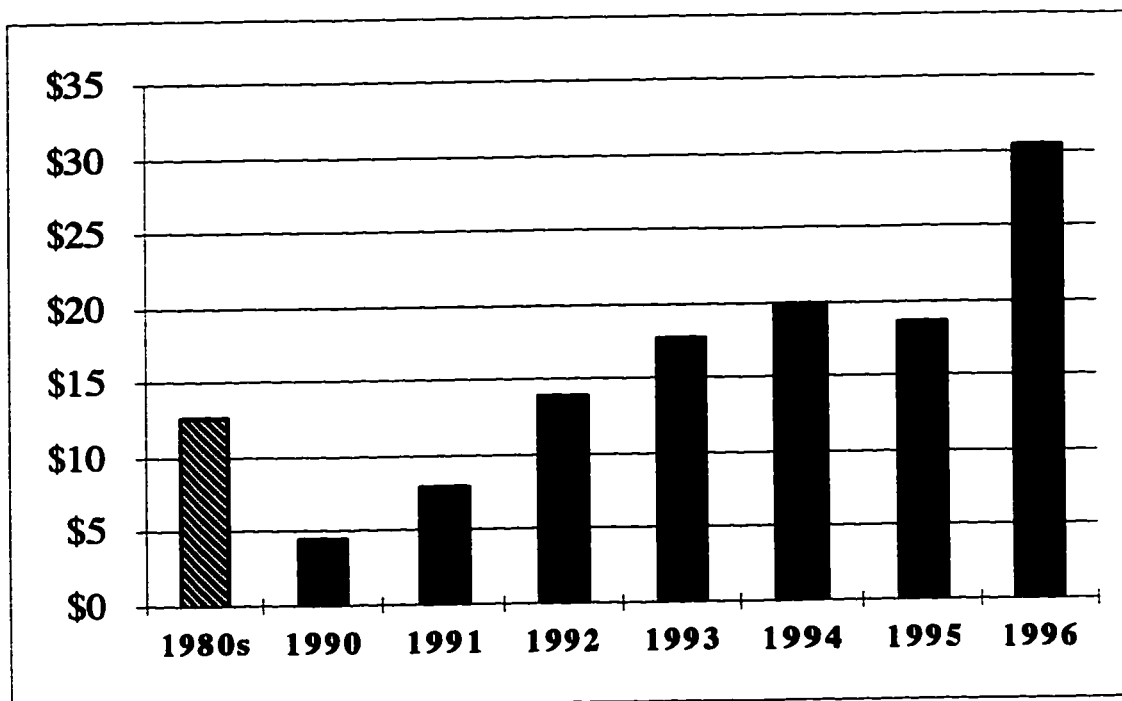
capitalization,²⁴ and have been largely supplanted by REITs as an equity public investment instrument.

COMMERCIAL MORTGAGE-BACKED SECURITIES

The same forces that led to the explosion in REITs, which are largely equity instruments, have contributed to a similar boom of securitization on the debt side: commercial mortgage-backed securities. Unlike REITs, CMBS are almost an entirely new phenomenon. While single family residential mortgage-backed securities have been in existence since the establishment of the Federal National Mortgage Association (FNMA or Fannie Mae) in 1938 and are well integrated into capital markets (Hess and Smith, 1988; Hu, 1988; Hendershott and Van Order, 1989; MacDonald, 1996; Jameson et al, 1992), CMBS have only very recently emerged as viable investment instruments. Jumpstarted by the Resolution Trust Corporation (RTC) in the early 1990s in its efforts to liquidate the problem loan assets of the failed S&Ls, CMBS have grown from \$4.6 billion of new offerings in 1990, to \$30.4 billion in 1996 (Real Estate Capital Markets Report, various issues). In contrast, over the course of the entire 1980s, CMBS offerings totaled less than \$13.0 billion (Hauser, 1994). Total market capitalization of CMBS now stands at approximately \$110 billion.

While there are numerous types of CMBS, in general they all involve the packaging of single or multiple commercial loans into a tradeable security, with a structure similar to a bond. These securities derive their cash flow from either the merged interest and principal payments from the pool of mortgages, or may only derive income from distinct components of these mortgages, such as principal only, interest only, and various subordinations (i.e., who gets paid first; known as "tranches") of each of these forms of cash flows. A Real Estate Mortgage Investment Conduit (REMIC) is a special entity created under the Tax Reform Act of 1986, which allows the transfer of residential and commercial mortgages in a less burdensome manner than traditional "pass-through" mortgage-backed securities (Dohrmann, 1995). REMICS have become a preferred means of quickly transferring newly originated loans (from, say, a bank) to securitized status.

²⁴ The Roulac Group Capital Flows Database.



Source: Hauser (1994) and *Real Estate Capital Markets Report*, Winter 1997 (based on data from *Commercial Mortgage Alert*)

Figure 10 CMBS issuance volume, 1980s and 1990-1996 (billions of current dollars)

Other than a short-term means of loan asset liquidation (such as the RTC activity and many of the issuances by banks and insurance companies in the early part of the 1990s), the primary reasons for securitizing mortgages is a recognition that there are various activities associated with the life of a loan, and that each of these activities may be better suited for different types of organizations and investors (Hess and Smith, 1988). For instance, we can think of any financial intermediary (say a bank) as performing two basic functions: originating and owning financial assets (e.g., loans). Each of these functions can be further broken down as follows (Hess, 1996):

Originate financial assets

- Matching of borrowers and savers;
- Maturity intermediation (e.g., formulating short-term saver's deposits into long-term loans);

- Project valuation; and
- Price discovery.

Own financial assets

- Monitoring;
- Diversify risk;
- Hedge risk; and
- Provide liquidity and a provision of payments system.

Banks are most effective in the origination of loans and least effective in their ownership. The primary reason for their ineffectiveness is that they are stuck in a conundrum of being short-term borrowers of funds (in the form of deposits) and long-term lenders. This exposes them to a high degree of risk in the form of defaults and changes in interest rates.

Without securitization, the originator of the loan must be an expert in each of the eight activities identified above. With securitization, however, not only can various stages of the loan origination and ownership be transferred amongst players who may specialize in that function, but the different types of risk can also be segmented to match the needs of different types of investors. For instance, an insurance company may wish to hold long-term, high grade tranches which provide them with both stability and the diversification benefits of real estate that they seek with traditional mortgage lending. An opportunistic investor, on the other hand, may choose the higher yielding, tranches, though these are riskier due to the subordination order of the tranche. Each investor has satisfied their needs from an asset that once would have had each of these risks bundled into a single loan.

Mortgage-backed securitization for commercial real estate, thus, has risen out of both the asset liquidations of problem real estate loans on the books of S&Ls, banks, insurance companies, and other lenders (such as pension funds) as well as a longer term shift in reducing and spreading the risk of commercial property lending. It is facilitated by technology and the creation and adoption of new methods which allow the sophisticated and highly complicated pricing structures which these instruments require in order to

participate in a truly “public” capital market. The results of this process are both an increase in the amount of available capital to those who demand it as well as a decrease in its price, due to economies of scale and specialization. This process has been observed empirically within the residential mortgage securitization industry (Jameson, Dewan et al., 1992), and there is evidence that this is also occurring in the evolving CMBS markets, as spreads have decreased.




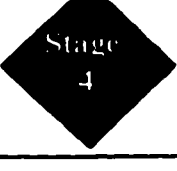
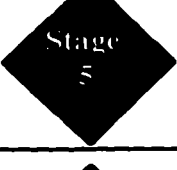
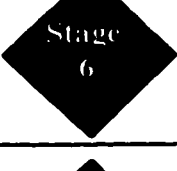
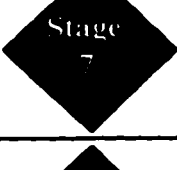

NOW ALL TOGETHER — CYCLICAL OR PERMANENT CHANGE IN THE CAPITAL MARKETS?

One central question arising out of this discussion of the various players in the commercial real estate capital markets is whether the profound changes that have taken place are a short-term cyclical phenomenon, and will subside as markets recover, or one that we can expect to continue through the next real estate cycle (for research on real estate cycles, see Barras, 1983; Wheaton, 1987; Barras, 1994; DeBondt, 1995; Grenadier, 1995; Mills, 1995; Dokko, Edelstein et al., 1996). Will REITs again follow their pattern of boom and bust or are they here to stay?

Figure 11 provides one interpretation (Gordon, 1995) of how these capital market changes are indicative of the various stages in the real estate cycle.

Here, we see the riskiest forms of capital (opportunistic capital such as “vulture funds”) coming in when markets are still declining and other sources are still reeling from portfolio losses. These are then followed by securitized forms, first CMBS then REITs, which meet the credit-crunch needs left in the wake of the restructuring of the traditional players. Less risk-averse pension funds and foreign capital then enter as they perceive markets have bottomed or are recovering, then finally the surviving traditional players emerge, having recovered from the hangover of nearly a decade.

Such a vision may downplay the notion of “this time it’s different” with respect to a permanently changed capital market structure. On the other hand, one could take a more measured view: that over time, new forms, such as securitization, wax and wane with the capital markets cycle, but each time getting progressively stronger. With this perspective,

 <p>Stage 1</p>	<p>Opportunistic Capital (1991-1992) Vehicle: Hedge Funds, Vulture Funds, Entrepreneurial Partnerships Attraction: Deep discounts, distressed sales, liquidations</p>
 <p>Stage 2</p>	<p>Fixed Income Capital (1992-1993) Vehicle: CMBS and workout cos. Attraction: Substantial spreads over corporate bonds</p>
 <p>Stage 3</p>	<p>Mutual Fund Capital (1993-1994) Vehicle: REITs and workout cos. Attraction: High yields relative to other equities</p>
 <p>Stage 4</p>	<p>Leading-edge Pension Funds (1994-1996) Vehicle: Pooled discretionary funds and separate accounts Attraction: Higher going-in yields relative to other real estate holdings</p>
 <p>Stage 5</p>	<p>Off-shore Capital (1995-1997) Vehicle: Private direct single assets Attraction: Superior performance, temporarily weak dollar, safe haven</p>
 <p>Stage 6</p>	<p>Insurance Co. Capital (1995-1998) Vehicle: Mortgages, single assets Attraction: High yields, easing of regulatory pressure, production capability</p>
 <p>Stage 7</p>	<p>Cautious pension funds (1996-2000) Vehicle: Specified funds and separate accounts Attraction: Asset allocation pressure, at least one year of "double-digit" returns</p>
 <p>Stage 8</p>	<p>Commercial Bank Capital (1997-?) Vehicle: Construction and permanent loans Attraction: Yields, slowdown of corporate demand</p>

Source: Gordon, 1995.

Figure 11 Stages in the US real estate capital market cycle

we might expect another retraction in REITs and the new CMBS, but not to the extent of the REIT collapse in the 1970s. On the next round of market recovery, these instruments, or even other innovations yet to be created, will grow again to a capital market environment similar to that for other assets, where there is a dominance of securitized public ownership, but other forms still exist and play an important role.

Regardless of what the next cycle will bring, what should be unequivocally clear from the discussion in this chapter is that there is no generic “capital market” system, where a supply of capital is somehow ubiquitously available where it is needed, as a strict neo-classical interpretation may lead us to believe (e.g., Borts and Stein, 1964; Romans, 1965). Instead, commercial real estate capital markets are a highly differentiated, dynamic amalgam of individuals, companies, institutions, regulatory agencies, and other players each operating within their own constraints and motivations. Even within these 15 or so components of the capital markets, there are vast differences amongst these players. These differences play out not only in regulating the spigot of capital into the \$3+ trillion asset type we call commercial property, but also into the exact form in which this investment takes place (e.g., securitized versus direct ownership, debt versus equity, office versus industrial, etc.). We expect that this high degree of differentiation of motivations and constraints will likewise produce temporally varying geographic investment behaviors. The next chapter builds a conceptual foundation for understanding the spatial outcomes stemming from the complex processes occurring in this quickly changing industry.

CHAPTER 2: CAPITAL FLOWS AND REAL ESTATE MARKETS — TOWARDS A THEORY OF INVESTOR BEHAVIOR OVER SPACE

A central argument in this dissertation is that the supply of capital to commercial real estate is spatially inefficient, or uneven,²⁵ often independent of factors underlying demand for commercial space, and this unevenness can have a profound impact on the behavior of local property markets, particularly fluctuations in value. This chapter develops the components of this argument in three sections. The first section lays out a four-quadrant conceptual framework of the operation of commercial property markets, as developed by DiPasquale and Wheaton (1992b). This framework not only provides an understanding of the general behavior of property markets and their relationship to the capital markets (in a more formal manner than presented in Figure 3), but it is also an appropriate springboard for identifying significant theoretical and conceptual gaps with respect to our current knowledge of the effects of capital flows on commercial real estate markets.

The second section provides an overview of how property values are determined by investors, in particular the use of discounted cash flow (DCF) analysis. It is necessary to have a basic understanding of these valuation methods, particularly for readers unfamiliar with real estate finance, because of their widespread use and that the concepts employed are so central to the framework developed in the following section as well as the empirical analysis in the next chapters, particularly Chapter Five.

The third section develops the underpinnings of a theory of investor spatial behavior, which ultimately determines the flow of capital to local commercial real estate markets. This theoretical construct begins with a simple static neo-classical interpretation of asset market equilibrium in a multi-regional setting, then adds layers of increasingly complex spatial and behavioral factors that alter the expected patterns of the original equilibrium model. The final layer adds an element of longitudinal change in these components and the expected spatial outcomes as different capital market players shift in their behavior and

²⁵ Smith (1984).

relative importance in the overall supply of capital to commercial real estate markets.

These three sections provide the concepts which are fundamental to explaining the dynamics of spatial behavior by the major players in the commercial real estate markets reviewed in Chapter One. This chapter explores each of these concepts in detail and concludes with two research questions: how does capital flow across regions into commercial real estate and what are the impacts of this geography on local property markets?

PROPERTY AND ASSET (CAPITAL) MARKETS - A SIMPLE FRAMEWORK

Figure 12 portrays DiPasquale and Wheaton's (1992b) conceptual framework of property and asset markets (i.e., capital markets). This framework provides the reader with a good understanding of how these markets interact. On another level, however, it is indicative of our currently insufficient understanding of these interactions. First, as I will discuss below, capital markets are often viewed as a secondary component to what is seen as far more important: the factors that drive the demand for commercial space. Second, even where the capital markets are recognized as an important component, the focus is almost always on *construction* trends and not on the effects of these capital markets on values, or prices. Further, there is very little theoretical or empirical work surrounding the very spatial or geographically uneven nature of the capital markets. A central thesis of this dissertation is that, first, capital markets matter — a lot. And second, while commercial real estate markets are highly local and regional, in spite of their increasingly national and global connections, an understanding of the geography of the capital markets is not only an important factor, but often more important than understanding local and regional factors of demand or trends in construction.

DiPasquale and Wheaton's framework in Figure 12 divides the property and asset markets into four quadrants: 1) rent determination and 2) stock adjustment, in the property market; and 3) construction and 4) valuation (property prices), in the asset market. The process begins in the northeast quadrant, where rents are determined.

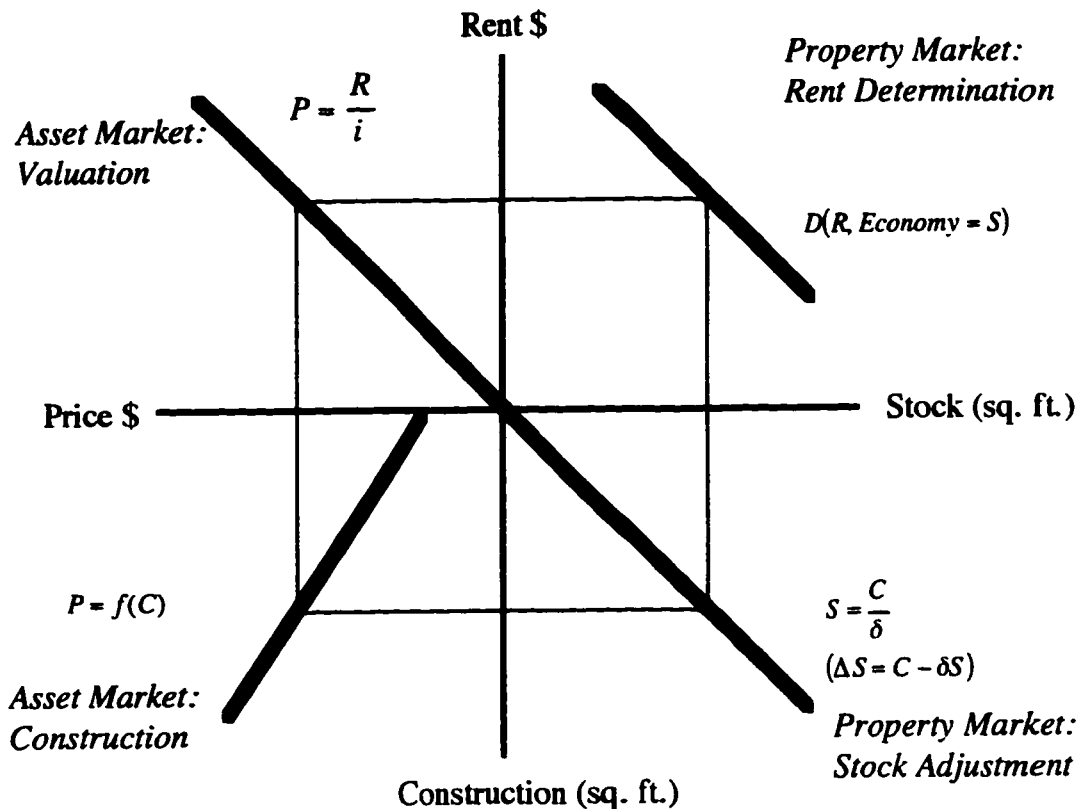


Figure 12 DiPasquale and Wheaton's (1992b) conceptual framework of the commercial real estate property and asset markets

Rent is a function of the demand for and stock of space. In the northeast quadrant of Figure 12, demand for space, D , is driven by economic conditions and the level of rent, R , in the property market. These economic conditions will vary for each type of use. For office uses, the level of producer services and other office-using occupations will determine the position and slope of the demand line. As employment expands, the line will shift upward and to the right. For any given level of stock or supply of space, S , the demand line will determine the rent level, on the Y-axis. A greater amount of stock will lower rents (owners of space will do so to avoid vacancy), and a constrained stock will put upward pressure on rents.

Moving to the northwest quadrant, the rent level determined in the property market influences the price for the space in the asset market. This price is determined as follows:

$$P = \frac{R}{i} \quad (1)$$

where: R is the rent level (actually, net of expenses) and i is the *capitalization rate*. The capitalization rate is a fundamental concept to understand, as it underlies any theory of value on the real estate asset markets (Ellwood, 1977). For any given asset, an investor requires a rate of return in exchange for purchasing that asset. This rate is determined by that potential rate of return on other assets (a base rate would be the riskless return on capital, such as a short-term treasury bond), other aspects of the general investment environment (such as expected inflation), and specific characteristics about the asset currently being considered (i.e., a property asset) that would influence its future income stream (the riskiness of the future income stream and the likely amount of investment which can be recaptured in a future sale).²⁶ Important characteristics of this latter component include: the type of property (e.g., apartment, office, etc.), its age (e.g., older buildings will yield less future income without capital improvements), quality of tenants (long-term leases will have less variability in income than short-term leases), and, most importantly to the topic at hand, its location (including region-specific characteristics, such as expected employment growth, and site-specific characteristics, such as accessibility). In general, higher capitalization rates are associated with riskier assets (i.e., greater possibility of variation from expected returns) and lower capitalization rates are identified with the least risky assets. Empirically, we can observe capitalization rates only through actual transactions; they can also be estimated through surveys of potential buyers, such as the *Korpacz Real Estate Investor Survey*, or derived by other methods.²⁷ The capitalization rate will be discussed in further detail later in this chapter as well as in Chapter Four.

Returning to Figure 12, the price of the asset determined in the northwest quadrant will influence the level of construction, in the southwest quadrant. This is represented by the

²⁶ This discussion and examples are drawn from Wurtzebach and Miles (1994, p. 223-225)

²⁷ These methods include a “build-up” method, where a riskless rate of return is used as a base and a “band of investment approach” which weights the debt and equity portions of the investment. See Ellwood (1977) and Wurtzebach and Miles (1994, p. 224-231) for further description.

equation:

$$P = f(C) \quad (2)$$

where $f(C)$ is the replacement cost of construction. Shifts in this curve will occur as the cost of construction either increases or decreases (such as a change in short-term interest rates, which influence construction loans).

The level of construction that has been determined from the price level derived in the valuation market then influences the stock of space in the southeast quadrant. The stock of space is a function of both the addition of new construction (C) less any removal of space (DiPasquale and Wheaton define this as the depreciation rate, δ), represented in the equation:

$$\Delta S = C - \delta S \quad (3)$$

In an equilibrium setting, the addition of stock exactly equals that amount determined in the asset market plus that required to replace removal of stock through depreciation. This returns us to the right-hand horizontal axis, the total stock of space, where the process began. There are other aspects about the model, specifically the factors which alter the slopes and positions of the curves, which we will not address here.

Although DiPasquale and Wheaton (1992) do not explicitly state the level of geographic scale at which this conceptual framework operates, it has been most often applied at the market (metropolitan area) or sub-market (nodes in a metropolitan area) level, as evidenced in their own work (Wheaton, 1987; Wheaton and Torto, 1988; DiPasquale and Wheaton, 1996, Ch. 11). There is now an established body of work that addresses various components of this framework, particularly the cyclical behavior of office markets (see Hysom, 1997, for a recent review). The northeast quadrant (rent determination and demand for space) represents the component which is most understood and researched (Brennan, Cannaday et al., 1984; Wheaton and Torto, 1988; Glascock, Jahanian et al.,

1990; Wang, Webb et al., 1990; Thrall, 1991; Mills, 1992; Sivitanidou and Wheaton, 1992; Downs, 1994b; Howland and Wessel, 1994; Grenadier, 1995; Sivitanidou, 1995). The southwest and southeast quadrants (construction of space and adjustments to the stock of space, which affect vacancy rates) have also been well-documented at the metropolitan level of analysis (Rosen, 1984; Voith and Crone, 1988; Pollakowski, Wachter et al., 1992; Gordon, Mosbaugh et al., 1996; Hanink, 1996). The northwest quadrant, valuation or price determination, has received the least attention, particularly at a geographic specific level of detail. Where it has received attention, the emphasis has been on the impact of rents, vacancies, and “market fundamentals” on value (Heckman, 1985; Scott, 1990; Corcoran, 1993; Dokko, Edelstein et al., 1996), or based upon nationally-based measures of the capital markets (Leitner, 1994; Stephenson, 1995; Dokko, Edelstein et al., 1996; Gordon, Mosbaugh et al., 1996). What is interesting, however, is that some of these models have difficulty in finding explanatory demand-side and construction-driven variables in explaining differences across markets, but that the few capital market variables which are incorporated are the very ones which do have significant contributions. Gordon et al. (1996), for instance, modeled volatility in vacancy rates across metropolitan areas to determine whether common economic variables could explain market variations. While there was evidence that oil-dependent states shared similar characteristics, other markets demonstrated little correlation. However, their capital market variables — changes in tax laws and treasury bill rates — dominated the model, yet, *these were the very (and only) factors which were not modeled at the metropolitan level*. Further, their choice of variables were highly simplistic measures of the capital markets. From Chapter One, it should be evident that there are numerous and highly differentiated players in the commercial real estate markets, each operating within a different realm of motivations and constraints. What is necessary in ultimately understanding how the capital markets affect the behavior of particular real estate markets (and, again, the impacts on values and not just construction levels) is an understanding of how and why capital flows into and out of these markets. In other words, an understanding of investment behavior over space.

THE VALUATION OF REAL ESTATE ASSETS - A QUICK OVERVIEW

I have already touched upon the concept of the capitalization rate and the relationship between a property's current income and value. Determination of value, particularly from the perspective of an investor making an investment decision, has become more complex than a simple static capitalization of existing property income. In particular, the use of discounted cash flow (DCF) analysis is now a widely accepted and practiced method of evaluating real estate investments (as well as in formal property appraisal; Appraisal Institute, 1992); however, the use of such analyses has come relatively late to real estate, even though it has been well-established for other financial instruments since the 1950s (Jaffe, 1977; Young and Grieg, 1993). It was not until the mid 1970s that DCF became a common part of the real estate investor's analytical toolbox, in part promulgated by the introduction of spreadsheet software allowing the practical application of these methods.

DCF analysis involves projecting a future income stream of an existing property (or the combined development costs and stabilized income stream of a newly-developed project) over an established period (usually 10 years), valuing an assumed sale of the property in the 10th year based on a projected 11th year income, and discounting the value of these cash flows to calculate a net present value (NPV). The extent of the discounting of future cash flows depends upon the choice of a discount rate. Discount rates will vary between investors, according to their opportunity cost of capital and their required compensation for the prospective asset's level of risk, illiquidity, and any other burdens encumbered as a result of investing in that asset (see Greer, 1997 p. 247-250). The NPV which is calculated based on this discounting represents the amount an investor is willing to pay for that asset, given the assumptions of future income and the chosen discount rate.

There are three main assumptions which ultimately determine the NPV, or value of the property, by the investor: assumptions affecting the property's future income stream (e.g., rents, vacancies, expenses), the discount rate, and the choice of an "exit" capitalization rate to determine the value of the property in an assumed end-of-10th year sale. The best means of illustrating how these assumptions are both estimated and how they affect the resulting calculated value is to provide an example, as shown in Table 4

and Figure 13. Here, we assume a potential buyer is evaluating the price he/she is willing to pay for a 100,000 square foot office building, with a stabilized tenancy and income.

The first step in the analysis is to derive the existing net operating income (NOI) in the first year, then project the expected NOI in the following nine years.²⁸ Although there are other time periods for which cash flows are forecast, a 10 year period is standard as it replicates what is considered a “typical” holding period by the average investor.

NOI equals the effective gross income of a property less operating expenses. Effective gross income is calculated by multiplying an average rent amount (\$25.00 per square foot) by the total square footage of the building (100,000) less an assumed stabilized vacancy rate (5%). Annual operating expenses (\$10.00 per square foot) are then subtracted to yield the net operating income for one year. A rate of rental increase is assumed (5%), as well as an assumed inflation rate (4.5%) at which expenses increase. These assumptions are derived from both the known characteristics about the property, projected demand for the building’s space as leases expire, and the existing and projected supply of space of competitive properties within the subject property’s market (which may be the metropolitan area or a sub-market of the larger region). With these assumptions (and actual cash flows will likely incorporate many more variables), we can project the annual income of the property over the 10 year period. As seen in Table 4, NOI increases from \$1.425 million in the first year to \$2.273 million by the 10th year.

The other source of cash flow is derived from an assumed sale of the property at the end of the 10th year, based upon the capitalized value of 11th year NOI (not shown, but in this example it equals \$2.393 million). The critical assumption here is the “exit” capitalization (cap) rate. We have already discussed the concept of the capitalization rate above, but this discussion was in the context of an existing cap rate for a property. There are various rules of thumb for deriving an exit cap rate, which typically involve an estimation of existing cap rates in the market (based on actual sales of comparable properties and/or other methods such as surveys of investors) then adding a few basis points to account for risk, or an “insurance” factor into the model. Thus, the investor

²⁸ Actually, forecasts are made for the following 10 years, since an 11th year value is calculated in order to determine a 10th year sale of the property.

developing this cash flow may have observed capitalization rates in the market place at 9.0% then added 1.0% to derive the exit cap rate. The residual value is calculated merely by dividing the 11th year NOI (\$2.393 million) by the exit cap rate of 10.0%, to derive a figure of \$23.933 million. This value is extremely sensitive to the choice of a capitalization rate. If, for instance, the exit cap rate were in fact 1% lower than the existing market cap rate instead of 1% higher, as assumed in the model, the residual value would be nearly \$30 million, or about 25% higher than that actually forecasted.

Table 4 Discounted cash flow analysis

Assumptions	
Size of Building	100,000 sq. ft.
Average Rent	\$25.00 per sq. ft.
Operating Expenses	\$10.00 per sq. ft.
Annual Rent Increase	5.0%
Inflation	4.5%
Stabilized Vacancy	5.0%
Exit Capitalization Rate	10.0%
Discount Rate	15.0%

Discounted Cash Flow (in thousands)	<u>Yr. 1</u>	<u>Yr. 2</u>	<u>Yr. 3</u>	<u>Yr. 4</u>	<u>Yr. 5</u>	<u>Yr. 6</u>	<u>Yr. 7</u>	<u>Yr. 8</u>	<u>Yr. 9</u>	<u>Yr. 10</u>
Potential Gross Income	\$2,500	2,625	2,756	2,894	3,039	3,191	3,350	3,518	3,694	3,878
Less: Vacancy	<u>-125</u>	<u>-131</u>	<u>-138</u>	<u>-145</u>	<u>-152</u>	<u>-160</u>	<u>-168</u>	<u>-176</u>	<u>-185</u>	<u>-194</u>
Effective Gross Income	2,375	2,494	2,618	2,749	2,887	3,031	3,183	3,342	3,509	3,684
Less: Operating Expenses	<u>-950</u>	<u>-993</u>	<u>-1,037</u>	<u>-1,084</u>	<u>-1,133</u>	<u>-1,184</u>	<u>-1,237</u>	<u>-1,293</u>	<u>-1,351</u>	<u>-1,412</u>
Net Operating Income (NOI)	1,425	1,501	1,581	1,665	1,754	1,847	1,946	2,049	2,158	2,273
10th Year Sale (based on 11th year NOI)	-	-	-	-	-	-	-	-	-	23,933
TOTAL CASH FLOW	1,425	1,501	1,581	1,665	1,754	1,847	1,946	2,049	2,158	26,206
Discounted Cash Flow	1,239	1,135	1,040	952	872	799	731	670	613	7,720
Net Present Value (NPV)	\$16,429									

Finally, discounting the cash flows at an assumed rate of 15% reduces the value of the future income stream, having a particularly dramatic effect on the later years. Figure 13 illustrates this effect, particularly the heavy discounting on the sales residual in Year 10, which has been reduced from \$26.206 million in current dollars to \$7.720 million in discounted dollars. How was this 15% rate chosen? Well, as mentioned earlier, a “safe rate” is derived representing either the investor’s personal cost of capital or their opportunity cost for another asset absent any risk (say 8%). Added to this would be a risk premium merely associated with real estate assets in general compared to other types

of assets, which could include risks associated with inflation, changes in interest rates, or other aspatial factors (say 3%). The additional 4% is specific to the property and would be based on the potential risk of that property — or the potential variance from projected cash flow — over the course of the 10 year assumed holding period. These risks could include factors associated with the sub-market or broader metropolitan region that would have an influence on the demand for the space (affecting rents and vacancy), the supply of space in the market (i.e., if it is or has the potential of being overbuilt), the stability of the tenancy, and many of the other risks which are actually also part of the capitalization rate. For projects where a new development is considered, the timing of where the project stands along the development pipeline is also crucial to choosing a discount rate. For instance, the purchase of raw land is highly risky, as there are many factors which could go awry over the course of developing that land, including permit denials and delays, cost overruns, projected lease-up, and other uncertain variables. Raw land, for instance, will often have discount rates of 30% or higher. In sum, the choice of a discount rate is often more of an art than a science, and it represents the last variable in the DCF analysis to incorporate an element of conservatism, particularly when all of the other variables in the model may be uncertain as well.

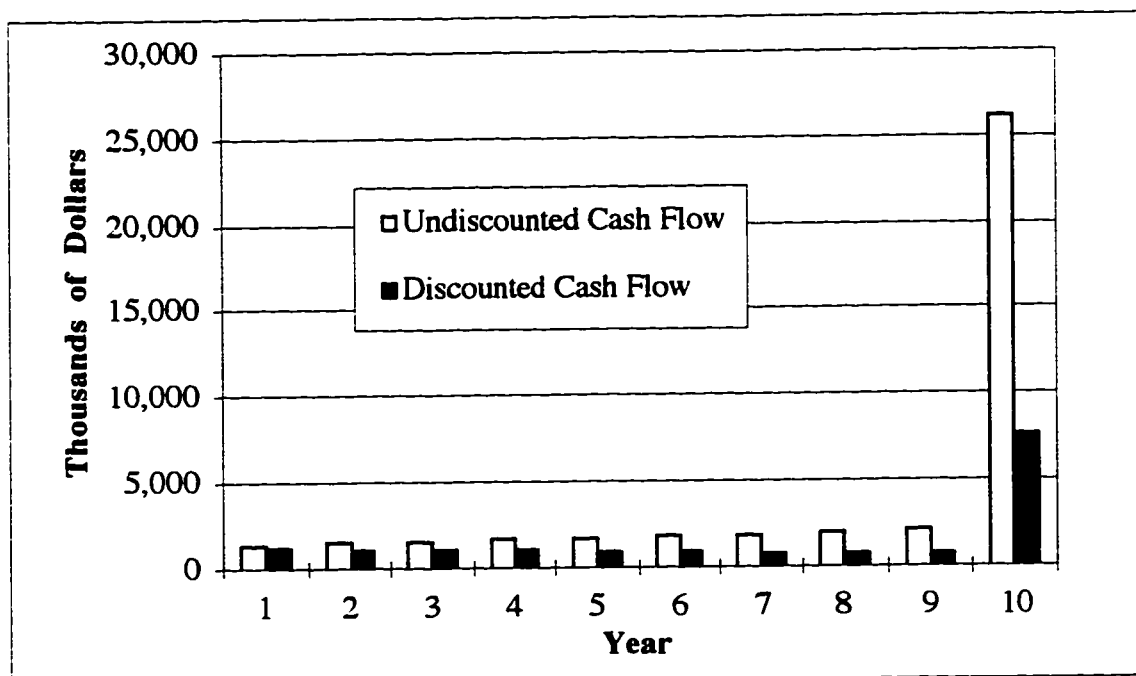


Figure 13 DCF analysis - the impacts of discounting and the 10th year sale

These three components of the DCF analysis drive the net present value (NPV) result derived in Table 4 (\$16.429 million). This represents the maximum price the investor is willing to pay for the asset. What is extremely important to recognize in DCF analysis is the power of each of the three components. The 10th year sale in this example, for instance, represents nearly 50% of the total NPV. This is where the choice of a cap rate can be critical. Moreover, the calculation of NOI in an 11th year — the most uncertain part of the cash flow because of the long time period — is also critical in this 10th year sale calculation.

Yet, the choice of a discount rate is also powerful, particularly as one raises this discount rate. Because nearly 50% of the total NPV (in this example) is derived from the 10th year sale, any change in the discount rate will have large impacts because this major flow of returns is discounted so heavily because of the long time period and the power of discounting (an exponential relationship).

Finally, there is another and closely related means of determining the feasibility of property investment, in this case where there is some knowledge about the price of the property (or cost of the investment). In this case (and I will not present the analysis), the future cash flows are calculated and, with the knowledge of the investor's initial outlay, an internal rate of return (IRR) can be derived, which will derive the implied *discount rate* based upon a net present value of \$0, including the negative value of the initial outlay.²⁹ In other words, an investor can calculate an IRR based upon a known outlay, and if that IRR is higher than the discount rate at which he/she would apply to the asset, then the price is considered a bargain. If it is less than the discount rate, then the price is infeasible, given its risk/return characteristics combined with the investor's opportunity cost of capital.

While actual value in a marketplace occurs as the result of buyers and sellers coming to an agreement about price culminating in a sale, DCF analysis represents the now widespread calculus undertaken by most real estate investors to determine property asset value. There are other nuances associated with these analyses, including the determination of before-

²⁹ See Greer (1997, p. 236-244) for a complete explanation of the internal rate of return.

versus after-tax returns, leveraged versus unleveraged return, and other complexities. This brief overview of discounted cash flow analysis, however, provides an important foundation for not only understanding how the calculus underlying investment decisions is undertaken, but these concepts become critically important in the empirical analysis in Chapter Four, as well as in the following section presenting the driving components behind how investors place their investable capital over space. What is important to recognize is that each of the components contained in the DCF analysis — assumptions about a property's future income, the calculation of a 10th year sale, and choice of a discount rate — is spatially differentiated and requires analysis and interpretation on the part of the investor. This analytical and interpretive process, itself driven by spatial variables, is the vehicle by which investors make decisions about the type and location of assets in which they place their investable capital. The next section unbundles the factors ultimately determining this spatial behavior.

TOWARDS A THEORY OF INVESTOR BEHAVIOR OVER SPACE

This next section develops a theoretical framework, or model, towards explaining the geography of capital flows into commercial real estate, although many of the principles are applicable to any investment activity of a spatial character. It draws from a diverse body of theory in geography, finance, economics, and real estate literatures and could be characterized as behavioral in nature. The underlying assumption driving this theoretical framework is that the flow of capital is ultimately determined by the actions of individuals and organizations, and that these actions can, in part, be explained by the interplay of the motivations driving these individuals and organizations and the constraints and incentives they confront. Furthermore, it also assumes that we can in large part explain and predict spatial outcomes (in this case, the flow of finance capital) so long as there is a sufficient understanding of the components that influence the behavior of the responsible decision-makers.

Figure 14 presents the theoretical components explaining the spatial behavior of investors. Starting from the component at the top of the diagram and moving clockwise, the theoretical framework begins with the simplest and most fundamental features and, in general, gains in complexity (and, we hope, reality) as each component is added. Each of

the seven components which influence what we are attempting to explain (that is, where investors direct their investments) can be viewed cross-sectionally at any point in time. The last component, *shocks and dynamic change*, provides a longitudinal element to the framework, which can upset the balance of the other seven components via long-term structural change (e.g., technological developments), shocks which influence the components and their interactions in a dramatic fashion (e.g., a market crash), or lead to temporary or cyclical changes (e.g., a regional recession and recovery).

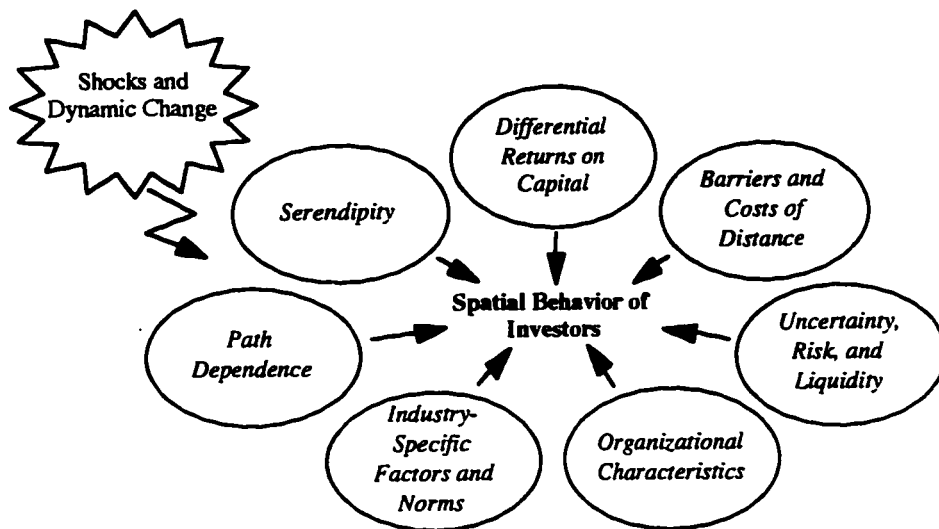
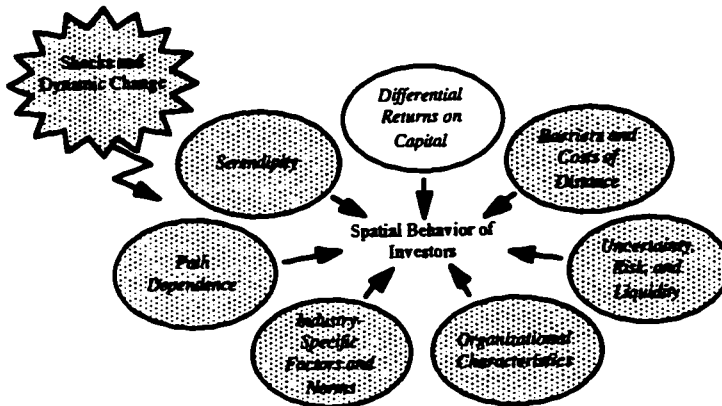


Figure 14 A theoretical framework for the spatial behavior of investors

Finally, the output from this theoretical framework — the spatial configuration of capital flows as a result of investor decisions — can manifest itself in a variety of ways. These include various spatial configurations, such as concentrated, dispersed, networked, hierarchical, channeled, or random patterns (Pred, 1977; Beyers, 1981). While there are various downstream implications associated with these patterns (for instance, the impacts upon property market cycles and the resulting impacts on a regional economy), for now we will not be concerned with such impacts unless they have a direct feedback influence on one of the eight components of the framework. These implications will be addressed in more detail from theoretical and empirical perspectives in Chapters Four and Five.

The remainder of this chapter dissects each of the components of this framework, then summarizes the research questions which stem from this conceptual analysis for the empirical chapters which follow.

DIFFERENTIAL RETURNS ON CAPITAL



The first component of a theory of spatial behavior of investors is the most fundamental: assuming all other factors being constant, capital will flow to the areas of highest return. Said another way, if there is a difference between the rate of return on capital in one region and another, then there will be a flow of capital out from the region with the lower rate of return to the region with the higher rate of return (Borts and Stein, 1964; Romans, 1965). While such a process certainly does not constitute the only factor influencing investor behavior (see Clark, Gertler and Whiteman, 1986, for a thorough critique), without it there would practically be no reason for investment outside an investor's home region.

To demonstrate this principle, let us assume we have a situation as shown in Figure 15, where there are five regions: one "source" region (**S**), where there exists a hypothetical investor, and four possible destination regions, **A**, **B**, **C**, and **D** (in addition to the investor's home region of **S**). In this first scenario, the rates of return on assets, say they are commercial real estate properties, are all 6% in each region (although there are various ways we could measure the return on these assets, such as capitalization rates, internal rates of return, after-tax yield, leveraged returns, etc., we will assume one consistent measure and that all players in the market rely upon the same measure). Our investor, say she is the sole director of a pension fund charged with investing a set amount of money into commercial real estate assets, is faced with the decision of investing in **A**, **B**, **C**, or **D**, or, alternatively, within her home region of **S**. Although for purposes of this analysis

we are assuming that there are negligible costs of distance or any differences in the quality of assets, we can say that our investor, if given the choice, would prefer to invest in her home region, given equal rates of return as shown. If others behave like her in S as well as in other regions, we can assume there to be little flow of capital between regions.

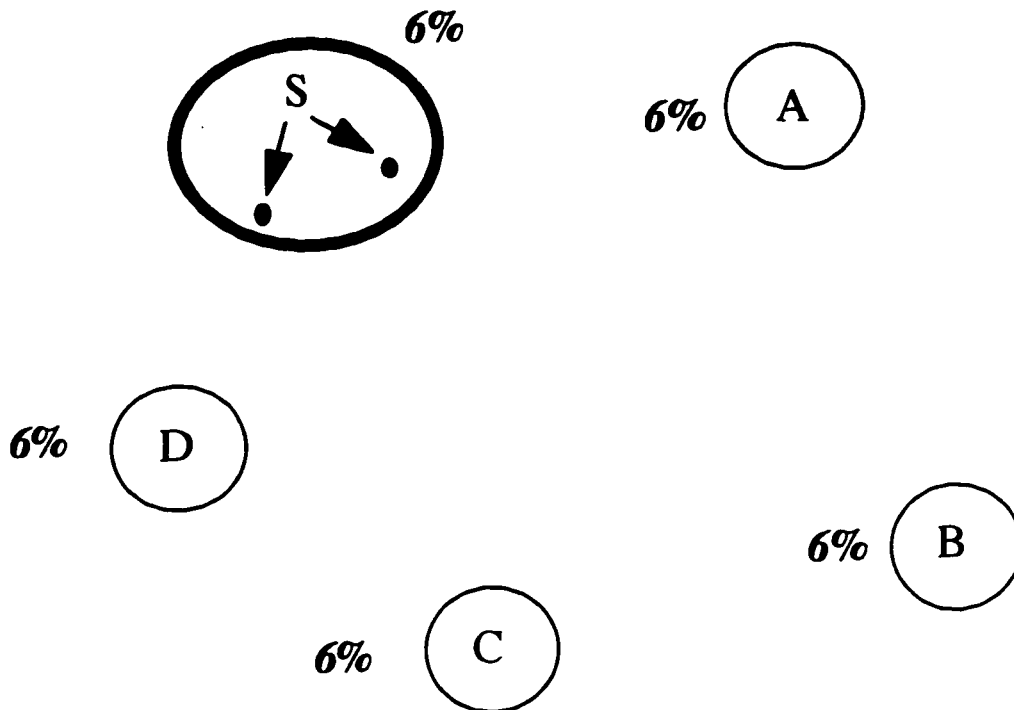


Figure 15 Spatial behavior of investors - differential returns on capital (a)

Now, over time (perhaps a year), each of these regions undergoes different experiences that affect the markets for these property assets. A rapid increase in employment in C, for instance, will generate increased demand for space, which, as we saw in Figure 12, will decrease vacancies and increase rents. If there is not a comparable increase in the supply of investable capital in this region — either to place into new construction or to bid up the prices of existing property assets — then yields will increase (in this case to 15%). As August Lösch (1954) hypothesized in his classic analysis of regional interest rate differences in early 20th century America, this could be a typical situation in a quickly growing region where the demand for capital investment far exceeds the endogenous funds available in that region as there is a lag between construction and other investment activity and when production from these capital assets flow back into the regional banking

and financial system.

While the increase in yields in **C** is a function of increased demand exceeding the supply of investable funds available, let us say in **D** there is also an increase in yields, but this is a result not of increased demand, but of a decline in the supply of funds. This decline in supply could be a result of an outflow of funds to other types of assets (such as a change in interest rates which could make riskless assets such as government bonds more attractive), a tight monetary policy restricting the flow of money throughout an entire national or regional financial system, or a decline in the confidence of these assets, discouraging future investment. The point here is that an increase in rates could be the result of either an increase in the income of that asset (as in **C**) or a decline in investor's willingness or ability to purchase that asset (as in **D**).

Likewise, in **A**, a decrease in its rate of return to 5% may arise from a decline in the income-generating potential of those assets (say a decline in space absorption relative to the amount of space made available) and/or an increase in the supply of funds put towards these assets (i.e., an increase in prices relative to income will decrease the rate of return — as identified in equation (1)).

In **S**, our source region, we can say that the market for property assets is stable and there is no change in the rate of return. Figure 16 presents this new scenario (b). Before we return to our pension fund investor in **S** to determine her reaction to this new investment landscape, there is one other point essential to the situation that has now developed. The differentials in rates that have emerged over the course of a year are contingent upon a sluggishness between the time in which rates change and when investors in other regions are able to react to these changes by shifting their assets to areas of higher returns. There are many possible reasons for this sluggishness, including the time in which information is gathered and interpreted about these changes,³⁰ the ability to liquidate assets in exchange for acquiring new ones, as well as the exact structure of the investment

³⁰ Dokko and Edelstein (1992) make the distinction between “information” and “signal” efficiency in a market, where “information-efficiency” assumes that all players in a given marketplace have equal access to information. “Signal-efficiency” holds that two markets will derive the same prices based on the same or similar information.

instrument (e.g., direct ownership, securitized, loan, etc.). These qualities are certainly characteristic of real estate assets more than most other assets because of their indivisibility, fixed location in space, uniqueness, and other “lumpy” factors discussed earlier. While this sluggishness is evident for both existing properties and new construction, it will be particularly pronounced for the latter, where there may be a significant lag time between when signals are sent and processed by investors/developers, and when a property actually generates income after a lengthy planning, construction, lease-up period, and other activities typically consuming at least 18 to 24 months at best. Regardless of the exact factors actually causing this slow reaction time between when rates of return change and when new investment can actually occur in response to these changes, we can return to our scenario in Figure 16, where there are clear regional differentials.

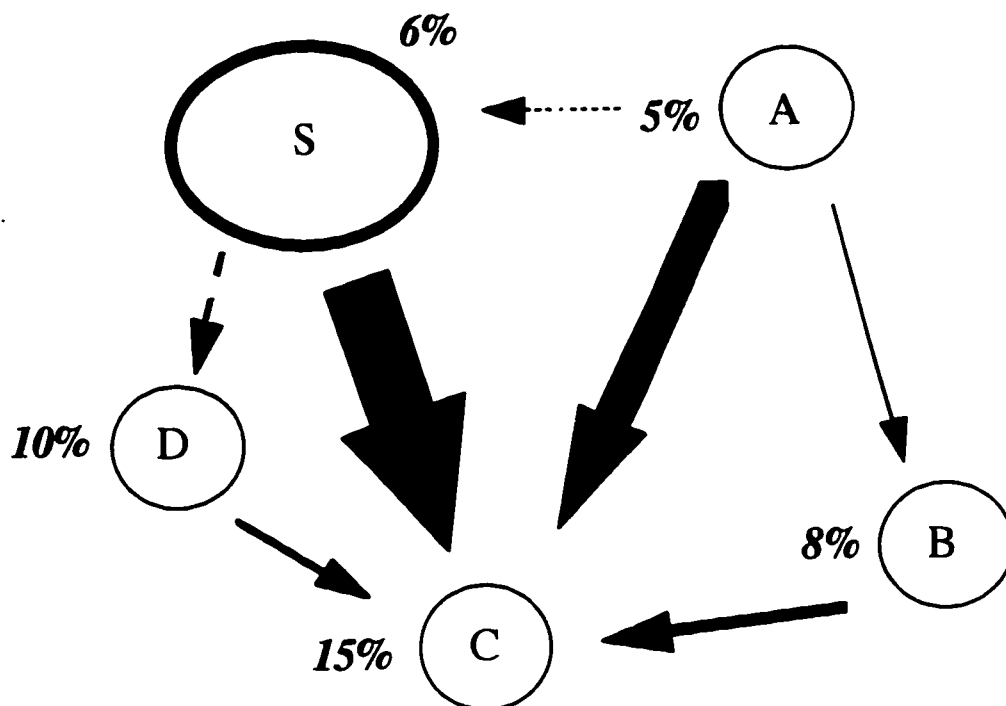


Figure 16 Spatial behavior of investors - differential returns on capital (b)

Our pension fund investor is now faced with the five potential choices in Figure 16. Clearly, C is the preferred choice, represented by the largest arrow, again assuming there are absolutely no other costs or differences in the asset characteristics of the five regions.

However, there may also be a more moderate flow to other regions where there is a differential, but not to the extent of the flow between S and C. As these funds are placed into C, there are two immediate effects. First, the flow of funds into assets in C results in an increased demand for those assets (not to be confused with the demand generating income for those assets). This has the impact of increasing their price. An increase in price independent of any increase in income of that investment will reduce the yield, or rate of return. Thus, depending upon the amount of funds our investor in S has to place into assets in C, the original 15% rate of return will decrease. However, if our investment manager is so lucky as to invest in C sooner than others, she will enjoy not only a higher yield, but also the benefits of price appreciation. The second impact our investor has is on the prices, and subsequent rates of return, on assets in her home region of S. Here, whether due to the sale of assets in this region or her mere absence in the marketplace, we can expect the rate of return of these assets to increase above the original 6% level (since return is merely the ratio of the annual income of the asset to its current value).

Now, we have only evaluated the behavior of one individual, and her influence may or may not have a substantial impact. If, however, there are other investors in S with similar costs of capital and the same menu of investment options, we would expect them to follow an identical or similar pattern. In this case, a wave of investment would leave S and flow to C, until there was a point when either the asset prices had increased so much in C, combined with the decrease of prices in S, would yield no further benefit. Or, D may become the preferred choice as it has the second highest rate of return, at least at the time in which this whole process began.

Finally, if we introduce the possibility of investors in each of the regions faced with the same menu of choices as our hypothetical pension fund manager (and, again, assuming that the cost of capital in a region is the same or closely related to the return on capital for assets in that region), then we can expect an iterative game whereby the end result is an adjustment of rates back to some level, likely not resembling that in Figure 15, scenario "a", but perhaps something resembling Figure 17, where rates approach some semblance of equilibrium, but the combination of differential rates of growth in each region with the sluggishness of investment never allows perfect convergence. Further, there exists some

level of continued interaction between regions, which may be based on the current information of asset returns, or an “inertia” of previous signals.

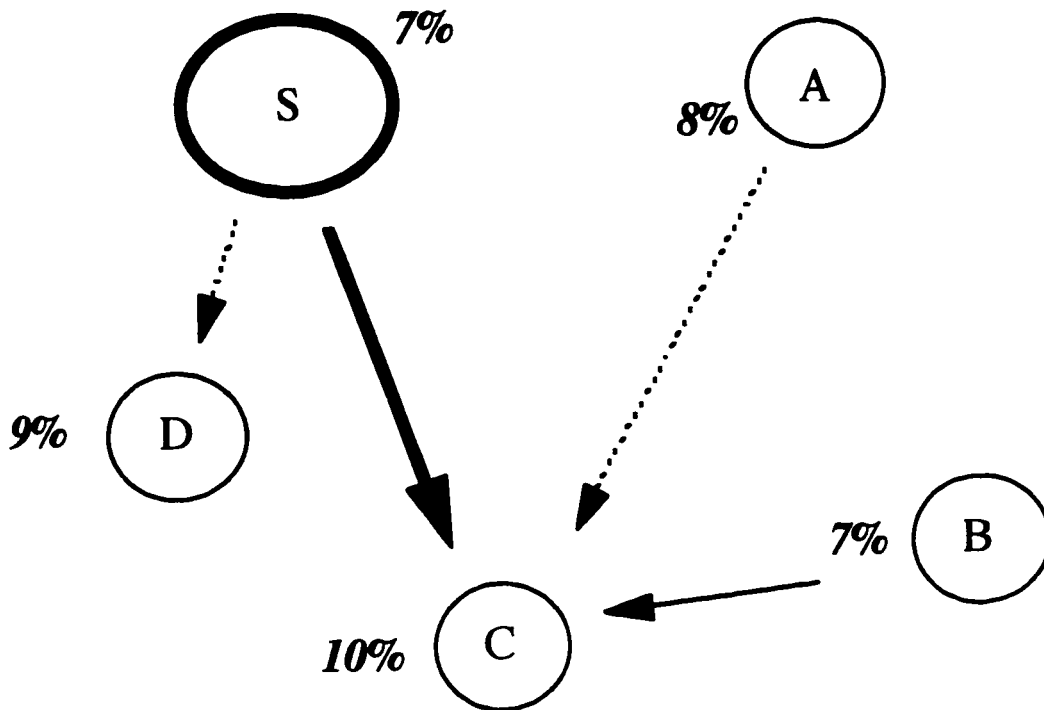


Figure 17 Spatial behavior of investors - differential returns on capital (c)

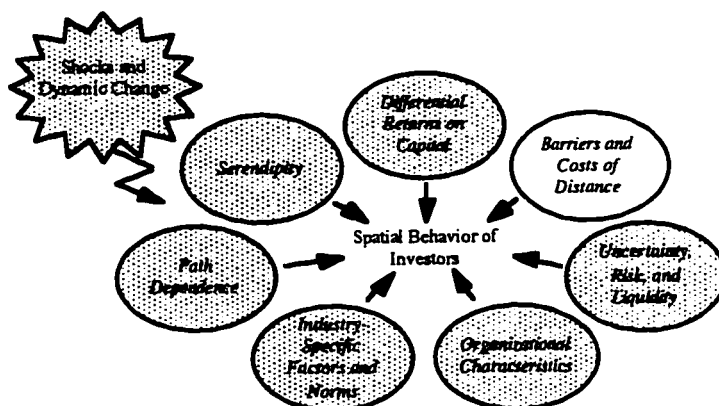
One last comment about this process is that the flow across regions due to differentials in rates of return on capital is not only a function of the relative rates of return of the potential portfolio of assets but the investor’s cost of capital (also known as a hurdle rate). Overall, there may be a relationship between an investor’s cost of capital and the return on assets in a region (or particularly within a nation with an established banking system), but this relationship is increasingly diminishing as organizations and industries engage more and more in interregional and globalized trade. Thus, we can certainly imagine a concentration of one kind of investor, say the insurance industry’s concentration in the northeastern US, and a cost of capital divorced from any particular rates of return on capital in that same region. What then drives the spatial flow of capital based on the processes just described are the differentials between these investors’ costs and availability of funds and their menu of spatial opportunities. This process is a classic explanation of why Japanese banks invested so heavily into US real estate (and other assets) during the 1980s (Warf, 1988; Arthur Andersen and IREM Foundation, 1991;

E&Y/Kenneth Leventhal Real Estate Group, 1996), when interest rates in Japan were so low combined with a strong yen and higher yields on US assets.

Based on this analysis of differential returns on capital, we can establish the following principles:

- 1) All else being equal, capital flows from regions with lower costs of capital to areas of higher returns;
- 2) As capital markets become more “efficient” in both the allowance of the free flow of capital and a decrease in the “sluggishness” between when signals are sent and received and when these signals are acted upon, we would expect the rates of return on assets (i.e., commercial property) to become more similar across regions;
- 3) A dynamic environment where regions are growing and declining at different rates will counterbalance the convergence effects of (2). In other words, if the pace of economic dynamism accelerates more quickly than the pace of change in reducing market “inefficiencies” (such as the adoption of securitized forms of investment), then rates of return will continue to vary across space, and perhaps become even more differentiated.

BARRIERS AND COSTS OF DISTANCE



The second component of our theoretical framework introduces the barriers and costs of distance that apply to the flow of finance capital over space, particularly into commercial

real estate. Although a barrier could in fact be labeled an infinite or insurmountable cost, it is useful to address both barriers and costs of distance separately, as each of these have different spatial implications for the flow of capital.

Barriers

Spatial barriers that prevent or severely restrict the flow of capital can take numerous forms. This is particularly true for commercial real estate on an international scale because of differences in property laws and institutions (Geurts and Jaffe, 1996). Some of these barriers (both internationally as well as within a nation's boundaries) may include:

- *Regulatory barriers*, that prevent either or both inward and outward flow of capital. For instance, while interstate banking regulations do not prohibit lending outside the state in which a branch is located, they do prevent branching outside the state of the same banking organization, severely curtailing any flow of capital outside the state. These regulatory barriers are often most pronounced on an international scale, where countries may prohibit certain nations from any form of trade or investment in their home country, and vice versa, where residents are prevented from investing in other nations.
- *Physical or insurmountable cost barriers*, where, for instance it may be completely infeasible to invest capital in a region because it is not possible (for instance, if one were to invest in an industry in a region or nation where all of those industries were privately held and there was no opportunity for outside investment) or where the costs were so high that any investment would not be feasible.
- *Severe risks*, such as extreme political instability where no type of investor would be willing to place their capital.
- *Lack of or inability to access information*, which could also include an absence of any knowledge that opportunities even exist in another region.
- *Other barriers*, such as cultural and language barriers, which may prevent any interaction to occur.

What are the implications of these barriers for investor behavior and what happens when

these barriers are suddenly released? Using the same example as Figure 16 (where there are regional differences in return on capital), Figure 18 depicts a barrier around region S, where our pension fund manager is located, preventing her from making any investments outside her home region. For now, let us assume that the barrier also prevents any investment into the region. Thus, the 6% rate of return is based upon the regionally endogenous clearing rate between the demand for funds (the assets available for investment) and the supply of funds (the moneys available to invest in assets). This is represented in Figure 19, where Z represents the intersection of the demand schedule (D) and the supply schedule (SP) yielding a rate of return R and a quantity of projects financed, Q. If there are no changes to the region's supply and demand conditions, we would expect this relationship to remain stable.

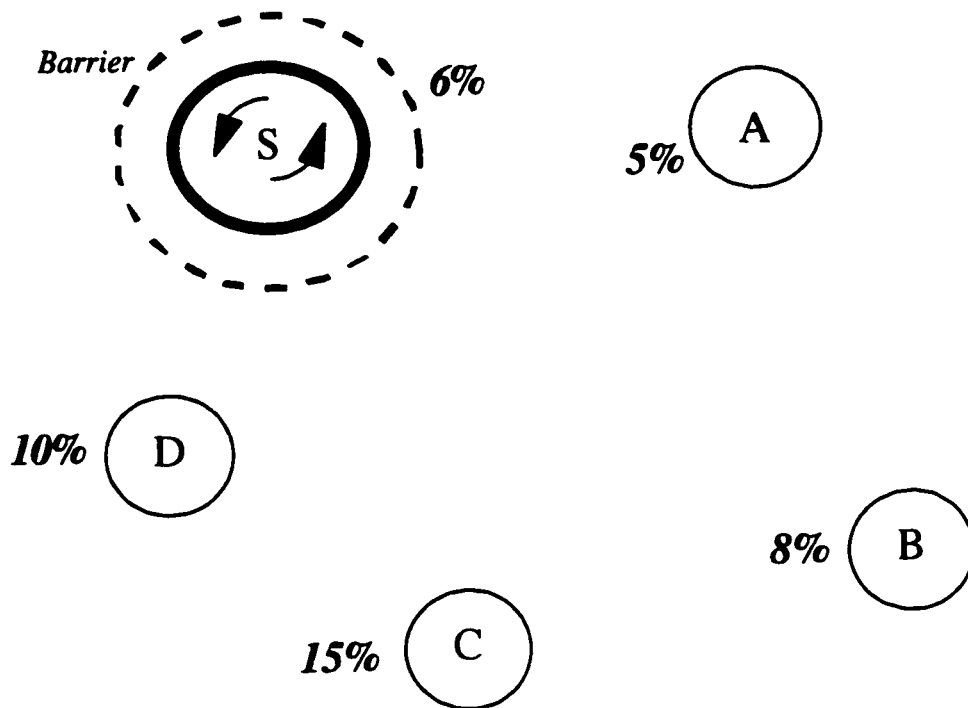


Figure 18 Spatial behavior of investors - effects of spatial barriers

Now let us assume that what was a two-way barrier, where funds were not allowed to enter or exit the region, now becomes a one-way barrier, where outside funds can enter the region but investors in S are still prohibited from leaving their home boundaries. Depending on the relative rate of return of assets in S to other regions (say investors in C are attracted to the slightly higher returns), we would expect the supply of funds to

increase, represented by a shift in supply curve SP to SP' . This shift could also occur if the region traded in other goods, services and assets with other regions, which would result in exports that are channeled into the banking and financial system, which then become available for investment. This shift, then, reduces the return on capital R to R' (4%). In effect, this is increasing the price of assets (because, again, R is a function of the price and the income of assets). In addition, more projects may be financed from Q to Q' , if indeed there is a sufficient supply of projects available.

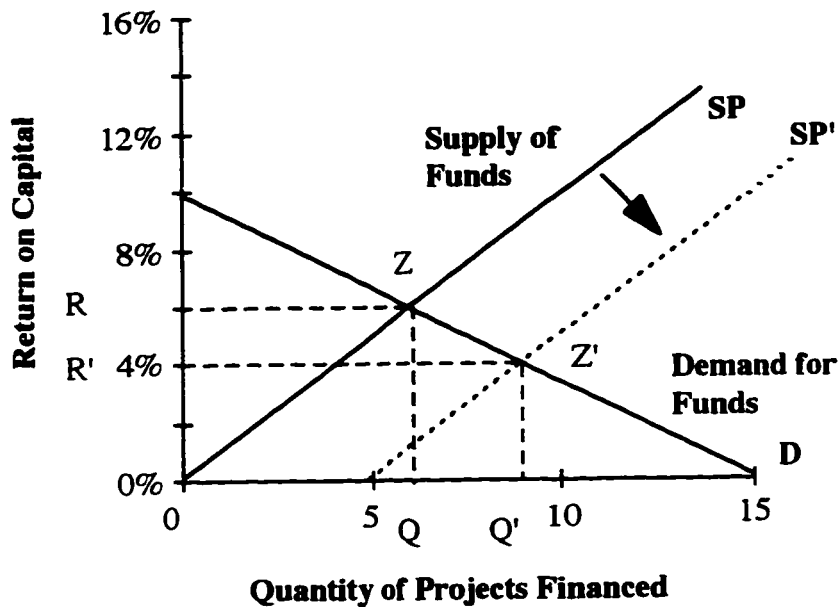


Figure 19 Spatial behavior of investors - supply and demand for investable funds in a region with two- and one-way barriers

Now, let us say the barrier is suddenly removed. Depending on the duration of the barrier and the extent to which funds are circulating in the region in a quickening manner, this removal will result in an outflow of capital (e.g., our pension fund investment manager can finally place funds into assets with higher yields), and the result is quick and dramatic, as shown in Figure 20. Further, this outflow may not only be directed at a single region, where returns are highest, but in a more haphazard manner, due to the high differential that had been building up as a result of the barrier.

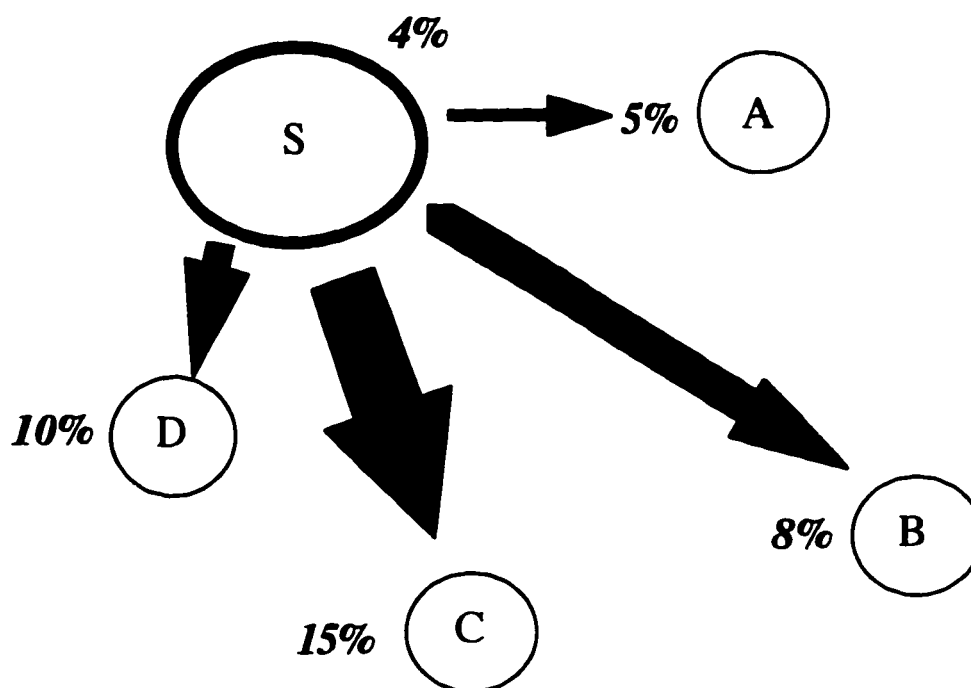


Figure 20 Spatial behavior of investors - sudden removal of a barrier

Finally, and I will not diagram this relationship, the removal of the barrier not only results in the equilibrating effects of rate convergence as discussed earlier, but results in a total flow of funds between all of the regions of a greater volume than when the barrier existed.³¹ This is because there is such a large supply of capital in the region where the barrier has developed, that they are far more willing to invest in projects in other regions where the rate of return was too low for other investors' (with higher costs of capital) willingness to invest in these lower-yielding assets. On a related note, there is evidence that a higher volume of capital flows results in higher shorter-term volatility (see Lizieri, 1995a for a discussion of this with respect to real estate and the effects of capital market integration). In other words, while the integration of markets, by the removal of barriers, may yield aggregate equilibrating effects between regions (or other market segmentation), a rapid, voluminous flow of capital may produce a higher degree of "noise" as a result of

³¹ The reason for this increase in total volume is the differences in the slopes and/or intercepts of the demand and supply curves between two (or more) different regions. Integrating two segment markets, where we can add together the supply and demand curves, will always result in greater quantity than the total quantity of two segmented markets if the two markets are not identical. See (Fisher, 1933; Hirshleifer, 1992) for further elaboration.

the volume of “signals” in the marketplace (many of which may be false or superfluous) as well as simply the greater number of players interacting in a marketplace.

From this analysis of the effects of barriers on the spatial behavior of investors and the resulting impact upon capital markets, we can state the following conclusions:

1) Where there are barriers, we can expect differentials across places in the rates of return on capital; moreover, when these barriers are in a single direction, we would expect these return on capital differences to be even more pronounced.

2) The effect of relaxing a barrier will depend upon the speed in which it is removed and the differential in the rate of return developed as a result of the barrier. If it is removed rapidly and there is a high differential, the resulting outward flow will be sudden and haphazard.

3) Removal of a barrier will almost always result in a greater aggregate flow of capital (i.e., more projects will be financed and more money will be invested).

Costs of Distance

Like other industries where there is a transportation cost associated with the movement of goods and services (Isard, 1956), the investment process in real estate also has a cost where there is physical distance between the investor and the asset. These costs can be as trivial as “the cost of telephone calls and necessary computer time” (Amos and Wingender, 1993, p.93) associated with the actual transfer of funds to the most expensive costs of travel, establishment of field offices, face-to-face contacts of individuals at the highest levels of management, hiring of local specialists and brokers, and the costs of researching distant markets as well as managing assets once acquired. Some of these costs will be fixed in that they will occur whenever investment is made outside the investor’s home region (such as the hiring of local brokers and specialists), while others will increase in some function as a proportion of distance.

There will also be a gravity-like attraction of larger places that offset these costs of

distance. We would expect that larger places would yield greater agglomeration economies and other economies of scale (such as competitive and well-established real estate services industry; see Keogh and D'Arcy, 1994). Figure 21 illustrates these concepts. Again, we have the same differential rates of return across regions as in Figure 16, however, now there is a cost of distance, represented as a "spread" that must be added to the cost of capital (or subtracted from the potential return on the asset), thus the 5% return on assets in A now yields only 3 1/2% ($5\% - 1\ 1/2\%$).³² Also, while B and C are similar in their physical distance from our pension fund investor in S, B is a much larger market, yielding substantial economies of scale and perhaps minimal travel costs because of well-established connections between the two places, thus B and C each yield a net of 7%. Since this is slightly larger than the returns in the home region of S, we could expect a flow, though minimal, to both of these regions. Region D, because of both its proximity (with a distance cost of only 1%) and its fairly high returns now receives a large share of the outward investment.

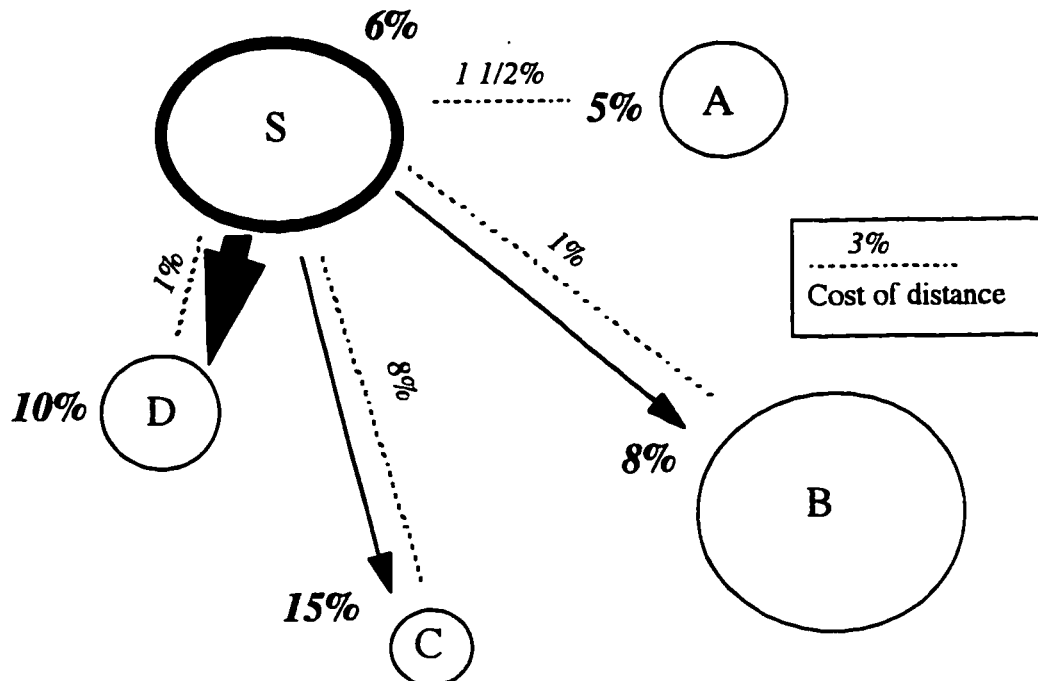


Figure 21 Spatial behavior of investors - cost of distance

Over time, we would expect the costs of distance to decrease, as transportation costs

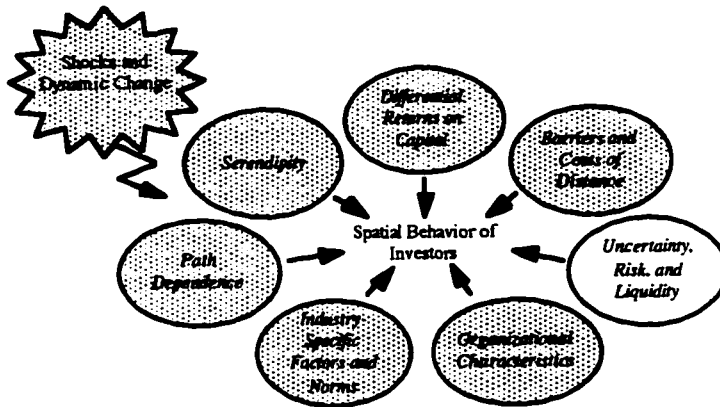
³² Even though many of these costs may be fixed or a one-time cost, these can still be reflected in a single rate of return if that rate reflects the potential return on all current and future flows of capital.

decline (Janelle, 1969), as indirect instruments (i.e., securitized vehicles) reduce the costs of direct asset ownership, and as communications and information technologies create a globalized system of financial markets and free flow of information (Castells, 1989; Hepworth, 1989; O'Brien, 1992). As these innovations take hold and decrease these costs of distance, we would expect the investment landscape to approach gradually the outcomes in Figure 16 (which, again, taken to its logical conclusion may result in a convergence of rates across regions; however, there will always likely be some "friction" of distance, for instance there is a continuing need for face-to-face contact, which has a cost of distance).

The conclusions then from a consideration of costs of distance on spatial behavior are as follows:

- 1) The fixed costs associated with any investment outside the familiar bounds of an investor (e.g., its home region) will require a "threshold" of a differential return on capital between regions before any investment occurs.
- 2) The existence of distance costs exacerbates differentials in the net return on capital across regions.
- 3) Over time, we would expect these costs to diminish, as transport, communications, and information developments occur as well as the creation of more indirect forms of investment which create economies of scale and decrease marginal costs. As these costs diminish, we would expect a dispersion of capital away from investor's home regions, with the largest of places being the first recipients, and a convergence of net rates across regions over time.

UNCERTAINTY, RISK, AND LIQUIDITY



The next component of this theoretical framework involves three related factors which, other than differential returns on capital, have potentially the most pronounced impact upon spatial patterns of investment, particularly real estate investment. Investors, like all decisionmakers, operate in an environment of incomplete information (Merton, 1987; Pindyck, 1991). Further, even where there may be a sufficient body of information from which to make an informed decision, the means by which this information is processed and interpreted is often imperfect. This combination of incomplete information and never-perfect means of interpreting this information creates conditions of uncertainty (Simon, 1960). This is particularly relevant to the real estate industry which, unlike other types of investments, has been plagued by the lack of information and the analytical tools necessary to process information in the cases where it is available (Stearns, 1995).

Risk, in contrast to uncertainty, is an information and analytically-informed knowledge of the variation in predicted future outcomes. For investors, risk represents the statistically calculable probability of future returns. It is typically expressed as a likelihood (i.e., “there is a 25% chance that the return on stocks will fall by 20% or more over the next five years”) or a measure of variance on a population of possible outcomes (e.g., standard deviation of an expected mean return). It is also incorporated into capitalization and discount rates, as a premium to account for future income variability (as discussed earlier in the overview of discounted cash flow analysis). Knowledge of the probabilities of these future variations, based on information of historical performance, can lead to

decisions which are just as informed and “rational” as ones made where the exact future returns are known and invariant.

Finally, liquidity is defined as the “ease and quickness with which an asset can be exchanged for goods, services, or other assets” (Abel, 1992, p. 734) and is the means by which risk management can be put into practice. Liquid markets (where there are many buyers and sellers, and, thus, many transactions) provide both market information (which reduces uncertainty and allows the calculation of risks) and the ability to purchase or dispose of an asset in a reasonable and predictable period of time (again, reducing uncertainty). Thus, liquidity could be viewed as a temporal barrier.

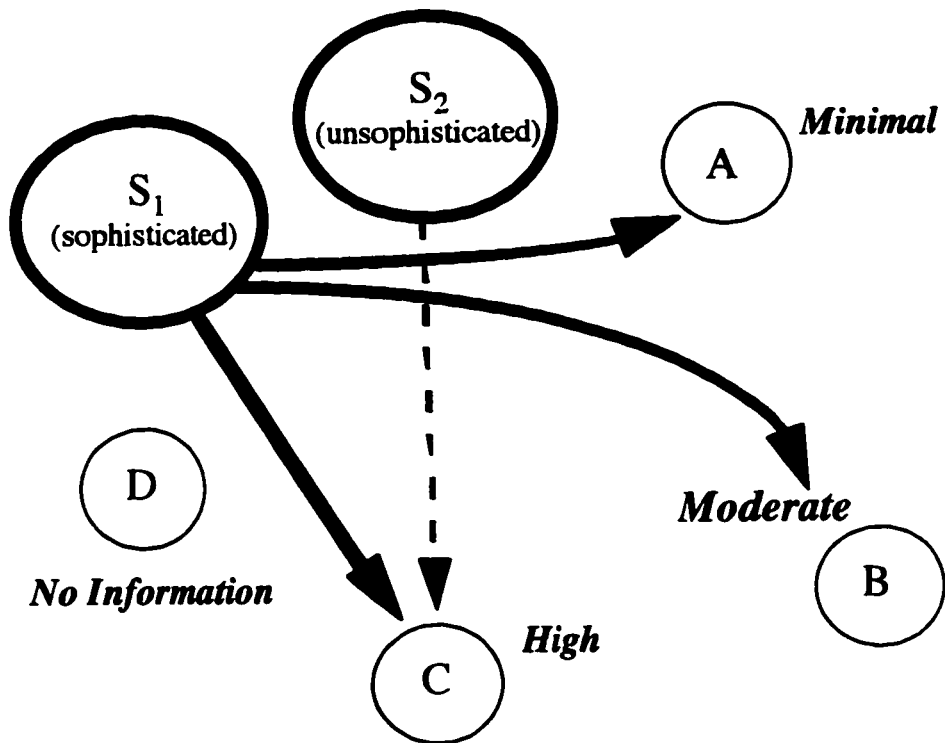
Each of these three factors varies over space. Further, different types of investors and decision-makers have varying attitudes towards each of these factors. Thus, we would expect different investors to exhibit different spatial patterns, particularly when issues of uncertainty, risk, and liquidity are important features of the asset in which they are investing. The following sections describe the possible spatial variations in investment behavior based on these distinctions.

Uncertainty

Uncertainty in investment is a function of the information available about the asset in which the investor is interested, the ability of the investor to collect and process this information, in addition to the never-perfect capability of predicting the future (i.e., uncertainty will always be present). Returning to another version of our investment-behavior diagram, Figure 22 indicates a situation in which two types of investors in a source region (S_1 and S_2) are faced with a choice of assets in regions A, B, C, and D, each with different levels of market information that are available ranging from “no information” to “high”.³³ S_1 is a “sophisticated” investor, with both the ability to collect the available information (e.g., field offices, relationships with specialist information providers, intraregional information and communications infrastructure) and process that information in a meaningful and useful way (e.g., specialist personnel, customized

³³ See Keogh and D’Arcy (1994) for an empirical assessment of “market maturity” in a selection of European property markets. One component of their measure of maturity includes information and research capabilities.

computer models). In fact, S_1 needs only a threshold of “minimal” information to make an informed decision about distant investment choices. Therefore, **A**, **B**, and **C** are all a part of their possible portfolio locations because they are at or above this threshold. In all likelihood, there would be some continuum of probabilities where S_1 would invest based upon these levels of information, with the greatest probability in the region with the highest amount of information, **C**.



Note: High, moderate, and minimal indicate the level of market information available about the assets in each region.

Figure 22 Spatial behavior of investors - uncertainty

S_2 , on the other hand, is “unsophisticated” and may require not only the highest quality information about market conditions, but additional value-added transformations of these data in order to include the region as part of its possible portfolio. The nature of these value-added transformations may include the difference between uninterpreted market information (e.g., vacancy rates, employment growth, rents, comparable sales, etc.) and specific analysis of the data into information upon which a decision can be based (e.g., a property specific market study, a discounted cash flow feasibility analysis, an appraisal,

etc.). Thus, S_2 is only able to invest in C , based upon its information requirements. In all other aspects, S_1 and S_2 may be identical, but their spatial patterns could be quite different based upon their abilities to deal with uncertainty.

As with the other “costs of distance” discussed earlier, costs of acquiring information will likely increase with distance (including costs of communications, travel, fixed costs of establishing a distant office or local contact, etc.) and could be approached in the same manner as described in the previous section. However, we would also expect that these costs will decrease over time, particularly in light of the rapidity of developments in information and communications technologies.

The importance of information in real estate decisionmaking cannot be understated. The elements that are incorporated into a discounted cash flow analysis — current and projected rents, expenses, vacancy levels, lease-up rates, capitalization rates — can each substantially alter the projected returns on the project and the signals regarding the price the buyer is willing to pay. Yet, the amount of information required will vary according to the type of investment instrument applied. Clark and O’Connor (1994) offer a taxonomy that highlights this concept. Clark and O’Connor identify three categories of financial products based on their informational structure: transparent, translucent, and opaque products. Transparent financial products are those such as gold futures, where the characteristics of the assets are so ubiquitous that trades can take place merely on the knowledge of current and past prices. Translucent products are assets where information is widely available, but the issuers of these products seek to differentiate themselves from others. The example Clark and O’Connor use for these products are mutual funds, where firms use their particular expertise to construct portfolios of assets where information is both widely available as well as requiring customized research and analysis. Finally, opaque products require a great deal of asset-specific information, much of which is not publicly available but instead requires special efforts and expertise to acquire. Interestingly, Clark and O’Connor use REITs as an example of these opaque products because of the information requirements necessary to value the individual property assets that underlie these products. The informational content based on this categorization, they argue, forms strong constraints on their geographies, with transparent products being the most locationally footloose (due to ubiquitous information about their characteristics) and

opaque products being the most locationally constrained (requiring an intense amount of locally-specific information). Because of this differentiation, they dispute the arguments of (O'Brien, 1992) and others espousing the eventual irrelevance of location in a globalized financial system:

“Despite dramatic improvements in the technology of information transmission, there is no systematic evidence that the global financial system is neither collapsing to a point (just a few places) nor fragmenting into a ‘thousand pieces of geography’ scattered randomly across the globe.” (*Clark and O'Connor, 1994, p. 1*)

Moreover, there is a valid argument that the continued growth of financial activities, and the greater differentiation of types and mere numbers of assets more than ever requires specialized knowledge and information — information found in the social networks of the largest financial centers (Sassen, 1991). In sum, this tension between the ubiquitous availability of information to distant places stemming from a global technological network, counteracted by the attraction and familiarity of large places lies at the heart of the debate over the spatial implications of the new finance economy. To test the veracity of these opposing views, it is necessary to measure and map both the flows of capital across space (to determine whether there is a shift to dispersal or increased concentration), as well as analyze the decision processes on the part of organizations and individuals that ultimately lead to these configurations.

This analysis of the influences of uncertainty on investor’s spatial behavior can be summarized as follows:

- 1) There is a tendency to go to places where there is most information — or where the existence of information is known. Both of these instances are most typically indicative of the largest places.
- 2) Where there is not information (e.g., uncertainty), there will be a cost (similar to other costs of distance).
- 3) Places with low information will have higher proportions of local investment.
- 4) Over time, as more information is gathered about assets in a greater number of markets, there will be a tendency for investment to flow to once-overlooked (e.g., smaller) places. However, given the aggregate distribution of population and

economic activity, we would still expect the majority of assets in larger metropolitan areas.

5) Uncertainty is reduced by proximity and time. This is not simply the cost of distance in gathering information, but the influence of familiarity as influenced by these two characteristics.

Risk

As with uncertainty, risk varies over space (Webber, 1972). Different investors have varying levels of risk tolerance (Fama and Miller, 1972). Therefore, we can expect that there will be variations in investment patterns based upon both the spatial unevenness of risk and the uneven patterns of investor locations who exhibit different levels of risk tolerance.

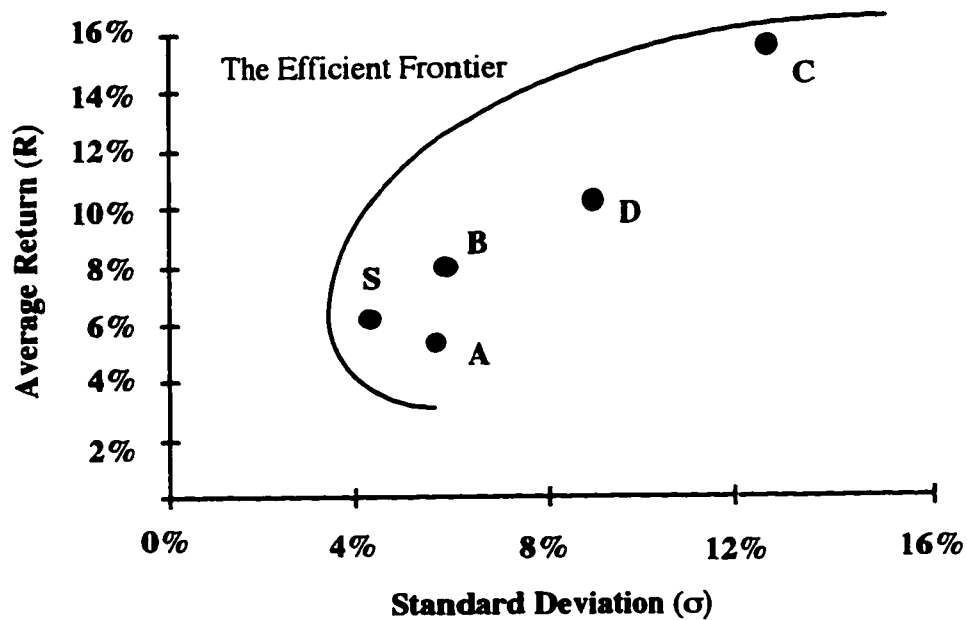


Figure 23 Spatial behavior of investors - risk and return asset characteristics of places

Modern finance theory is based upon the principles of risk and reward (Markowitz, 1959; Fama and Miller, 1972). A risky asset is one in which there is a high potential variation between the expected and actual returns, typically measured as a standard deviation. Like comparing any individual asset or asset class against another (say a comparison of two stocks, or a comparison of bonds and precious metals), we can also compare the performance of assets across regions based on these two characteristics. Figure 23

presents a diagram of our five possible destination regions based upon the returns identified earlier in Figure 16 combined with a measure of expected risk (standard deviation, or σ). Here, the region with the highest risk, **C**, is the region with the highest return of 15%. The lowest risk region (**A**) also has the second lowest average return.

Figure 23 alone is insufficient to predict the spatial behavior of investors in our source region. We must know something about the risk-willingness of these investors. Figure 24 identifies alternative risk tolerance levels, based on the tradeoff between expected returns ($E(\tilde{R})$) and an expected level of risk ($\sigma(\tilde{R})$). A risk-neutral tolerance represents a linear relationship between risk and return: for every increase in risk, a comparable increase is expected in return. A risk-willing level would imply the purposeful seeking out of risky assets at the expense of return ("irrational" behavior). Most investors will demonstrate some variation of the last possibility, risk-averseness, where the required rate of return increases at a faster rate than a comparable increase in risk. Some investors may have little risk tolerance, represented by a steep, upwardly sloping curve, while others will be willing to take on future high volatility in exchange for the possibly high returns.

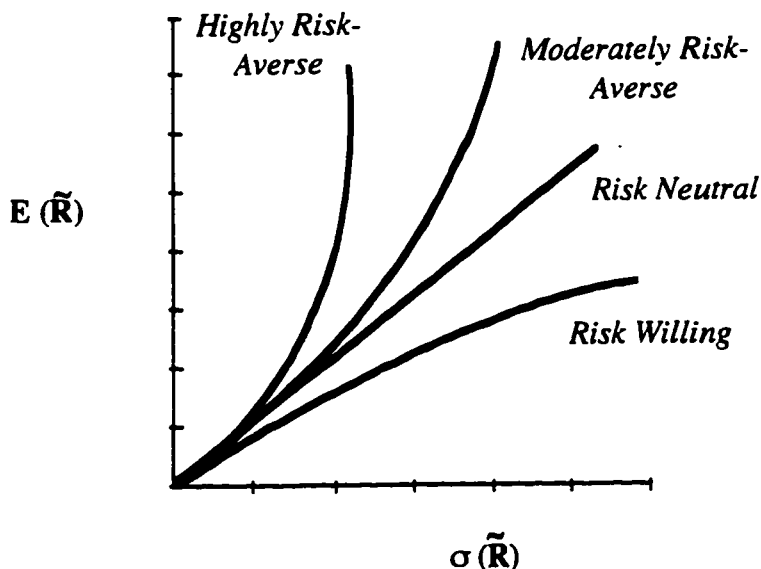


Figure 24 Levels of investor risk tolerance

Modern Portfolio Theory

Adding another dimension to this analysis of risk over space is the recent application of modern portfolio theory (MPT) towards real estate investment, as put forth by the work of Markowitz (1959). MPT is a standard method of analysis for other financial securities but has only recently received widespread attention in real estate investment analysis (Firstenberg, Ross et al., 1988; Sweeney, 1988; Young and Grieg, 1993; Schuck, 1995), especially with respect to geographical diversification (Shulman and Hopkins, 1988; Mueller and Ziering, 1992; Williams, 1996). While institutional investors have most always practiced what is deemed “naive” diversification — where portfolios are diversified according to some, often arbitrary, classification of assets (e.g., office, industrial, retail; northeast, southwest, northwest) that may be weighted in some manner — the formal application of MPT has stemmed from a variety of factors. First, is that application of MPT relies heavily upon historical returns, and such data have not been available in a reliable fashion nor at a necessary level of detail, until recently. Second, is that the calculations can be very computer-processing intensive, and the developments in information technologies and personal computing has allowed once tedious calculations to be far simpler. And, finally, the continued involvement by sophisticated financial institutions into real estate combined with a “Wall Streetification” of the industry, as exemplified by the securitization trends identified in Chapter One, has facilitated the adoption of such methods of analysis. In fact, in a survey of pension fund portfolio methods (Bajtelsmit and Worzala, 1996), nearly 60% claimed to apply modern portfolio analysis in their real estate investments; in addition, 51% practiced some form of diversification based on geographic area/region. In this theoretical analysis, I am less concerned with the optimum portfolio, based upon geography, than I am about the effects of the widespread adoption of such methods in the industry on the investment patterns over space.

The basis of modern portfolio theory stems from not only the relationship between risk and return, as seen in Figure 23, but the *covariances* between a portfolio of assets. The objective is to minimize the amount of *systematic risk* (the amount of variance exhibited by an entire class of assets, most often measured by an index of those assets such as the Standard and Poor’s (S&P) 500 index for stocks) and maximize the level of *unsystematic*

risk (the risk that is unique to an individual asset).³⁴ Doing so minimizes the exposure to a downturn of a particular asset across an investor's portfolio.

The objective of MPT is to derive what is called an "efficient frontier", an optimum portfolio of assets, where for any point along this frontier, it is impossible to construct a portfolio with a lower level of risk, or standard deviation, for a given expected return. Likewise, there will be no higher level of return for a given level of desired risk. The derivation of this frontier is undertaken via two equations. The first equation calculates an investor's portfolio of expected returns (after Markowitz, 1959; taken from Draper and Findlay, 1982):

$$E(\tilde{R}_p) = \sum_{i=1}^n \alpha_i E(\tilde{R}_i) \quad (1)$$

where:

$E(\tilde{R}_p)$ = the expected return on the total portfolio

α_i = the expected return on asset i

$E(\tilde{R}_i)$ = proportion of total investment in asset i

Likewise, the expected variance of the portfolio can be represented as follows:

$$\sigma_p^2 = \sum_{i=1}^n \sum_{j=1}^n \alpha_i \alpha_j \rho_{ij} \sigma_i \sigma_j \quad (2)$$

³⁴ See Wurtzback and Miles (1994) p. 597 for a more thorough explanation.

where:

α_i, α_j = proportions of total investment in asset i , asset j .

σ_i, σ_j = standard deviation of return for asset i , asset j .

ρ_{ij} = correlation of returns between asset i and asset j

The important aspect about this model is that diversifiable risk (i.e., minimal covariance of assets in a portfolio) will construct a more optimal efficient frontier of assets of similar standard deviations than one that involves a high degree of systematic risk. Simply put, the portfolio manager is looking to construct a portfolio that holds assets of different cyclical behavior. In doing so, one can create a relatively lower risk, optimal return portfolio which may consist of very risky assets.

So, returning to our five destination regions in Figure 23, we can construct an efficient frontier (illustratively; in actuality, we would need to know the covariances of these assets), as drawn. Here, there is no other combination of assets which lead to a more optimum combination of risk and return. Further, we cannot achieve this optimum unless some combination is chosen, as opposed to investment all in one asset. The curve typically will take on an elliptical shape, where the curve doubles back as return increases, because to achieve a low return will require a combination of only a few assets. If those low return assets are in fact risky (a good example are precious metals, where they can be high volatility, but low returns over time), risk is reduced as the higher-yielding assets are added to the portfolio (thus increasing returns as well).

Knowing that a portfolio can be constructed anywhere along this frontier, how can we know which point is appropriate for any particular investor? First, we can construct a series of utility curves for any investor (and while this is typically applied to an individual we can apply these to an analysis of firms or other organizations with a collective risk tolerance level), as shown in Figure 25. These curves are concave to the northwest with an increasingly higher level of expected return, $E(\tilde{R})$, required as risk, or $\sigma(\tilde{R})$, increases. As one moves northwest, there is a higher level of utility (higher expected

returns and lower expected risk). Although one can construct linear (risk-neutral) or convex (risk-willing) curves, as in Figure 24, it is usually assumed that all investors are risk-averse in varying degrees (Fama and Miller, 1972). The optimum portfolio along the frontier, then, is at the tangent of the utility curve V_3 and the efficient frontier the most northwesterly position, or Z^* .

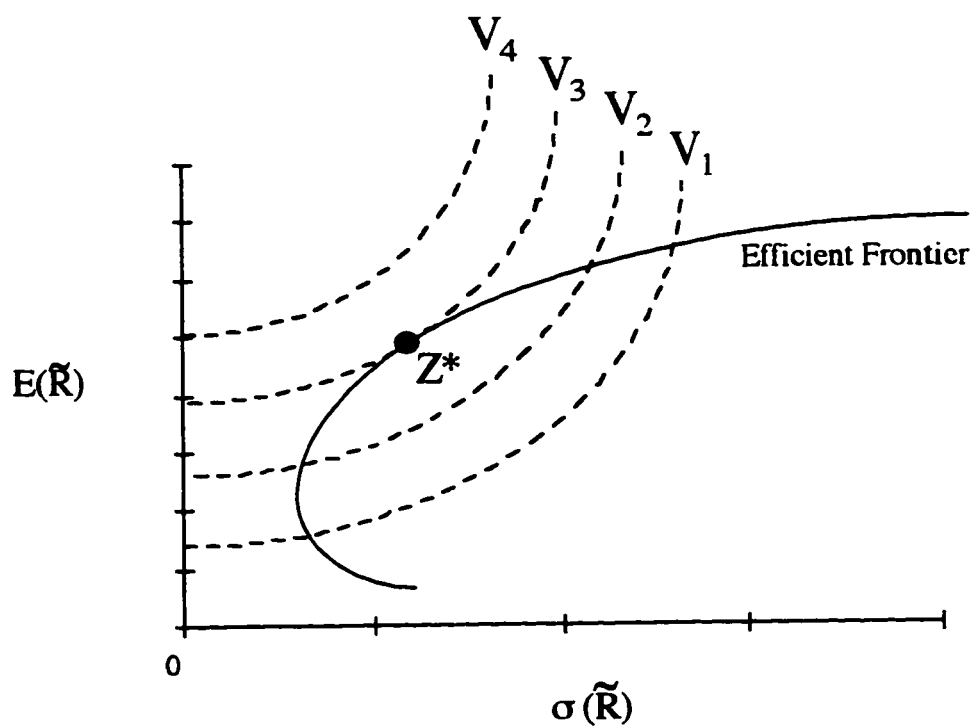


Figure 25 Investor utility curves of expected risk and return versus the efficient frontier

Now, let us assume that suddenly, some market-integrating process, such as the relaxation of a regulatory barrier or the creation of a securitized instrument, brings in a new population of asset possibilities (such as the ability to invest in commercial property in new regions), demonstrating the risk-return and efficient frontier characteristics as shown in Figure 26, comparable to relationships and efficient frontier of our original portfolio in Figure 23.

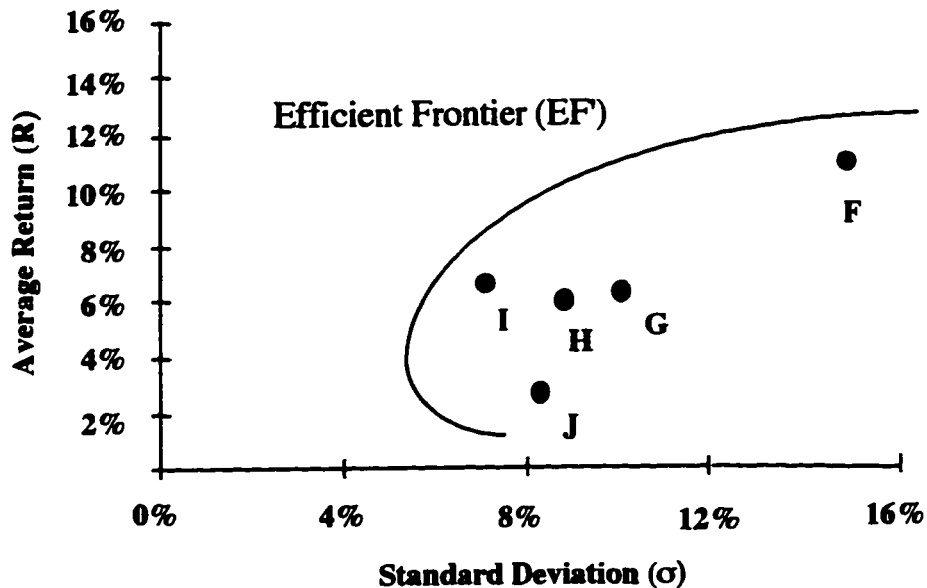


Figure 26 Asset characteristics and efficient frontier for new population of assets due to market integration

Depending, again, upon the covariances of these two populations of assets after integration (not shown in either Figure 23 or Figure 26), integration of these markets would likely result in a movement of the aggregate frontier farther up and to the northwest than either of the frontiers individually. If we combine this with our investor utility curves from Figure 25, we could expect a configuration as shown in Figure 27. Here, utility has now moved from V_3 to V_4 as it is now tangent to the aggregate efficient frontier, $EF_{\text{Integrated}}$, a combination of the original efficient frontier, EF_{SABCD} , and the new population of assets available, EF_{FGHIJ} . In other words, investors now benefit from the integration as they can construct a more optimally diversified portfolio that increases their overall return at a lower level of risk.

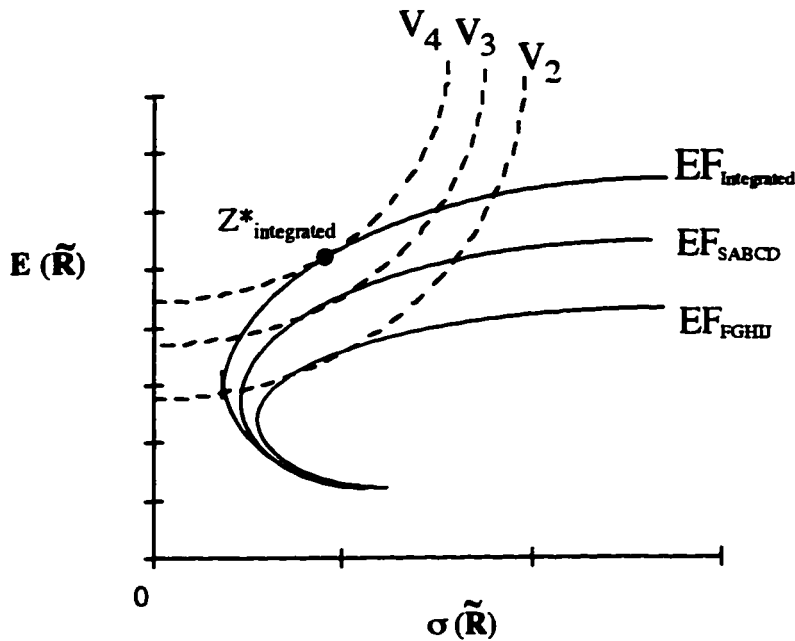


Figure 27 *Efficient frontiers in an integrated market*

To this point, we have constructed frontiers as if we knew the exact characteristics of each asset. This is highly impractical if not totally impossible. Instead, (Sharpe, 1970) developed a method by which a performance index of asset type categories could be applied to achieve similar diversification benefits.³⁵ Because geography is one means of classifying assets, real estate researchers and practitioners have been striving to find the optimal spatial classification scheme which offers the greatest diversification: that is, maximizing unsystematic and minimizing systematic risk. These spatial classifications began first with a regional typology established by the National Council of Real Estate Investment Fiduciaries (NCREIF, which provides an index of real estate returns for incorporation into MPT models) based on simple US regional classes of East, Midwest, South, and West (see Firstenberg, Ross et al., 1988 for an application of these classes to MPT). In a search for a more meaningful classification, researchers applied Joel Garreau's "Nine Nations of North America" (Garreau, 1981) as a typology, testing its MPT application, and determining it to be more useful (Shulman and Hopkins, 1988), as

³⁵ I will spare the mathematical presentation of this method; see Draper and Findlay (1982) for a description and application to real estate assets.

it incorporated an element of economically contiguous regions. Finally, the work of Mueller and Ziering (1992), and various offshoots (e.g., Williams, 1996) represents the current state-of-the-art methods, where geographically contiguous boundaries are now passé, and instead metropolitan areas demonstrating similar economic characteristics (e.g., oil-dependent, defense-related, financial services-oriented, etc.) are applied as the means of diversifying assets by location.

Amidst this turmoil and continuing efforts in the real estate industry to determine exactly how MPT can be optimally applied to real estate, especially with respect to location, what can we deduce from our conceptual analysis of these applications in its implications for the flow of capital over space? First, the upward movement in the efficient frontier seen in Figure 27, due to the integration of markets (say, through securitization) does not necessarily mean that suppliers of finance capital will allocate according to this “optimal” allocation model. Application of MPT is dependent upon development of its technical capabilities, the extent and way in which it is adopted in the industry, and, most importantly, by the amount, quality, and availability of information that is absolutely necessary in its feasible utilization.

If the following conditions hold with respect to the use of MPT in real estate, then we would expect a dispersal of investment across places, particularly to smaller metropolitan areas: 1) MPT continues its widespread adoption and development within the industry, with geographical allocation models being increasingly applied; 2) there are more mechanisms allowing suppliers of finance to invest feasibly in distant regions (such as through securitized forms of ownership); and 3) there is an increase in diversifiable risk both across regions as well as along the urban hierarchy (particularly counter or leading or lagged cyclical behavior of smaller places). These conditions would lead to both a greater flow of capital across regions (more transactions, greater aggregate level of funds in real estate ownership) as well as a shift of capital to a less concentrated pattern.

To summarize:

- 1) The riskiness of assets (variation in possible future returns) can be expected to vary over space. Without the application of diversification methods, we would expect risk-

willing investors to invest in riskier, or more volatile places, and risk-averse investors to place funds in the safest places.

2) Large places are often seen as least risky by investors with broad menu of geographic choices, because there is a perceived less likelihood of large swings in these economies and thus the future returns on assets, compared to smaller places which may be more vulnerable to single industry downturns.

3) Application and adoption of modern portfolio theory, where riskier places are actually sought out as long as they demonstrate different cyclical behavior (low covariance), will lead to a dispersal of investor capital flows over space, regardless of their level of risk tolerance. However, it remains unclear as to exactly how this dispersal will manifest itself as the industry continues to strive for what it perceives to be an optimal classification scheme of location.

The last segment of this component adds another dimension to this issue of uncertainty and risk and its implications for investor behavior over space: the role of liquidity.

Liquidity

Economists would call property a very “lumpy” asset. This lumpiness stems from its indivisibility, the high transaction and agency costs associated with its trade, and its fixed place in space. Further, these lumpy characteristics create a minimal threshold for the size of a property for it to be a feasible investment. For some players who have vast amounts of capital to invest, there is thus an incentive to minimize the number of transactions, and, thus, only invest in assets of sizable magnitude. All of these factors can severely limit a property asset’s liquidity, the ease and speed in which it can be traded between buyers and sellers.

Illiquid markets prevent an investor from accurately predicting the timing and price of an asset. To the investor, this is particularly a problem when he or she desires to sell a property as values are declining. In these instances there are often many willing sellers but few prospective buyers.

Investors' stomach for liquidity will in part be a function of their ability to tolerate uncertainty. It is also a function of their desired holding period. An investor seeking to own a property over a short-term, say two years, will be far less likely to invest in an illiquid market than one wishing to hold a property over a long-term, say 15 years. Illiquid markets require flexibility.

Liquidity in a market is most valued during periods of a market decline. During these periods, investors wish to dispose of their assets, however, there are fewer and fewer buyers as prices continue to drop. Figure 28 diagrams this relationship, where as a market begins its upswing in a cycle, the number of transactions increase as other investors receive signals about these increasing prices. Near the top of the cycle, transaction levels begin to decrease as investors perceive the market as being fairly or overly valued. When prices decline, there are few buyers, and the number of transactions falls.

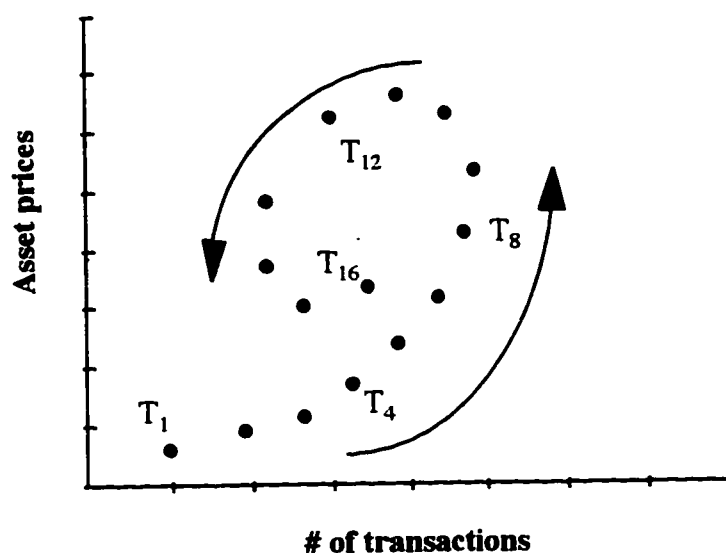


Figure 28 Spatial behavior of investors - the liquidity-price cycle

For the investor choosing a market in which to invest, there is a need for the availability of assets for sale during the first part of the cycle as well. Small markets typically will not offer these opportunities because of the lack of a sufficient base of assets and number of transactions. Thus, liquidity favors the larger places.

Dow (1987; 1990; 1992), in her studies of regional credit markets,³⁶ cites liquidity as a primary driver of how integration of markets (in her studies, this largely applies to the banking system) leads to further regional *divergence* in that if markets are allowed to operate freely without spatial boundaries, they will seek the most liquid markets. This effect, according to Dow, has the greatest implications for “peripheral” regions, where, Dow claims, there is little incentive to invest on the part of both the local suppliers of capital (who seek stability and may lack faith in a possibly declining state of their home regions) as well as the credit suppliers in the so-called core areas, who are driven by the need for short-term transactions that only liquid (i.e., large) markets can provide. Martin and Minns (1995) are supportive of Dow’s “liquidity preference” thesis, arguing that the pension fund system of the UK undermines regions by extracting funds from peripheral areas only to be placed into the core-oriented financial industry of the largest cities.

With respect to the investment in real estate, we might expect, based on this thesis of liquidity preference, for there to be an inordinate amount of capital flowing to the places which offer this liquidity. These can be the largest of places, but also could include the places which are growing quickly and thus attracting outside investment. In other words, investment attracts more investment. Unless there is some other counterbalancing force (like the strong forces of differential rates of return that would develop as investment favors one region and ignores another, or the integration of markets that now allow investment in markets where it was previously infeasible), then this cycle repeats itself — liquid markets become more liquid and less liquid markets approach illiquidity. In other words, the spatial flow of capital becomes increasingly concentrated (if Dow and her followers are correct).

To summarize this discussion of liquidity:

- 1) Liquid markets reduce uncertainty, on the one hand, because there is both a confidence

³⁶ There is an established literature on the workings of regional credit markets (Roberts and Fishkind, 1979; Moore and Hill, 1982; Moore, Karaska et al., 1985; Harrigan and McGregor, 1987; Moore and Nagurney, 1989; Hutchinson and McKillop, 1990; Bias, 1992; Amos and Wingender, 1993; Porteous, 1995), initiated in by the work of Engle (1974) and Fishkind’s (1977) revisiting of Lössch’s (1954) analysis of regional interest rates.

that an asset can be bought or sold in a predictable period of time as well as a greater provision of market information (because of the existence of transactions) than an illiquid market.

2) In contrast to (1), on the other hand, liquidity may increase uncertainty, as a greater amount of activity increases the complexity of a marketplace and makes predictions about future price and other variables more difficult.

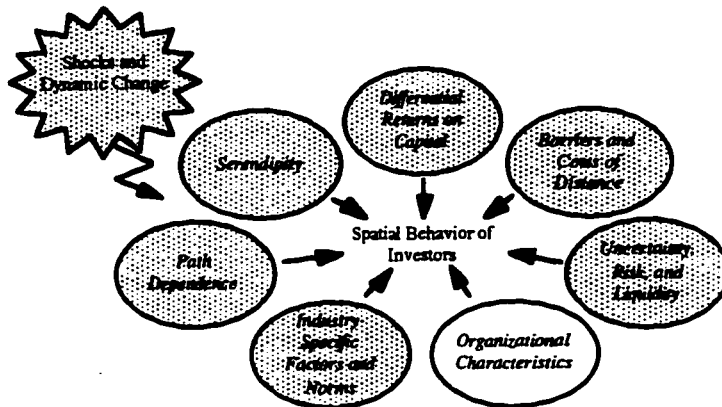
3) Liquid markets are typically found in the largest of places; however, rapidly growing markets will also be more liquid than stable regions of comparable size.

4) The spatial effects of capital market integration — through reduction in barriers, costs of distance, and innovations such as securitization — can be argued to either increase investment in the largest of places (if one believes that liquidity breeds further liquidity), or, on the other hand, allows transactions to take place in once illiquid markets. Depending upon which factor is more prevalent, we could observe either more concentration in the most liquid of markets or dispersion.

Summary

The interaction of uncertainty, risk, and liquidity — particularly as they change over time— is essential in developing an understanding of investor behavior over space. There is a spatial tension that emerges from these interactions. While liquidity is the means by which market information is produced (through both transactions and the development of a cadre of specialist information providers in a liquid marketplace), the management of risk through modern portfolio theory both relies heavily upon information and creates incentives to invest in places which are “out of synch”, in order to reduce systematic risk. These “out of synch” places may likely be the same ones which both lack liquidity and thus information, the necessary fuel to apply MPT in the first place. Further, changes in attitudes towards risk, especially in light of the boom and bust in real estate markets, exacerbates a tension between wanting to invest in markets which are most familiar with the knowledge that an overconcentration in these familiar markets may indeed prove riskier than a diversification strategy that favors investment in uncertain markets.

ORGANIZATIONAL CHARACTERISTICS



The fourth component of this framework explaining the spatial behavior of investors recognizes the decision-making processes within the organization, and how different types of organizational structures determine varying spatial outcomes.³⁷ These structures may be common across an entire type of investor (for instance REITs will each have a board of trustees who are responsible for its administration) or they may vary within a type (for instance, some pension funds may use investment advisors and others will not).

A first organizational characteristic that will influence spatial behavior of investment is the type and magnitude of the investment decision-making bureaucracy (Clark, 1997). Simply stated, the greater number of layers which must be permeated in order for an investment decision to be implemented, the greater likelihood that the least risky, most certain places will be chosen (e.g., larger markets, channel to particular regional markets). This tendency is even further exacerbated when there are committees along this decisionmaking chain. It may also be influenced by the existence of outside investment advisers (although there are arguments countering this tendency as discussed below).

Figure 29 demonstrates this process, where an investment advisor receives favorable information about conditions in regions A through F, and makes a portfolio recommendation to the investment manager of the organization (we will return to our

³⁷ See Dicken and Lloyd (1990, Chs. 7 and 8) for an overview of spatially-based literature in this regard.

example of the pension fund investment manager). She must now decide upon this advice, then forward her recommendations to an investment committee. The committee may see these recommendations, which could have already been curtailed by the investment manager, and only choose to invest in those assets where there was some degree of familiarity by most or all members of the committee (i.e., closer and larger markets). They then provide approval based on the revised recommendation, and the investment is then made, with a large investment in **B**, the most familiar market, and a smaller investment in **D**, based on the likelihood that at least one of these smaller markets will either have some familiarity with individuals along the decision chain or hold some other characteristics that the committee and manager find worthy of placing their funds.

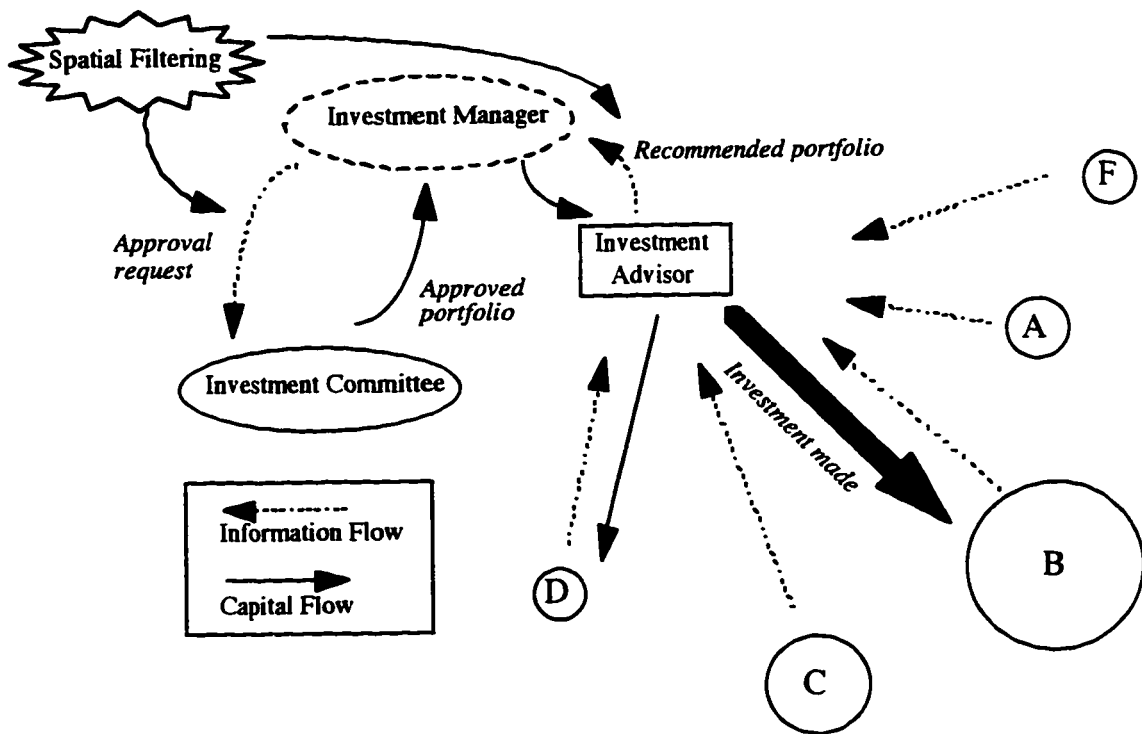


Figure 29 Spatial behavior of investors - effects of bureaucracy on spatial decisionmaking

This inertia of bureaucracy may in fact favor small organizations, as they are often perceived as more flexible because of their lack of this chain of decision-making and filtering. Thus, small organizations (and organizations with low levels of bureaucracy) are more likely to exhibit behavior that leads them to invest in smaller and perhaps even

more distant markets.

Counteracting this spatial filtering tendency of bureaucratic organizations is the possibility that outside advisers provide the organization with specialized information and advice, thus reducing their uncertainty and aversion to investing in once unfamiliar markets. Moreover, the use of outside advisers, like other types of business services, is most often driven by a need for technical expertise (Beyers and Lindahl, 1996), in addition to a multitude of other factors. The higher the level of expertise and its importance to the overall organization, the more likely is a large amount of trust between the investor (the client of the adviser) and the adviser (Wood, 1994). If the adviser is truly an expert in research and analytical capabilities about opportunities in various locales, then one would expect that the combination of quality information (e.g., a reduction in uncertainty) and a trust in this quality on the part of the adviser to result in decisions which counteract a tendency to go only to the most familiar of markets. As already discussed, we would expect larger markets to be more familiar than smaller markets. Likewise, markets closer to home are more familiar than distant ones. Thus, use of outside advisers, particularly where the adviser has developed credibility and there exists a bond of trust between the client and adviser, may indeed favor investment in areas outside the investor's home region and to smaller markets.

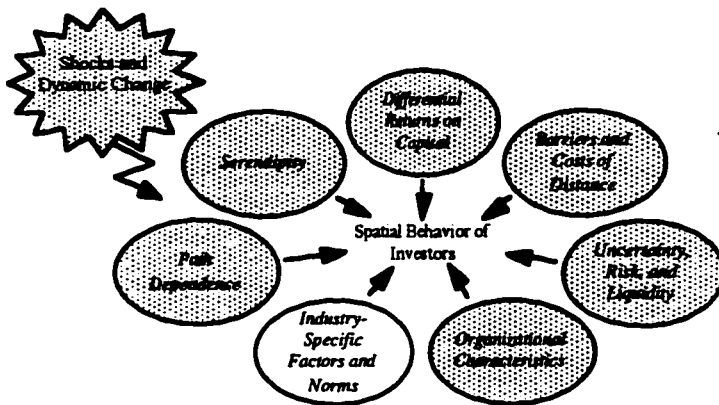
A last concept concerning this issue of organizational characteristics involves rationally-driven "herding", where decisionmakers are rewarded for mimicking the behavior of others. DeCoster and Strange (1993), for instance, argue that developers who seek funding from a bank will tend not to deviate from what others are doing, as this will be perceived by the bank as risky behavior. While DeCoster and Strange state that this process is driven by information imperfection (e.g., "when information imperfections are introduced in capital markets, it is possible that capital will flow to unproductive locations with a choice of projects in a region", DeCoster and Strange, 1993, p. 274), it can also occur when there are organizational incentives which reward such behavior, even in the face of information that may suggest otherwise. In fact, an increase in the amount of information available may exacerbate this situation, as investment decisionmakers may now have knowledge of what others are doing and attempt to copy their behavior, particularly if these decisionmakers are evaluated based upon their comparison to others

like them. As the real estate industry becomes further institutionalized and entering the ways of the world of security fund managers, this herding tendency may actually increase.

There are likely other characteristics about organizational behavior which will have similar spatial influences, including the degree of competition in a particular segment of the investor's industry (i.e., more competition may spur the seeking out of new markets while lack of competition may breed complacency) and the lifecycle of the organization and its attitudes towards its investment strategies. From this above discussion, we can state the following:

- 1) Bureaucracy breeds spatial filtering which will result in the investment in familiar places; such a process leads to concentration in larger places and close to home.
- 2) Use of outside advisers may counteract the tendency in (1), unless the adviser merely acts as another level of spatial filtering.
- 3) There are entirely rational reasons for "herding", due to incentives placed upon decisionmakers that may be divorced from those of the organization (a "moral hazard"). Likewise, the availability of better information may or may not exacerbate these tendencies.

INDUSTRY SPECIFIC FACTORS AND NORMS



Aside from organizational characteristics which will differ between and within different capital market segments, there are other industry-wide variables that influence the spatial calculus of investors. First, factors which affect their ultimate sources of capital may change the amount of capital available to the organization as well as its intended purpose. An example of this would be the shift of life insurance companies from whole to term life policies, which has encouraged a shorter holding period for property. This has not only had an impact on the ways in which these organizations will now invest in property (choosing to hold more securitized instruments), but may also affect their attitudes towards their direct property holdings and lending activity. Shorter holding periods generally will encourage selection of markets with greater liquidity, where, if the need arises, investors can dispose of an asset to raise necessary cash to meet current obligations. Again, liquid markets will be generally a characteristic of larger markets, but also ones that are expanding.

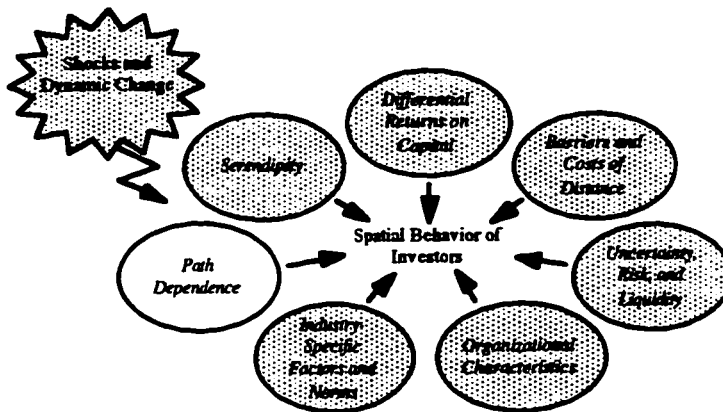
Second, regulatory changes that affect an industry (other than outright spatial regulatory barriers, discussed earlier) can have an impact on their selection of markets. The risk-based capital requirements now an integral part of pension fund management (ERISA), insurance companies (the NAIC standards), and banks (FIRREA and the Basle Accord) assign various forms of property investment different levels of risk. If one class of property is most closely associated with what has been deemed a riskier form of investment and there is a spatially differentiated pattern in these types of uses, then the

flow of capital will decrease to these areas from the capital market segment being regulated.

Another factor most closely associated with a particular industry will be cultural norms or place-based linkages which channel investment into restricted pathways, as Chinitz (1961) found in his classic analysis of bank lending in New York and Pittsburgh. For instance, if a multi-national corporation (MNC) active in real estate investment serves clients of a particular industry within a certain region, then there is a far greater likelihood of that MNC investing in that region than a place in which it has no other connection. Also, lenders and investors may only direct investment to borrowers where some relationship has already been established. Many banks, for example, may only provide loans to their existing customers. Moreover, where there are common characteristics of culture, language, or some other bonding characteristic, these factors will be a natural draw to the investor.

All of these factors lead to a differentiation of players who specialize in various types of investments and locations. This differentiation can at times be predictable, but often occurs in a dynamic splintering process, leading to a complex investment landscape. The spatial implications may often be ambiguous but these factors should at least be recognized for their potentially strong influence on capital flows across places.

PATH DEPENDENCE



All of the factors to this point have added another layer of complexity to our theoretical framework: a complexity that, overall, argues for an unevenness of capital flows across regions in contrast to one where capital flows freely over space to the places where it is most needed. Such unevenness implies that some places will find an abundant, even overabundant, supply of capital for investment, while others will be undersupplied. In other words, there is agglomeration of capital in certain places and established pathways of the sources and destinations of this capital (and the destination could in fact be one and the same place as the location of the source).

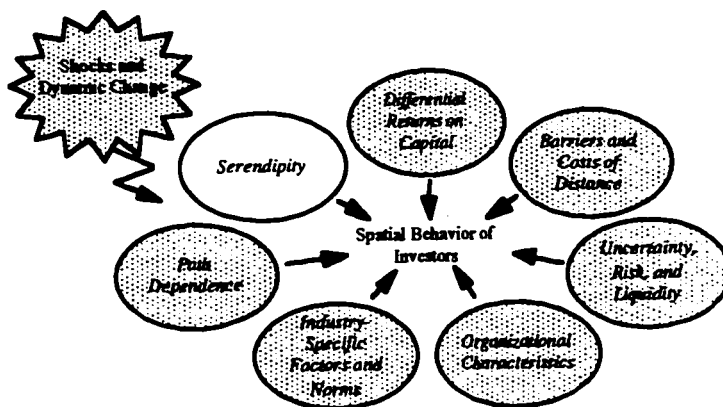
A nuance to this tendency towards concentration and channeling is the concept of path dependence (Pred, 1977; Meyer, 1983). The driving factor here is merely that a trodden path, like a single set of ski tracks in a meadow, will attract other followers. This follow-the-leader, path-of-least-resistance tendency may provide comfort in an environment of uncertainty for the first travelers. As the path becomes more used, there is less and less likelihood of deviating from the path, unless there is some outside event which may block the path or offer new ones.

Edgington (1995a) provides an excellent example of this behavior in his analysis of Japanese investors into North American real estate during the 1980s. He classifies the early investors as "Pioneers" and demonstrates the very focused locations and property types in which these pioneers chose. Next came the "Followers" then the "Laggards",

who mimicked the Pioneers in their focus on New York, Los Angeles, and Hawaiian real estate. It was not until a stage Edgington labels “Diversification”, nearly a decade after the first Pioneers, when secondary and tertiary cities in North America were considered. While Edgington identifies many of the “herding” type factors already discussed to this point, a path may be established by no other means than usage and the passage of time. The inertia of such a process can be powerful. Thus, we would expect that where there are established channels of capital, those channels will remain intact, in spite of possibly countering influences discouraging such a flow (such as a decline in asset yields compared to other places). Further, where a channel is initiated, we would expect it not to “dry up”, particularly if a critical threshold is surpassed which acts as the attracting seed for further investment. This is a similar argument to a cumulative causation theory of regional development whereby capital attracts capital (Myrdal, 1957; Hirschmann, 1958; Clark, Gertler et al., 1986).

In summary, we would expect that the longer a channel of investment has been established, the more difficult it becomes to break that channel, even if there may be broader diversification into other regions.

SERENDIPITY

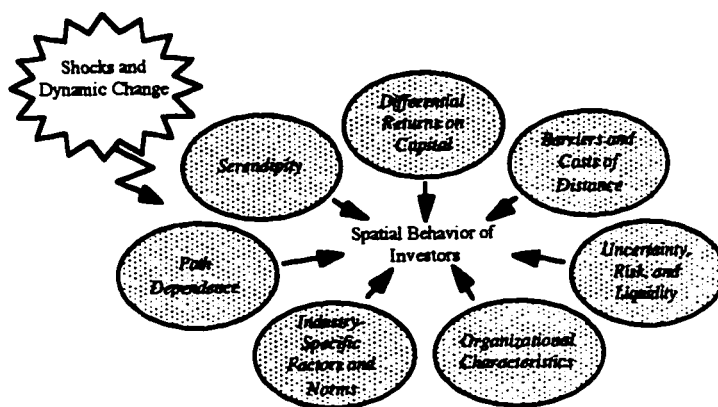


The last endogenous component of our theoretical framework, and again we have progressed along a continuum from the easily modeled to the complex (where math-oriented economists run into much trouble), is serendipity, or seemingly pure chance or

fortuitous (or not so fortuitous) circumstances. Such happenstance decisions may be a result of the personal characteristics of the decisionmakers (e.g., the investment manager has a second home in Nice and decides to invest in Riviera hotels), chance discoveries of a “deal” that happens to cross one’s desk, or the perusal of an airplane magazine article by a pension fund board member about the booming economy of Kuala Lumpur. These seemingly “irrational” decisions should not be understated. As Worzala (1994, p. 44) notes in a survey of overseas investors, “most asset managers would probably rather visit Orlando and combine the trip with a vacation than spend a week in Houston — partially explaining why international investors tend to hold property in Florida rather than Texas.”

Predicting the spatial outcomes of such behavior is difficult. On the one hand, we might expect these acts of chance to be more likely from places where more information is being produced. On the other hand, the places with the most information may also prove to be the least interesting, and a maverick investment manager may be piqued on hearing about opportunities in far-away or less known places. Also, over time, we would expect these random occurrences to diminish as information becomes more widely available.

SHOCKS AND DYNAMIC CHANGE



Finally, each of the components in this theoretical framework is affected by long-term structural changes, such as technological changes which decrease the costs of distance or reduce uncertainty, as well as shocks, which may be exogenous (e.g., a change in interest rates, which affects the cost of capital and the attractiveness of other assets) or endogenous (e.g., oversupply of capital in certain places due to path dependence results

in an eventual price decline which changes the risk willingness of investors). These shocks may have permanent effects on the system; they may be temporary, in a ripple-like, gradually diminishing pattern; or they may appear in a rhythmic fashion in conjunction with some type of cycle.

Table 5 identifies some of these shocks and changes as they bear upon investor behavior. Each of these changes (and this list is certainly not complete) will affect the components of investor behavior.

Table 5 Examples of shocks and dynamic/structural change affecting commercial real estate capital markets

<p>I. SHOCKS</p> <p><u><i>Exogenous</i></u></p> <ul style="list-style-type: none"> • Shocks affecting regional/local demand for real estate (e.g., decline in oil prices, defense cutbacks, plant closing, regional recession) • Shocks affecting construction (e.g., building moratorium, change in short-term interest rates, sudden increase in construction costs) • Shocks affecting supply of capital (e.g., sudden change in interest rates, stock market crash, currency devaluation, unforeseen monetary policy change, unexpected inflation, change in tax laws, construction or elimination of a regulatory barrier) • Other universal shocks (e.g., wars, natural disasters, political turmoil) <p><u><i>Endogenous</i></u></p> <ul style="list-style-type: none"> • Pronounced change in property prices due to capital overaccumulation on regional, national, or global scale (e.g., a boom or a bust) • Sudden withdrawal or emergence of a major capital source (e.g., crash in REITs in 1970s, explosion of REITs and CMBS in 1990s, S&L/banking crisis, Japanese investors in 1980s) • Industry-specific shocks (e.g., Basle Accord of 1987 instituting risk-based requirements for bank lending, embezzlement or criminal scandal of a major pension fund)
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Table 5 (cont.)

<p>II. DYNAMIC/STRUCTURAL CHANGE</p> <ul style="list-style-type: none"> • Changes affecting demand/income potential of real estate products (e.g., long-term shift to services, increase/decrease in office space use per worker, telecommuting, demographic changes, shift in retail spending patterns) • Changes leading to capital market integration (e.g., globalized financial markets, growth in financial assets nationally and worldwide, increased demand and supply of securitized and complex derivative investment instruments, 24 hour electronic trading, deregulation of financial markets) • Reductions in the barriers and costs of distance (e.g., long-term improvements in transportation and communication technologies, the world wide web, overnight mail service, etc.) • Shifts in organizational behavior / production styles (e.g., Fordist versus flexible management styles, consolidation of industries such as banking, increase of multi-national corporations)

Distinguishing between a “shock” and a “dynamic/structural change” is often blurry: for instance, the dramatic widespread adoption of the world wide web was not foreseen by practically anyone even four years ago to have occurred so rapidly. While this shift is certainly more than a temporary disturbance (thus, eliminating it from “shock” status), its effects are just as sudden and unexpected as a burst of inflation over the course of a few months. Further, the distinction between an endogenous and exogenous shock can be obscured as well. For instance, the demand for space — which drives rents and property income — can be modified by the mere availability of this space in the marketplace. As a broad menu of space opportunities are made available to a prospective tenant, demand becomes driven more by “needs” than by “wants”, further feeding the positive signals received by investors of future demand.

What effects these changes have on capital markets and investor behavior and the resulting spatial outcomes is, of course, the overriding question. Simply put, are markets becoming more efficient, and therefore capital flows only to where it is needed, or do they remain and become even more inefficient, leading to continued capital rationing and spatial unevenness? The next section brings all of the theoretical components together to explain investor behavior over space, thereby beginning to answer this fundamental question.

CONCENTRATION OR DISPERSION - THE FRAMEWORK IN MOTION

We now have all of the components of a theoretical framework designed to explain investor behavior over space. This vision of how the world works can be tested through empirical observation and analysis to validate the importance of and role of the elements of this framework (or the lack of importance). To do this, we must put it into motion to explain historical patterns of capital flows over space. After such tests, elements of this theoretical framework may be related to each other more formally, leading us further along the path towards the development of a theory of the spatial behavior of investors. Such a theory could not only further our understanding of historical patterns but also be used to predict future patterns of these flows given forecasts of the variables comprising such a theory.

To initiate this process, it is useful to place this theoretical framework within the context of two extremes which I alluded to in the introduction to this dissertation and which have consequently been rearing their heads throughout these last two chapters: is capital approaching efficiency in its allocation over space (e.g., less “unevenness” or dispersal across space to where it is needed) or is it more uneven (e.g., increasingly misallocating capital, resulting in higher concentrations in certain places and undersupply in others)? Let us begin with the first spatial extreme (efficiency and dispersion).

Figure 30 presents a view of our theoretical framework from the first extreme. This view, most often identified with a neo-classical vision of market behavior, holds that all of the other six factors which lead to an inefficiency or unevenness of capital flow over space are diminishing, and what we will be left with is a flow of capital determined only by the possible return on that capital. In other words, factors conditioning the supply of capital approaches irrelevancy; what determines, instead, the flow of capital is merely the demand, which drives income. If demand for property increases, rents will rise, vacancies will fall, income will push up rates of return, and the capital markets will see this increase (or have already foreseen it long ahead of time) and invest accordingly so that rates of return are again in equilibrium, and so on. This vision is driven by the long-term structural changes which: a) allow investors to immediately receive signals about market changes and swiftly react to these change; b) diminish the costs of distance and

eliminate barriers, which create more information and better analytical methods to curtail uncertainty; c) allow the perfect management of risk; d) increase liquidity of once illiquid markets allowing capital to now flow freely there, which institute a “learning by doing”³⁸ process where organizations rid themselves of the moral hazard and path dependence behavior that in the past led to their eventual detriment; e) allow new capital sources to take the place of other sources affected by industry-specific changes; and f) eliminate factors of chance and serendipity as those entities practicing such behavior will eventually fail.

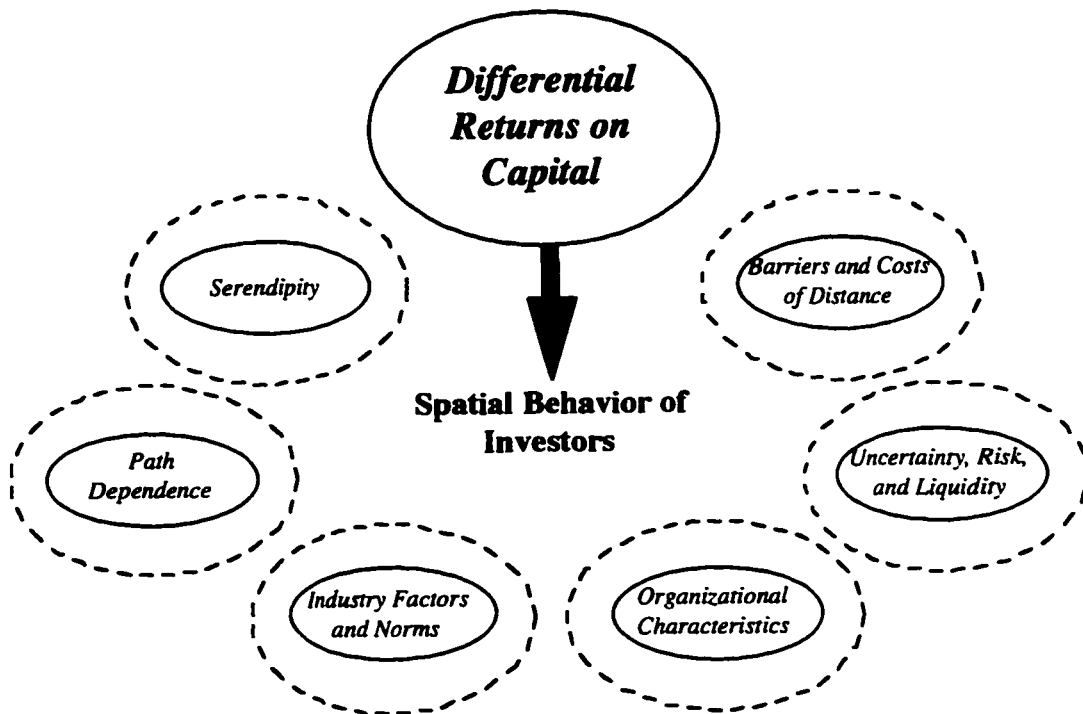


Figure 30 A purist neo-classical view of longitudinal change in the spatial behavior of investors

At the other extreme — and I do not mean to single out any particular individuals who embrace this entire logic, but I lay it out as the diametric opposite to a purist neo-classical view — is a complicated layering of arguments which see not the diminishing of these other six spatially-polarizing components, but, at a minimum, their rigidity and, more

³⁸ Cooley and Smith (1992).

likely, their growing as opposed to shrinking importance. Figure 31 presents a diagrammed perspective of this extreme.

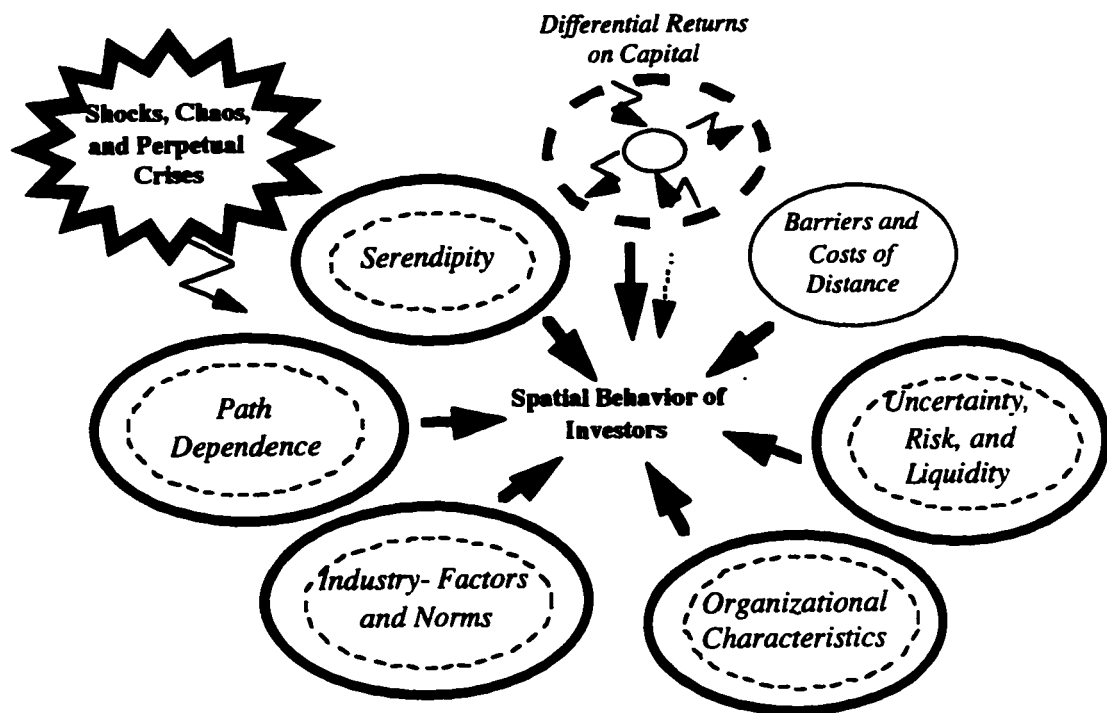


Figure 31 An extreme vision of continued or growing spatial unevenness of capital flow

Here, differential returns on capital, while important, are secondary and rapidly and dramatically ebb and flow in importance, brought on by “crises of overaccumulation” (Harvey, 1978), as capital shifts between the capital circuits of production and the built environment. In spite of the reduction in the costs of distance and elimination of barriers (explaining its diagrammatic neutrality), there is a continual search for liquid markets — the largest of places, the redlining of places seen as overly risky especially in an era of perpetual change and uncertainty, a continued short-termism on the part of organizations which favors investment in the known where others have trodden, and a follow-the-leader herding driven by greed and animal spirits that leads to dramatic place-specific capital inflows followed by outflows. In sum, the spatial outcomes of this vision is one where certain places are capital-gorged and others are capital-starved. Each successive round of capital inflows and outflows results in increased concentration of investment, and all of

the other activities which surround this investment process, in fewer and larger places.³⁹

These two extremes are exactly that: polarized spatial grotesques. Few would likely argue against the fact that what is actually occurring is some mix of these factors: the question becomes, what is this mix, and what are the spatial tendencies we can expect from this mix.

To answer these questions and determine which factors are having the most influence on investor behavior and the flow of capital over space, we must first measure these flows — cross-sectionally and over a period of time. Do we find a pattern of capital flow that responds efficiently to the spatial demands for capital or is this flow uneven and concentrated in certain places? Do different players in the capital markets exhibit varied spatial patterns and how have these patterns changed over time? Are the new forms of securitized instruments of investment the same or different in their spatial behavior compared to the banking, institutional, and other established forms of finance?

And, most importantly, what are the implications of these flows of capital on different commercial real estate markets, especially the impacts on values. In the perfect-markets extreme case presented in Figure 30, we would expect there to be no implications — that values reflect the changes in the income-generating aspects about markets in conjunction with the space supply-demand characteristics of those markets. In other words, we would expect the ebb and flow of value changes in markets to run in tandem with the changes in income generated by the properties in these markets. If, on the other hand, there are flows which are highly spatially differentiated, we would expect values to deviate substantially from changes in income in across places. We would expect to find places with oversupply of capital in their commercial property markets and other places

³⁹ Martin and Minns (1995, p. 139) offer one example of this type of perspective in their analysis of pension fund investment in the UK: "... rather than promoting the spatial decentralization and dispersal of financial activities, the new information and telecommunications technologies can just as equally reinforce the concentration of business and expertise within major centres..." and (p. 129), "The private occupational pensions system therefore undermines regions by extracting savings from all over the UK and centralizing their administration, management, and investment in one region, where fees accrue, control over investment policy is concentrated and where tax subsidies are skewed to benefit relatively high income contributors helping to support an investment regime which has relatively little to do with the promotion of capital investment throughout the UK."

where capital is lacking (or less oversupplied than other markets).

Between these two extremes likely falls reality: a complex weave of factors and outcomes that neither results in perfect equilibrating capital markets across space, nor the implosion of a system in a sequence of increasingly magnified crises. The theoretical framework described in this chapter goes beyond a simple spatial dichotomy. It is intended to provide a framework with which we can both understand the historical flow of capital, and its impacts upon property markets, as well as predict these flows and impacts given a certain set of conditions. It is a theoretical framework that neither assumes away the efficiency of a capital market system nor is it an apocalyptic vision of capitalist economies, but a means by which we can understand the complexity of the many types of players and dynamic factors described in Chapter One. Where we find, for instance, examples of barriers, we would expect to observe high differences in rates of return across places. Where large amounts of capital have flowed due mainly to path dependence, independent of other factors, we would expect to see property markets with high valuations compared to places without such channels. Where important sources of capital exhibit organizational characteristics which result in slow and conservative decisionmaking, we would expect to find an overconcentration of capital. In other words, to test the components of this theoretical framework, we must gather and analyze evidence which speaks to both the flows of capital over space in combination with an understanding of the actual motivations that led to these flows.

The next three chapters provide the kind of empirical data necessary to test these expectations — data which to date have been extremely difficult to come by: metropolitan specific flows of capital tracked over time differentiated by the type of investor. The behaviors of three important, and very different, capital market players are highlighted: institutional players, mainly involving pension funds and their investment advisors; REITs; and foreign investors. After identifying these patterns, and how and why these patterns may be changing (e.g., concentration or dispersal), I analyze data on changes in office property values over the course of the most recent boom and bust to determine whether there is evidence of “herding” during boom periods in certain markets and “fleeing” during market declines, where values fall substantially faster than changes in the underlying property market fundamentals (e.g., property income). Finally, I profile one

European market — Stockholm, Sweden — to compare the patterns seen at a intranational/interregional level to those patterns seen at the international scale. Stockholm is highlighted in particular because of its unique economic and geographic characteristics which emphasize many of the factors discussed in this conceptual chapter driving the spatial behavior of investors. It is viewed for both its role as a destination for a massive amount of capital flowing into its real estate markets during the 1980s and a source of capital flowing outward to foreign markets in a sudden, dramatic fashion.

While the empirical evidence will certainly not be able to answer all of the questions raised in this chapter, it will provide important insights into processes that are changing rapidly; processes that are inherently spatial in nature.

CHAPTER 3: THE GEOGRAPHY OF COMMERCIAL REAL ESTATE CAPITAL FLOWS

We stay away from the Danbury, Connecticut of the world.

- Managing Director of Aetna Realty Investors⁴⁰

Do different types of investors in commercial real estate indeed exhibit varied spatial patterns of investment, and have these patterns changed over time? This chapter answers these questions for three important components of the capital markets: institutional investors, REITs, and foreign investors. The first two components represent an important flow of capital during the 1980s boom period, and their ongoing restructuring continues to influence US real estate markets, as documented in Chapter One. REITs represent the largest source of capital in commercial real estate markets over the past five years (see Figure 5), and there is speculation that these securitized forms of investment will only gain in importance over the next decades.

Each of these three components is quite distinct in its organizational form, historical development, sources of capital made available for investment in commercial real estate, and motivations for investing in real estate. If the theoretical framework developed in Chapter Two is valid, we should, at the very least, observe varied spatial patterns of investment due to these distinctions. Moreover, we should expect to see shifts in these patterns due to both structural change and sudden shocks, most exemplified by the bust of the past decade. A key question is what has been the nature of these spatial changes? Will we find a flow of capital gradually approaching efficiency or a flow that has become increasingly uneven, accruing only to certain places (e.g., dispersal or concentration)? And do the elements in the theoretical framework for the spatial behavior of investors offered in Chapter Two provide an explanation of these flow patterns and their changes over time (if, indeed, the spatial patterns have changed)? Chapter Four provides more direct evidence on the explanation of these flow patterns and speaks directly to a number

⁴⁰ Quoted in *Real Estate Finance and Investment*, Oct. 8, 1995, p.11. Main reason cited for not investing in smaller markets is the lack of deals in the \$10 to \$50 million range.

of the elements of the framework describing the spatial behavior of investors articulated in Chapter Two.

GEOGRAPHY OF INSTITUTIONAL INVESTMENT

DEFINITION AND DATA SOURCES

The definition of “institutional” capital sources in commercial real estate often includes not only insurance companies and pension funds, but banks, savings institutions, REITs, RELPs, and CMBS, as well (Dohrmann, 1995). For this analysis, I will restrict a definition of “institutional” to nationally and/or globally based financial organizations with sizable real estate investment activities, excluding securitized sources (which are a vehicle of investment). This definition would mainly include pension funds and insurance companies but would also include bank and savings institutions with significant activity outside their home regions. Such activity is now becoming far more prevalent, as consolidation continues within these industries, national bank holding companies become more dominant, and interstate banking and other regulations are relaxed. Banks and savings institutions, which have historically focused most of their real estate lending activity within their branch regions, are currently in a hybrid state, with many still serving local needs, while more and more are part of large national operations.

A comprehensive source of longitudinal data on institutional real estate investment, particularly at a geographically-specific level of detail, does not exist in this country. The most commonly used source of data is the National Council of Real Estate Investment Fiduciaries (NCREIF) database, which tracks the behavior of investment properties for the portfolios of its contributing members to develop performance indices by property use and region. The members in the NCREIF database include pension funds, pension fund and institutional advisors, and the real estate investment divisions of life insurance companies (not including the divisions associated with commercial real estate mortgages, although there will be properties in the database with some form of debt arrangements, typically in combination with a direct equity investment). The NCREIF database was initiated in 1977, in conjunction with the Frank Russell Co., with 14 data-contributing members providing information on 234 properties valued at \$587 million. By the second

quarter of 1996, this database had grown to 2,340 properties, valued at close to \$50 billion, from a data-contributing membership base of 72.⁴¹

While this database is primarily used to calculate investment returns on properties by use and geography, it also offers information on the relative distribution of institutional portfolios. Shilton and Stanley (1995), Shilton et al. (1996), and Mahoney et al. (1996), within the real estate literature, have also used the NCREIF data to provide estimates of the concentration of private institutional investment by county or metropolitan area. The current analysis is similar to these studies, except that Shilton and Stanley (1995) and Shilton et al. (1996) used total square footage and a count of the number of properties as their unit of analysis. This would tend to understate investment in places with high values per square foot and large property sizes. Moreover, the data presented here are much more current than these other studies (through the 2nd quarter of 1996), and there have been recent changes in the structure of the capital markets as discussed in Chapter One.

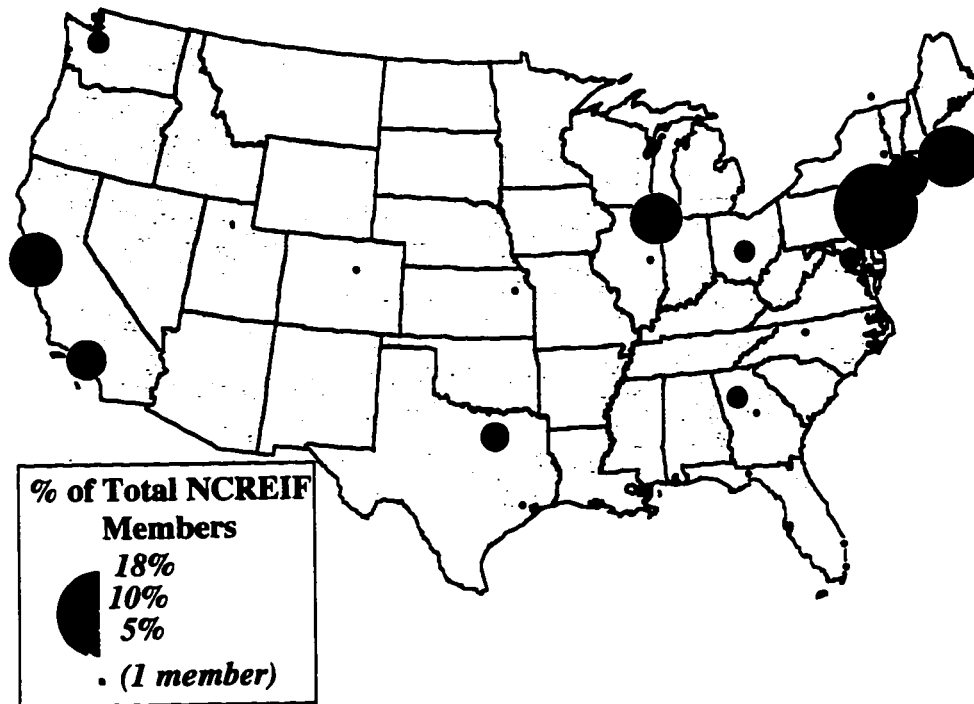
There have been numerous criticisms of the NCREIF data, mainly because of the way in which value is derived through appraisal based methods, and the representativeness of the data as a measure of broader property market returns, the primary use of this database (see Sirmans and Sirmans, 1996 for a review of these criticisms; Grissom, 1997). For this analysis, these issues are not problematic as the NCREIF data is being applied to evaluate the relative flow of capital into metropolitan regions, and not returns. Further comments on the particular characteristics of the data are discussed below.

CONCENTRATION OF INSTITUTIONAL CONTROL AND DECISIONMAKING

To understand the spatial patterns of institutional capital flows into specific places, we must know something about where this capital is coming from, particularly in light of the conceptual framework developed in Chapter Two, where the source-destination

⁴¹ These figures are based on the "Combined" NCREIF database, which includes leveraged properties. The "Classic" NCREIF database, from which the Russell-NCREIF index has been historically calculated, includes only properties with an all-equity investment by its members. Also, values reflect the appraised values of the entire properties, not just the investment share of the membership. It is believed, though, that a cross-sectional perspective on the distribution of these values are a reasonable representation of the relative distribution of the membership's actual invested portion.

geography is an underlying theme in each of the components of that framework. To provide a perspective on the geography of institutional location, Figure 32 identifies the MSAs in which the NCREIF data-contributing membership is located.



Source: NCREIF, 1996.

- Notes:
- Scale of circles are the same for Figure 32 and Figure 36 (% of total population of members/organizational entities).
 - Members identified as part of the same organization (e.g., Prudential Real Estate Investors and Prudential Timber Investments) represent a single observation.
 - Data by total amount of assets held are unavailable, although the major holders are insurance companies (acting as portfolio managers and advisors), mainly located in the northeast.

Figure 32 Distribution of NCREIF data contributing membership, 1996

Because of disclosure requirements by the NCREIF organization on individual members, this map does not weight for the relative size of portfolios. However, it is known that the major contributors to the database are heavily weighted in the northeast. While a number of members are pension funds themselves who manage their own assets (explaining such locations as Columbus and Tallahassee), most are managed by advisors (as Martin and Minns, 1995, note in their study of UK pension funds, where 77% of assets were managed by outside advisors). Again, the NCREIF database includes the pension funds,

pension fund advisors, and non-mortgage lending divisions of life insurance companies. Thus, Figure 32 is considered an adequate representation of where the real estate decisions are actually made. This distribution shows the high concentration in the major financial centers, particularly the northeast, Chicago, and San Francisco. As with Martin and Minns' (1995) findings on pension fund management in the UK, the control of these assets is highly centralized.

In spite of the centralization of the advisory industry (which, again, includes a large number of insurance companies with real estate advisory divisions), the sources of capital are often quite dispersed. The headquarters of public pension funds will typically reflect the location of the applicable seat of government (e.g., state capital). Likewise, private pension funds will be located where the corporation is based.

Thus, the geography of the investment decisionmaking for institutional investors (with the exception of insurance companies) is multi-layered, geographically and organizationally, with the research and direct management activities associated with the real estate assets being highly core-oriented.

GEOGRAPHY OF INSTITUTIONAL CAPITAL FLOWS

The second, and really more interesting, question to address is where institutional investments are concentrated and whether this distribution has changed. Table 6 and Table 7 portray the distribution in the market value of the NCREIF portfolios for all property types and the flow into metropolitan statistical areas (MSAs) based on a four-tier hierarchy of the urban system, where the first tier consists of the largest MSAs contributing 25% of the total urban population, the second tier being the second largest set of MSAs contributing the next 25%, and so on. While there are other means of representing a taxonomy of the urban hierarchy (see Noyelle and Stanback, 1983; Green, 1993), population-based tiers are considered an adequate method of determining changes in hierarchical patterns. However, there is one substantial flaw in this hierarchy and that is the placement of San Francisco (clearly considered a "first tier" US city under almost anyone's gestalt classification) as a second tier MSA. This is purely due to the MSA definitions in the San Francisco Bay area, where Oakland and San Jose are identified

separately (in addition to Santa Cruz-Watsonville, Santa Rosa, and Vallejo-Fairfield-Napa). Another method of categorization would be to aggregate MSAs to the Consolidated Metropolitan Statistical Area (CMSA) level (there are 12, representing the largest metropolitan regions), but by keeping the analysis at the MSA scale, we can observe suburban spatial shifts as well as shifts to other smaller metropolitan regions. Further, all of the trends portrayed in the following tables are replicated when broken down on the basis of personal income. I will note where caution is warranted due to the use of this classification scheme.

Table 6 *Distribution of institutional portfolio market value by population size of MSA, all property types, 1980-1996*

		% of Total Market Value			
		1980	1985	1990	1996
1st Tier (8 MSAs)	Pop. - 3.7 million+	46.1%	46.9%	50.2%	37.3%
	New York, NY	0.0%	8.2%	5.3%	4.2%
	Los Angeles-Long Beach, CA	18.3%	12.3%	16.0%	8.4%
	Chicago, IL	14.6%	10.2%	9.4%	6.3%
	Boston, MA-NH	1.0%	2.1%	3.9%	3.3%
	Philadelphia, PA-NJ	3.3%	2.0%	2.7%	2.0%
	Detroit, MI	0.0%	1.3%	1.2%	1.3%
	Washington, DC-MD-VA-WV	6.6%	7.3%	10.1%	9.4%
	Houston, TX	2.3%	3.5%	1.7%	2.4%
2nd Tier (24 MSAs)	Pop. - 1.5-3.3 million	37.6%	39.5%	35.2%	40.8%
	San Francisco, CA	0.0%	4.8%	4.5%	3.6%
3rd Tier (54 MSAs)	Pop. - 0.6-1.5 million	16.3%	13.7%	14.6%	19.5%
4th Tier (227 MSAs)	Pop. - 56,000 - 560,000	0.0%	0.0%	0.0%	2.5%
TOTAL (313 MSAs)		100%	100%	100%	100%

Source: NCREIF MSA Diskette, 2Q 1996.

Notes: a) Tiers are based upon descending quartiles of total MSA population (i.e., total population in the 1st tier MSAs contribute 25% of the total MSA population, 2nd tier MSAs contribute the subsequent 25%, etc.). 1980 tiers based upon 1980 population figures from the Regional Economic Information System (REIS) database (<http://www.lib.virginia.edu/socsci/reis/reis.html>). 1985 tiers based upon the 1985 REIS figures, 1990 tiers based upon the 1990 figures, and 1996 tiers based on 1994 REIS figures.

b) Population figures in second column based on 1994 figures.

As Table 6 indicates, the institutional portfolios represented in the NCREIF data have been dominantly in the largest urban areas, peaking at just over 50% of market value in 1990 (twice the share of population represented by these places). Yet, this pattern is shifting as the first tier urban areas are losing share to the smaller MSAs, indicated in both the distribution of market value and flow figures in Table 7 (market value will reflect any appreciation or depreciation of existing properties, while flow will not).

While in part this dispersion is a result of the addition of properties to the database over the entire period, this is more of a factor during the earlier periods when the membership database was growing most dramatically. Further, the shift out of the largest MSAs is not seen until the latest period. While second tier MSAs have fluctuated in their total share (capturing approximately 43% of the flow between 1990 and 1996), the third tier MSAs have shown substantial relative growth, from just over 16% of total flows in the early 1980s to over 21% in the 1990s. Even if we add the San Francisco MSA into the first tier, the trend is not changed.⁴²

Fourth tier places even emerge in the most recent period, although one must also use caution in interpreting this apparent trend because of the characteristics of the data set, where MSAs with four or less properties are not disclosed individually. Thus the smaller MSAs may have likely had a limited number of NCREIF properties in the earlier periods and then appeared in the database as a result of both new member portfolio additions and new investment by existing members. However, the magnitude of these suspect properties is small — the combined total of all properties in MSAs with fewer than four properties equaled 0.5% for the 1980-1984 period, 1.1% for the 1985-1989 period, and 1.2% for the 1990-1996 period (a code in the data set discloses the residual value of these properties). In addition, there is a code for non-MSA properties, which equaled 0.6% during the 1990-1996 period, with no entries for earlier periods. Neither the non-MSA nor the suppressed MSA data are included in the data in Table 6 and Table 7.

⁴² If we add the San Francisco MSA into the first tier, the percentages in Table 6 (market value) for this tier would be 46.1% in 1980, 51.7% in 1985, 54.7% in 1990, and 40.9% in 1996. The comparable figures in Table 7 (flow) if we add San Francisco to the first tier would be 44.6% for 1980-1984, 54.7% for 1985-1989, and 36.7% for 1990-1996.

Table 7 Proportional flow of institutional investment by population size of MSA, all property types, 1980-1996.

		% of Total Flow		
		80-84	85-89	90-96
1st Tier	Pop. - 3.7 million+	41.9%	50.8%	31.5%
(8 MSAs)				
	New York, NY	9.3%	4.1%	3.5%
	Los Angeles-Long Beach, CA	11.4%	18.6%	4.6%
	Chicago, IL	7.4%	7.3%	4.9%
	Boston, MA-NH	1.8%	5.2%	2.9%
	Philadelphia, PA-NJ	2.0%	3.4%	1.6%
	Detroit, MI	2.0%	0.9%	1.2%
	Washington, DC-MD-VA-WV	2.7%	9.6%	9.7%
	Houston, TX	5.3%	1.8%	3.1%
2nd Tier	Pop. - 1.5-3.3 million	41.8%	34.3%	42.9%
(24 MSAs)				
	San Francisco, CA	2.7%	3.9%	5.2%
3rd Tier	Pop. - 0.6-1.5 million	16.3%	14.8%	21.3%
(54 MSAs)				
4th Tier	Pop. - 56,000 - 560,000	0.0%	0.0%	4.4%
(227 MSAs)				
TOTAL		100%	100%	100%
(313 MSAs)				
GINI Coefficient	(based on personal income)	46.36	46.11	38.73

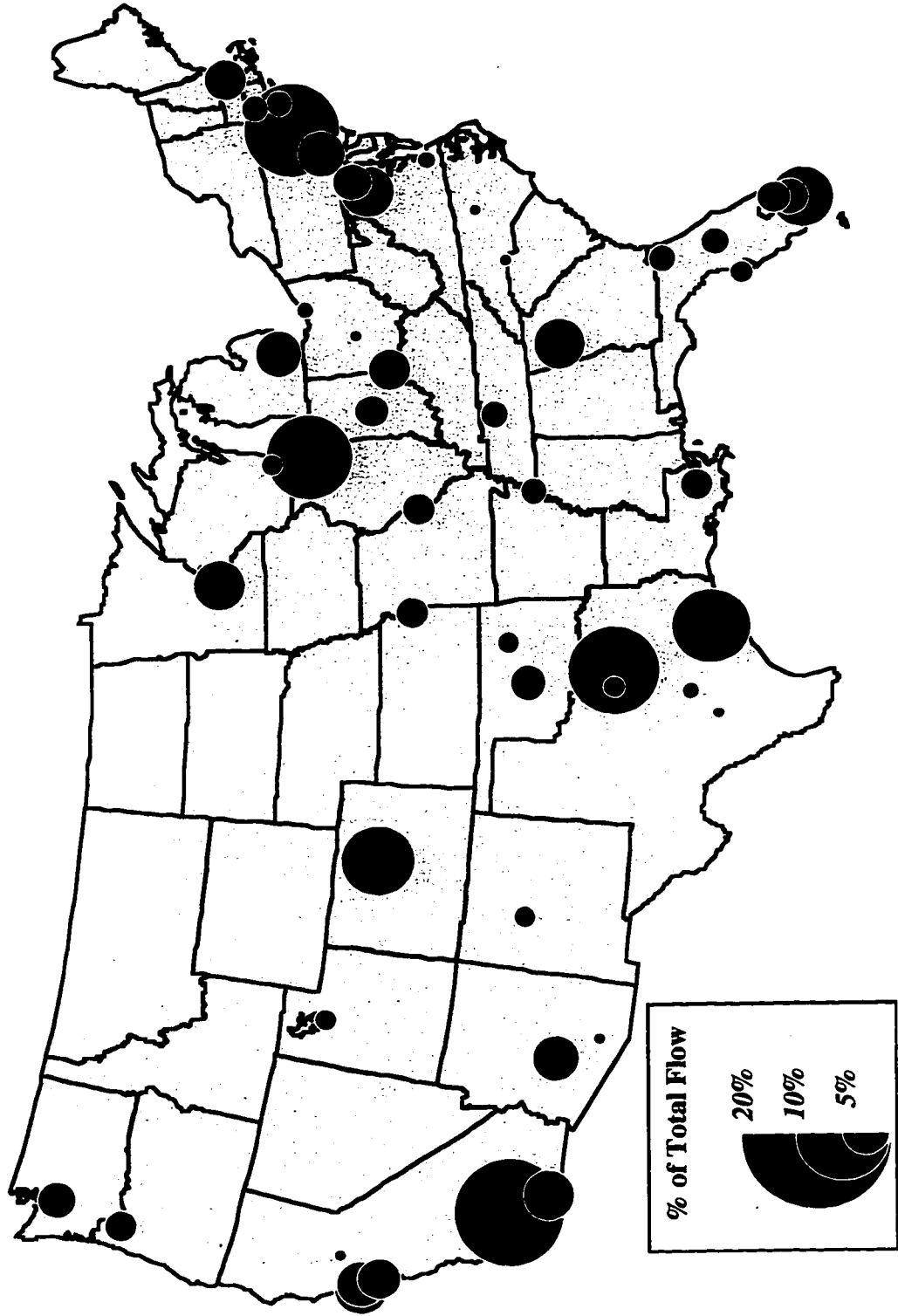
Source: NCREIF MSA Diskette, 2Q 1996.

- Notes:
- Flow is defined as the total value of properties added to the NCREIF database at the time of investment, less dispositions and partial sales. This will include the activity of existing members and the addition of new member portfolios.
 - Tiers are based upon descending quartiles of total MSA population (i.e., total population in the 1st tier MSAs contribute 25% of the total MSA population, 2nd tier MSAs contribute the subsequent 25%, etc.). 1980-1984 tiers based upon 1980 population figures from the Regional Economic Information System (REIS) database (<http://www.lib.virginia.edu/socsci/reis/reis.html>). 1985-1989 based upon the 1985 REIS figures, and 1990-1996 based upon the 1994 figures.
 - Population figures in second column based on 1994 figures.
 - Gini coefficient is calculated adding the difference in the proportion of investment flow and the proportion of personal income for each MSA and dividing by 2 (see King, 1969 p. 114-116 for an explanation of the methodology).

Gini coefficients are shown in Table 7, based on differences between percent flow of investment and MSA personal income. While these coefficients should be interpreted very cautiously because of the nature of this dataset (where there is the expansion in the number of MSAs as properties are added to the database), they do demonstrate a decrease, suggesting a less concentrated distribution (a gini coefficient of 100 would demonstrate complete concentration, and a value of 0 would demonstrate a distribution exactly equivalent to population distribution). These trends are also confirmed by the work of Shilton and Stanley (1995) and Shilton et al. (1996), who found a shift in the distribution of properties and total square footage from the largest counties, although this shift was not as pronounced, as their data were current only as of 1993.

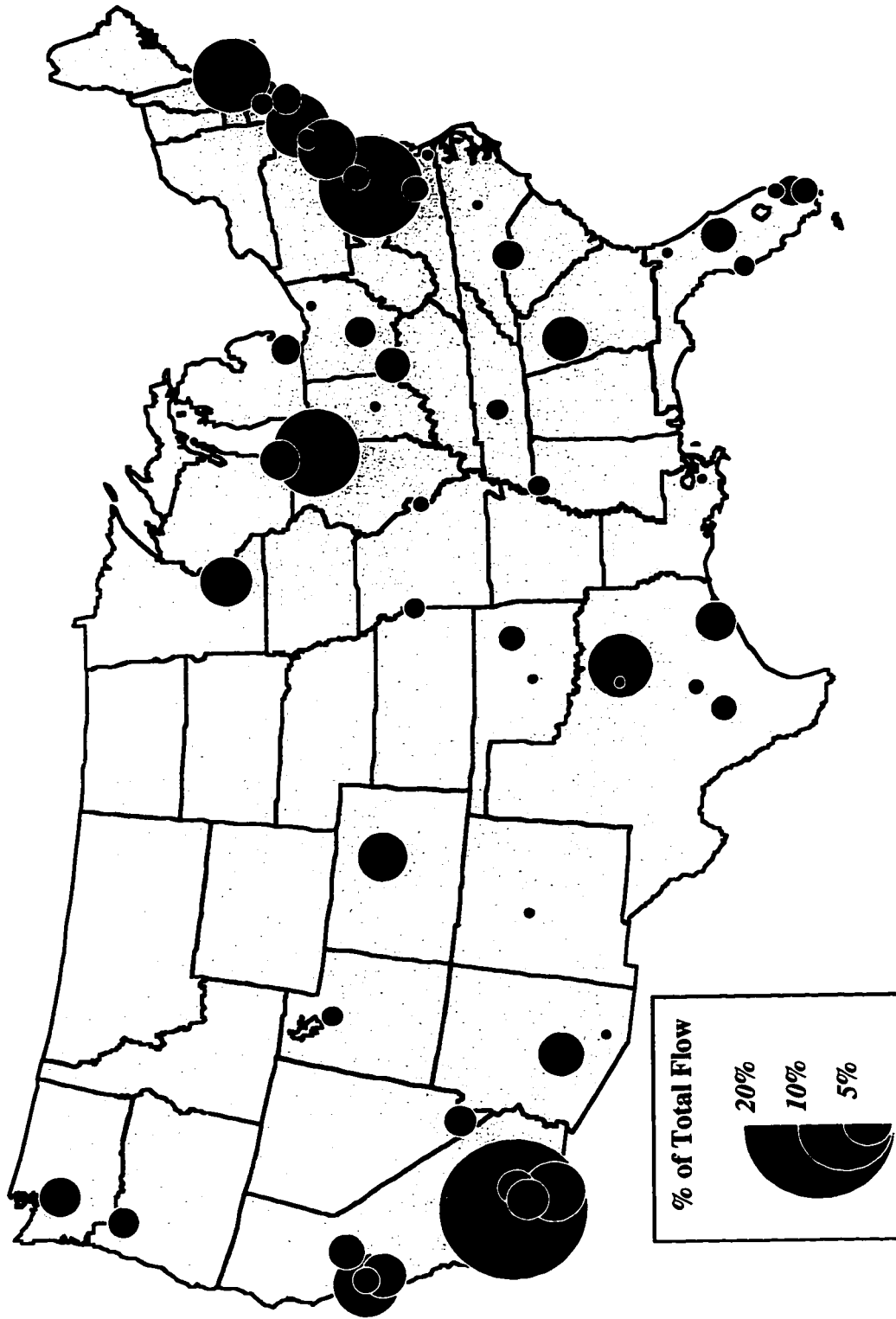
Figure 33 through Figure 35 provide another perspective on this shifting geography. The first two periods (Figure 33 and Figure 34) demonstrate the heavy concentration in the major urban centers, with a notable increase in Los Angeles as well as Washington, DC during the latter half of the 1980s (18.6% and 9.6% of total flow, respectively). The most recent period (Figure 35) stands in contrast, with Washington, DC being the only major urban area with greater than 5% of the total flow. The growth in the smaller MSAs is seen in both isolated places, such as Columbus, Nashville, Charlotte, and Portland, OR as well as in suburban MSAs, particularly in the Boston-New York-Washington corridor.

The data in Table 6 and Table 7 represent properties of all types in the NCREIF database. To determine whether this apparent dispersal trend is not a fluke associated with an increase in the investment in a particular use (e.g., an increase in retail investment, which is more closely associated with population, without a similar increase in other uses could show a dispersal for the entire dataset), office uses (which represent the largest share of NCREIF market value at 36%) are evaluated separately in Table 8. One caveat associated with looking at individual uses is that there is a potential for more MSAs to be suppressed, because of the 4-property minimum (and it is more likely that this minimum would be surpassed in the database containing all uses than for a single use dataset). However, for office uses, the NCREIF database does not identify any investment in an aggregated category of MSAs where there were four or fewer properties, with the exception of 1995.



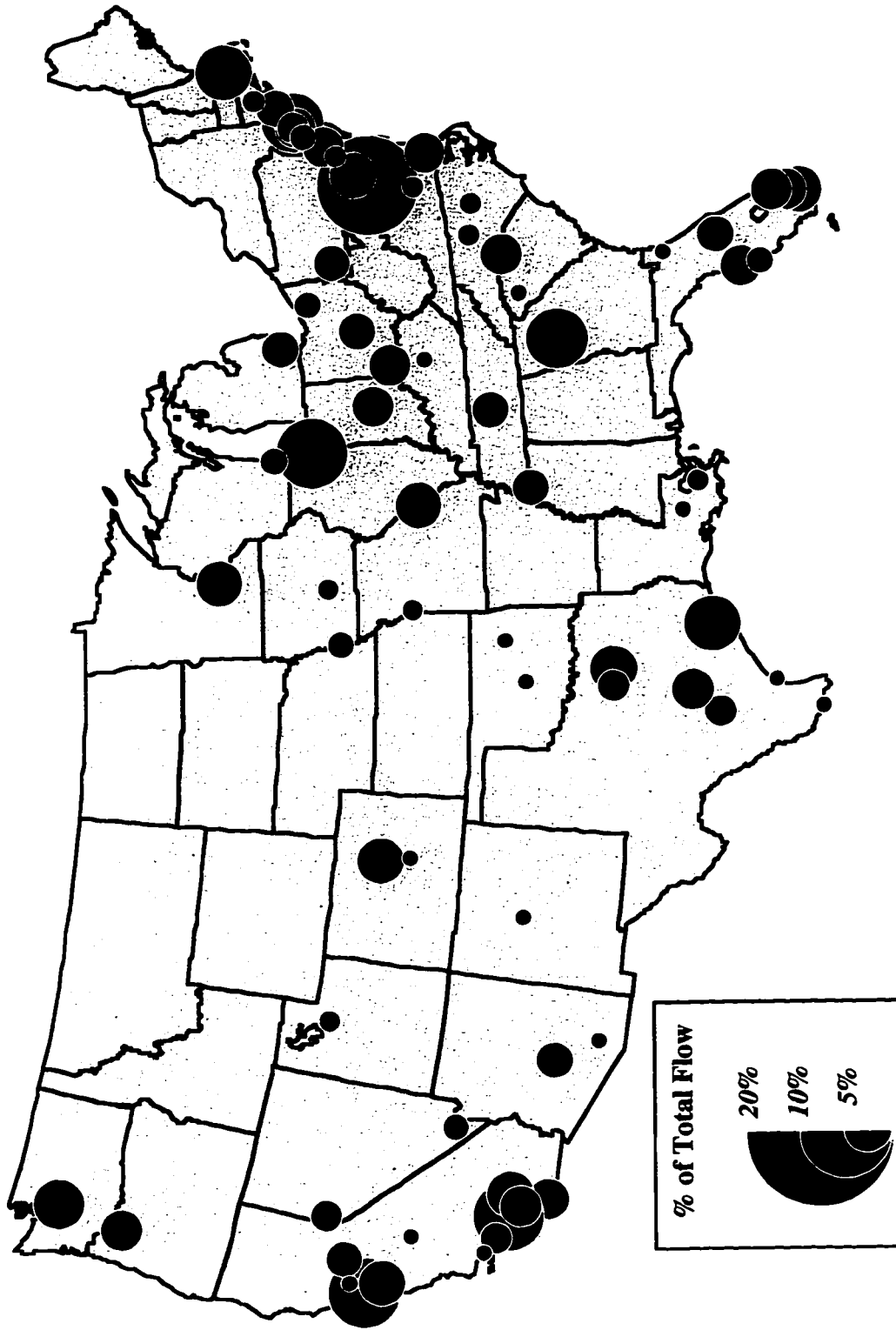
Source: NCREIF MSA Diskette, 2Q 1996.

Figure 33 Flow of institutional investment into MSAs, 1980 - 1984



Source: NCREIF MSA Diskette, 2Q 1996.

Figure 34 Flow of institutional investment into MSAs, 1985-1989



Source: NCREIF MSA Diskette, 2Q 1996.

Figure 35 Flow of institutional investment into MSAs, 1990-1996

Table 8 *Proportional flow of institutional investment into office uses, identifying MSAs experiencing greatest amount of flow in each tier, 1980-1996*

	% of Total Flow		
	80-84	85-89	90-96
1st Tier	68.7%	62.5%	40.4%
New York, NY	21.1%	8.5%	5.6%
Los Angeles-Long Beach, CA	14.6%	18.3%	5.8%
Chicago, IL	10.3%	8.1%	2.7%
Boston, MA-NH	3.5%	9.3%	1.5%
Philadelphia, PA-NJ	3.1%	4.9%	1.5%
Detroit, MI	1.2%	0.9%	0.6%
Washington, DC-MD-VA-WV	5.0%	11.2%	17.0%
Houston, TX	9.9%	1.4%	5.7%
2nd Tier	31.3%	33.9%	43.2%
San Francisco	-	9.5%	10.7%
Atlanta	2.4%	0.3%	4.2%
Seattle-Bellevue-Everett	-	-	3.4%
New Haven-Bridgeport-Stamford, CT	-	-	3.0%
Minneapolis-St. Paul	2.5%	2.4%	2.9%
3rd Tier	0.0%	3.6%	15.9%
Charlotte-Gastonia-Rock Hill, NC-SC	-	0.1%	2.7%
Columbus	-	-	2.3%
Austin-San Marcos	-	-	2.1%
Milwaukee-Waukesha	-	0.5%	1.7%
Nashville	-	-	1.5%
4th Tier	0.0%	0.0%	0.5%
Des Moines (only MSA in tier)	-	-	0.5%
TOTAL	100%	100%	100%

Table 8 replicates the same pattern as Table 6 and Table 7, suggesting that the recent shift down the urban hierarchy is not due to a mere shift in the proportion of uses. As expected, office investment demonstrates very high concentration during the first part of the 1980s, with no investment in 3rd or 4th tier MSAs. In the second half of the 1980s, there is a modest redistribution and the appearance of investment in 3rd tier places (under 4%). The most recent period, however, shows a dramatic shift — even more dramatic

than that seen in Table 6 and Table 7 for all uses. Fourth tier MSAs emerge for the first time during this period, albeit quite small at 0.5%. Second and 3rd tier MSAs both experienced substantial relative growth. A number of MSAs experienced substantial negative flows during the 1990-1996 period — with most of this disinvestment occurring in the 1st tier MSAs, especially Los Angeles-Long Beach, which fell from the high teens to just under 6% of total flows, no doubt a reaction to the severe decline in the southern Californian property markets. Again, these declines are not a direct reflection of a decrease in the value of existing portfolios but sales of holdings. In the first tier MSAs, Washington and Houston were the only MSAs to experience growth in shares. If we add in San Francisco into this first tier, the trend is replicated (68.7% between 1980-1984, 72.0% between 1985-1989, and 51.1% between 1990-1996).

Table 8 also identifies the 2nd, 3rd, and 4th tier MSAs which experienced the greatest amount of investment flow during the most recent period. Here, we find that 2nd tier MSAs such as Atlanta, Seattle, and the southwestern Connecticut corridor experienced the most positive change. For 3rd tier MSAs, places that have experienced recent growth emerge such as Charlotte, Columbus and Austin. Note that none of these places are the result of growth in MSAs which are adjacent to the first tier metropolitan areas: each is an independent metropolitan region (with the possible exception of the southeastern Connecticut corridor). One possible explanation for the increase in these smaller places is merely that these are the regions experiencing the greatest employment growth, particularly for office uses. While Charlotte, Columbus, and Austin are all state capitals, there are other bases for their recent growth including financial services in Charlotte and Columbus and high technology in Austin. Yet, during the boom period of the 1980s, other smaller places also experienced substantial growth rates and did not demonstrate these same investment patterns. In sum, then, there is a shift in institutional investment representing a combination of both disinvestment from the largest urban centers, which received the bulk of investment during the boom period of the 1980s, in addition to entirely new activity in smaller places.

SUMMARY OF INSTITUTIONAL GEOGRAPHY

This analysis on the one hand supports a vision of a core-oriented geography of

institutional investors in both where the investment decisions are made as well as where investment capital actually flows, at least during the period when markets were expanding rapidly during the 1980s. This lends support to the findings of Martin and Minns' (1995) analysis of the UK pension fund system where they find a high concentration of both decisionmaking and destinations in the largest urban centers.

However, contrary to Martin and Minns' and others' (e.g., Sassen, 1991; Dow, 1992) predictions of greater concentration of investment over time, an exactly opposite trend has been occurring over the first portion of this decade: capital flows have dispersed down the urban hierarchy to even the smallest of metropolitan areas. The exact reasons behind this trend will be discussed at the end of this chapter and will become even more clear in Chapter Four.

GEOGRAPHY OF REIT INVESTMENT

BACKGROUND AND DATA SOURCES

In contrast to institutional investors, REITs are the new kids on the block, growing tremendously since 1992, as Chapter One covered in detail. Before presenting the analysis of REITs investment patterns, some additional comments about their origins will provide a context for understanding their geography.

Most of the recent issuances of REITs have been born from local and regional property companies who could not finance their portfolios from traditional sources during the early 1990s. Thus, the distribution of their holdings will initially reflect the spatially concentrated nature of these original businesses, which had been privately controlled. But, just as importantly, Wall Street investors (especially the institutional investors who are the majority purchasers of these securities) have expressed a preference for a use and geographically-specific focus (e.g., retail strip centers in the mid-Atlantic states). In other words, the investors in these securities have expressed a desire to apply their own diversification strategies as opposed to having the REIT itself be diversified. Moreover, a REIT focused on a particular segment could take advantage of economies of scale and local experience and knowledge, and this has been viewed, until quite recently, as more

favorable than attempting to participate in multiple market segments.

Another important point to recognize is that, although most of the existing REITs have been initiated in the past few years, there exists a number of well-established REITs, such as Crown American, which represent the survivors of previous periods. In their wake are a littering of “dead” REITs, their assets disposed of, merged, or acquired by other REITs and other entities.

The data which follow document the spatial behavior of mainly the current REIT boom. Comprehensive databases on the property holdings of REITs are a recent phenomenon. Until the 1990s, REITs had limited disclosure requirements by the Securities Exchange Commission and, thus, a comprehensive historical database of specific REIT holdings is not available. The REIT data included in this analysis are derived from SNL Securities’ REIT DataSource database. This organization is well-known for its tracking of information on various aspects of the finance and securities industry. These data are a comprehensive inventory of all properties that comprise existing REIT portfolios, at the time the data diskette was issued in August of 1996. It does not include “dead REITs” and therefore any historical analysis is a representation only of the behavior of the surviving entities. Further, it does not include dispositions prior to 1993, so it is a representation of only the “surviving” properties of both the surviving and recently issued REITs.

As of the issuance of the database used in this analysis (second quarter of 1996), there were a total of 209 separate REIT securities holding 11,852 properties. An additional 324 properties are included in this database, which represent holdings that have been sold since late 1993. Information on these properties includes their location (zipcode, city, county, MSA, and state), size (square feet or number of units for residential properties), the property type (e.g., office, retail, industrial) and subtype (e.g., office park, R&D, outlet center), year bought, total sales price of acquisition, percent owned by the REIT, amount of mortgage encumbrance (if applicable), accumulated depreciation, and book value, in addition to other characteristics. For some of these categories, there is incomplete information — for instance, only 79% of the properties have data on total acquisition costs. The completeness of the data varies substantially by use. For the acquisition cost data, only 60% of the properties have values for hotel properties, 64% for

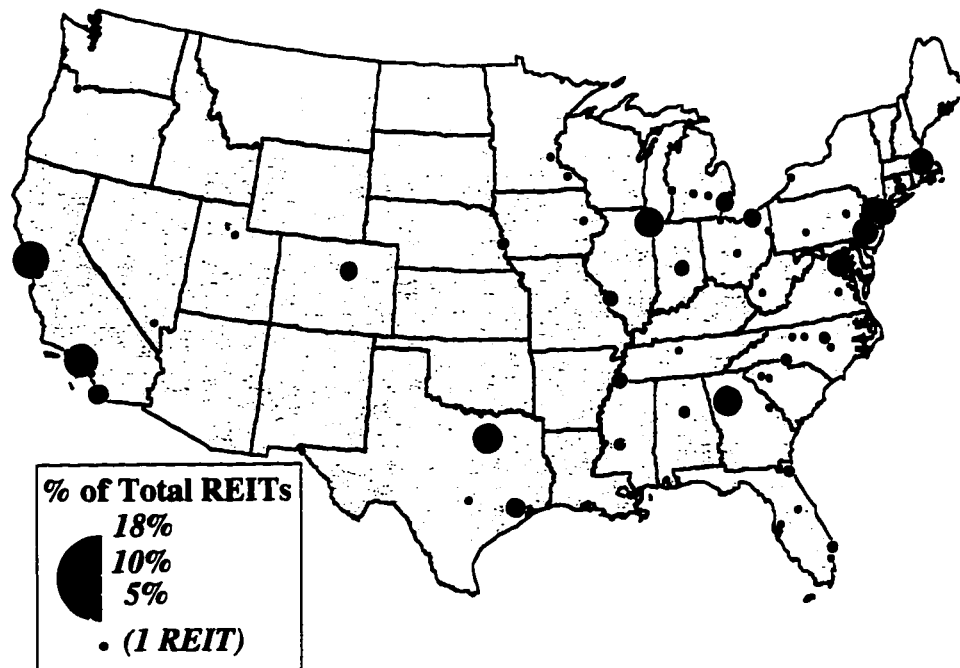
industrial, and 73% for land. Uses with the most complete data include health care (95%), restaurant (92%), and residential (86%). It does not appear there is any systematic bias associated with incomplete data, although there are some specific REITs in certain locations with missing acquisition cost values for sizable properties. These cases will be identified in the analysis, where known.

Recognizing these limitations, we can develop a picture of the distribution of REIT properties in comparison to the institutional segment and portray a sense of how this distribution has changed, based on existing REIT acquisition behavior.

GEOGRAPHY OF REIT MANAGEMENT OFFICES

Unlike institutional investors, REITs are much more vertically integrated with respect to the management of their property assets. While the underwriting of a newly issued security will involve an investment banking institution, almost always found on Wall Street, the actual asset acquisition and disposition decisionmaking process occurs where the REIT's management offices are located. Figure 36 portrays this distribution. Note that the scale of the graduated circles are equivalent to the map of the NCREIF membership in Figure 32.

REITs are far less concentrated in the larger urban areas and follow a pattern much more aligned with the distribution of population than their institutional counterparts. In part, this is a reflection of the broader mix of property types and greater emphasis on smaller, lower grade properties. Although this map is not weighted by total market capitalization, the four largest REITs are found in Chicago, Indianapolis, El Paso, and Aurora (Denver), Colorado. In other words, there is not the strong New York-Northeast orientation as found in the NCREIF membership. There is also a regional concentration towards the southeast, with notable absences in the Northwest and Mountain states.



Source: SNL Securities, 1996.

Notes: a) Scale of circles is identical to Figure 32.

b) Only REITs with a unique headquarters address are included. The total number of individual REITs with unique ticker symbols at the time in which the database was extracted was 255.

Figure 36 Distribution of REIT headquarters locations, 1996

GEOGRAPHY OF REIT CAPITAL FLOWS

From a cross-sectional perspective, Table 9 shows that the flow into REIT properties is far more dispersed than found for the institutional investors. Contrary to the NCREIF data, REIT investment (all uses) is disproportionately concentrated *away* from the largest MSAs, with the share of investment actually less than the 25% share of population found in these 8 largest areas. Instead, the second, third, and even fourth tier centers emerge. While this table does not include non-MSA flows, there is a sizable amount in non-MSA areas. An additional 16% was in non-MSAs in the pre-1980 period, 8% between 1980-1984, 13% between 1985-1989, and 10% between 1990-1996. Figure 37 through Figure 40 map these flows.

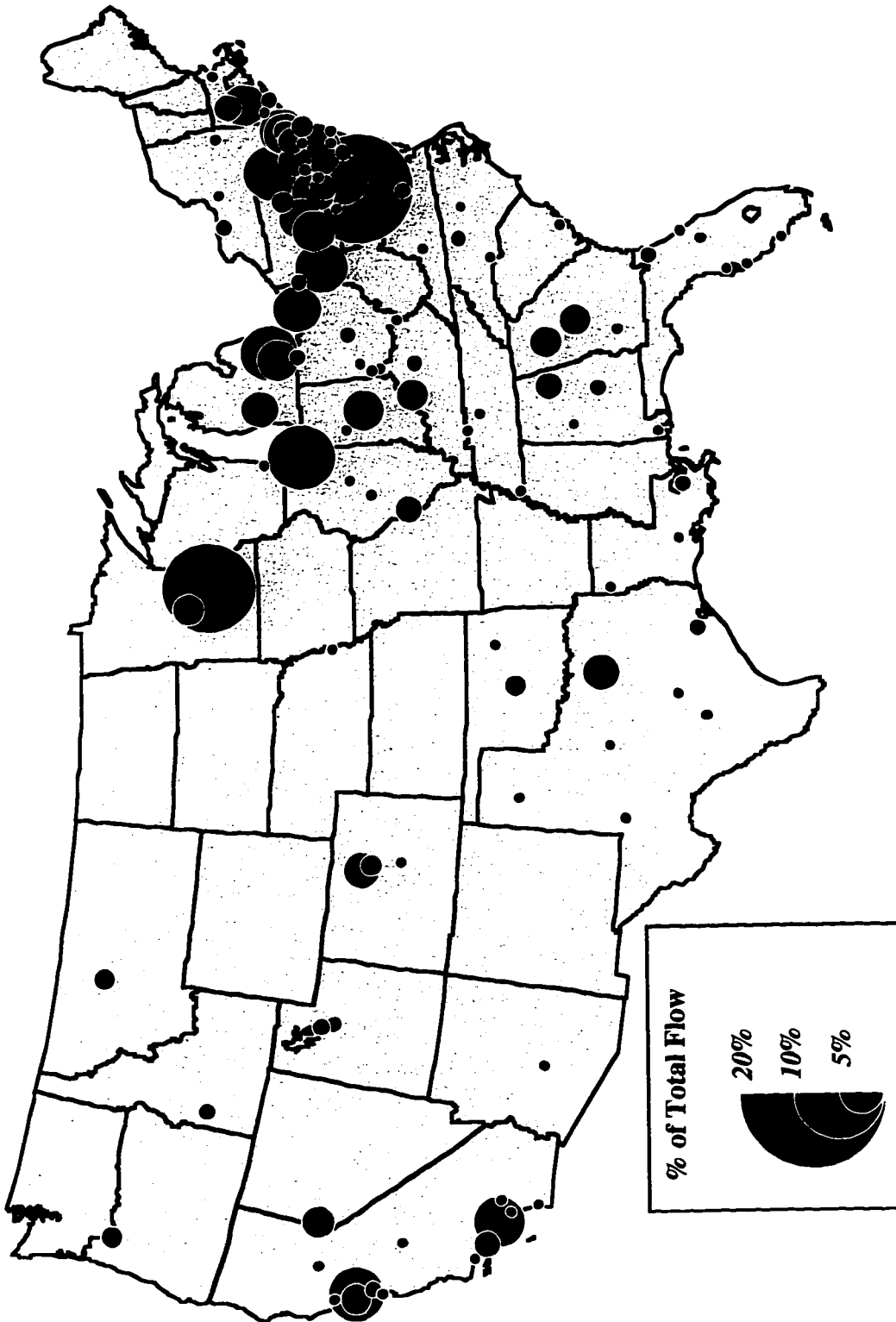
Table 9 Proportional flow of REIT investment by population size of MSA, all property types

		% of Total Flow ^a			
		Pre-1980	80-84	85-89	90-96
1st Tier	Pop. - 3.7 million+	28.4%	25.6%	16.6%	19.2%
(8 MSAs)					
	New York, NY	0.0%	0.6%	5.3%	4.2%
	Los Angeles-Long Beach, CA	2.9%	7.4%	16.0%	8.4%
	Chicago, IL	4.4%	0.6%	9.4%	6.3%
	Boston, MA-NH	1.6%	0.3%	3.9%	3.3%
	Philadelphia, PA-NJ	3.3%	3.8%	2.7%	2.0%
	Detroit, MI	3.5%	0.6%	1.2%	1.3%
	Washington, DC-MD-VA-WV	12.2%	11.2%	10.1%	9.4%
	Houston, TX	0.4%	1.1%	1.7%	2.4%
2nd Tier	Pop. - 1.5-3.3 million	28.4%	40.0%	37.5%	35.9%
(24 MSAs)					
	San Francisco, CA	1.3%	0.9%	1.4%	1.8%
3rd Tier	Pop. - 0.6-1.5 million	24.0%	20.4%	28.2%	31.8%
(54 MSAs)					
4th Tier	Pop. - 56,000 - 560,000	19.3%	14.0%	17.8%	13.2%
(227 MSAs)					
TOTAL		100%	100%	100%	100%
(313 MSAs)					
Total Flow		\$9.6	\$4.4	\$12.5	\$38.3
(\$Billions)					

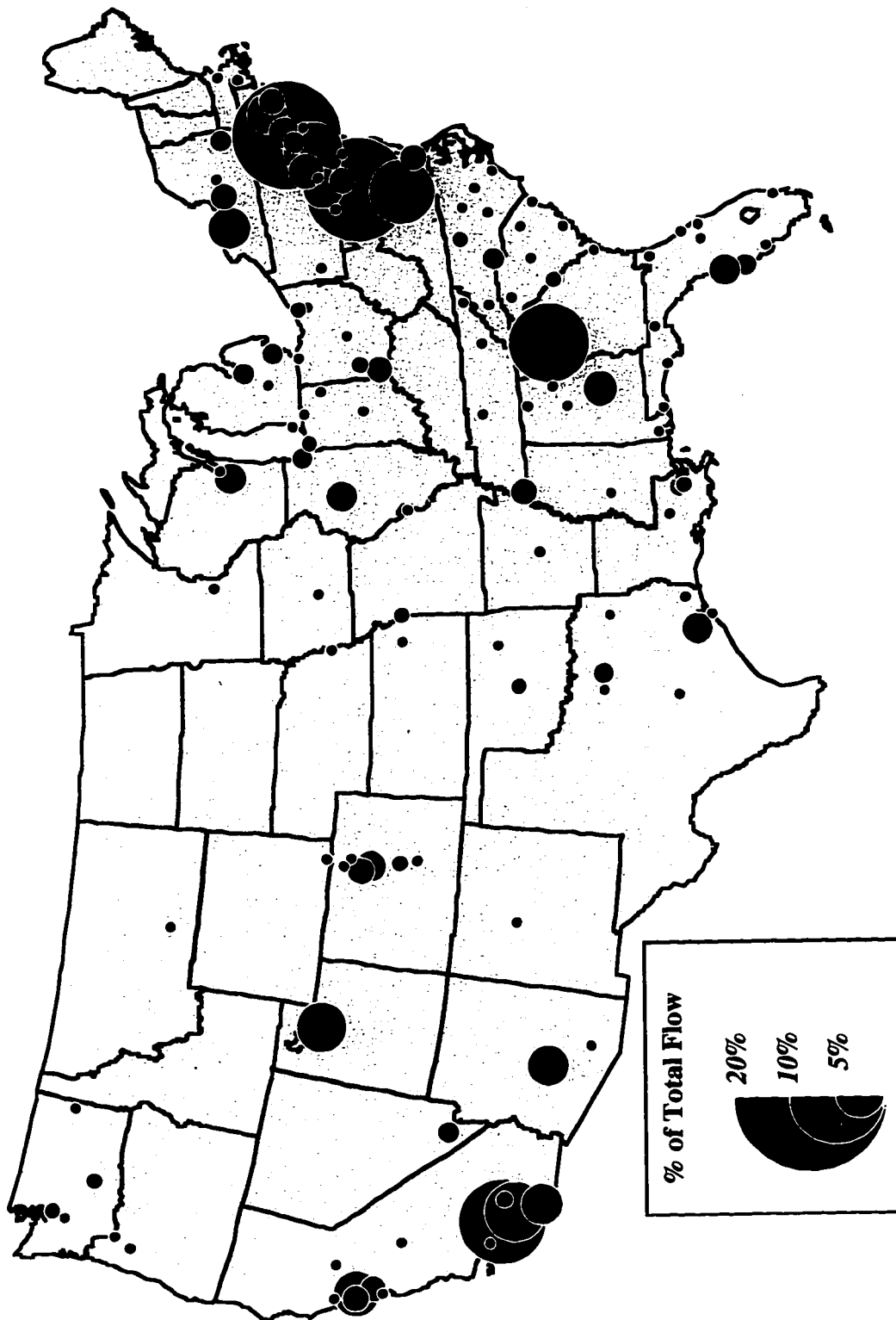
Source: SNL Securities, 2nd Q, 1996.

Notes: ^a Flows reflect the CPI-adjusted total costs of acquisition at the time of sale, which will include the value of any mortgages encumbered in the sale.

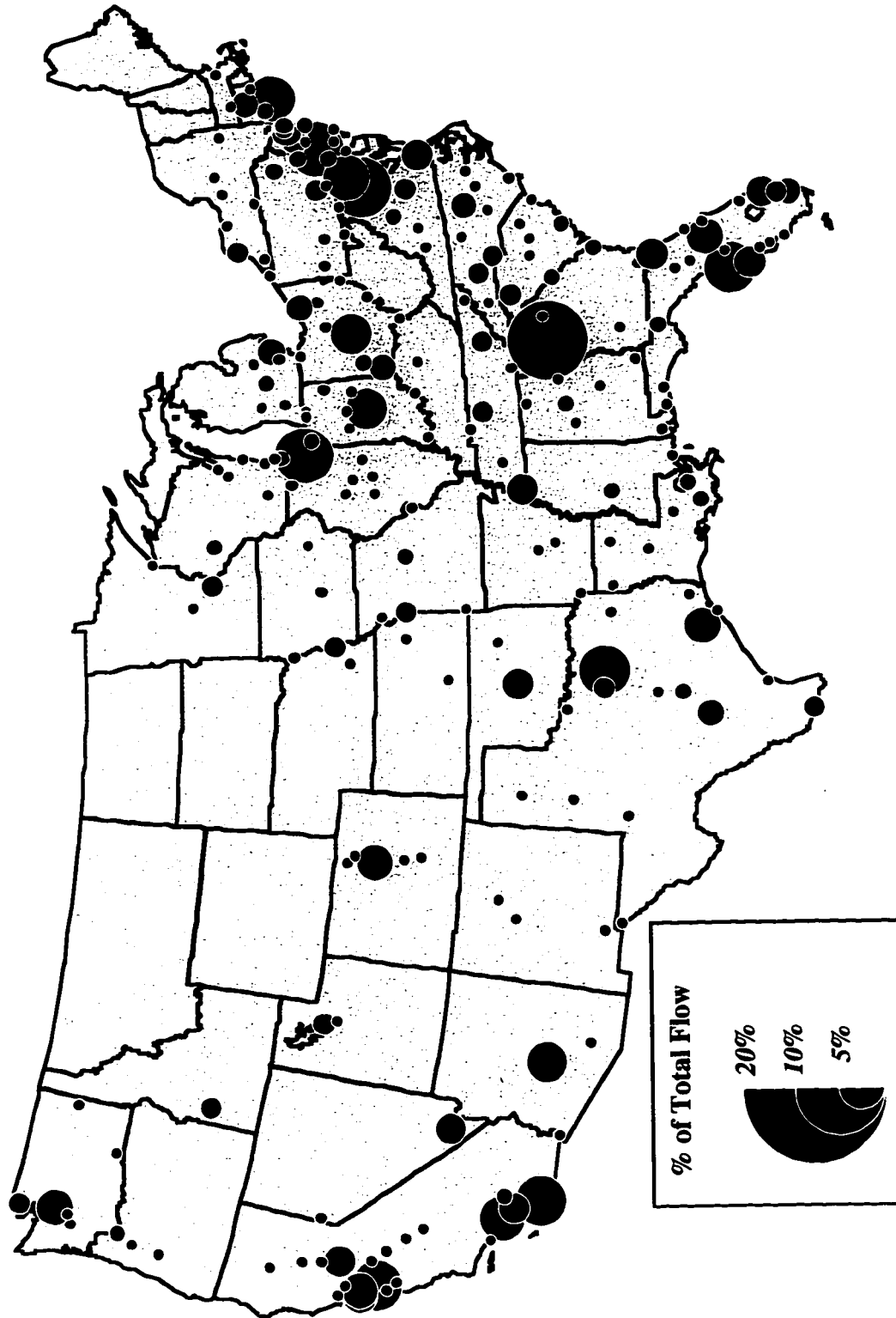
Because REITs have historically been dominated by retail and multi-family uses, it is no surprise to see a dispersed distribution in comparison to the institutional investors. As Figure 37 through Figure 40 show, there have been shifts in the regional geography of these REITs, with a strong northeast-north central concentration in the period up to 1980. This concentration reflects the concentration of some long-standing REITs that have specialized in regional malls and shopping centers in the Pennsylvania region. While the 1980 to 1984 patterns show strong concentrations in the Washington DC and northern New Jersey corridor, there are also smaller distributions throughout the mid-Atlantic and southeastern states, as well as in California and some of the western regions.



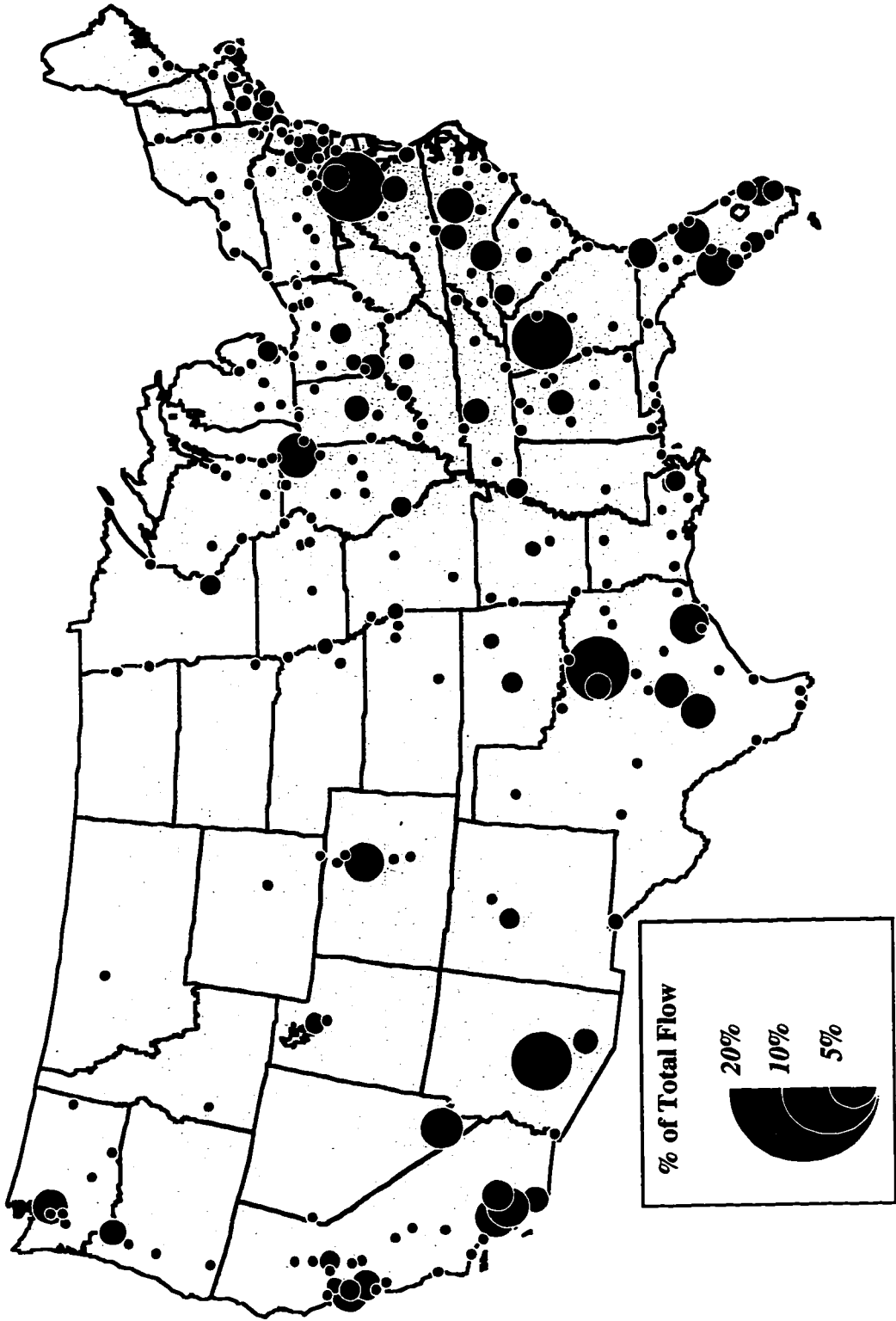
Source: SNL Securities, 2nd Q, 1996.
Figure 37 Flow of REIT investment into MSAs, pre-1980



Source: SNL Securities, 2nd Q, 1996.
Figure 38 Flow of REIT investment into MSAs, 1980-1984



Source: SNL Securities, 2nd Q, 1996.
Figure 39 Flow of REIT investment into MSAs, 1985-1989



Source: SNL Securities, 2nd Q, 1996.

Figure 40 Flow of REIT investment into MSAs, 1990-1996

The last two periods in Table 9, particularly the most recent when most of the investment activity has occurred (mainly through the issuance of new REITs and secondary offerings, and not the acquisitions of existing securities), show a highly dispersed pattern, with a strong concentration in the southeast and noticeably little investment in the New York and New England regions. The lack of New England values, however, must be greeted with caution. One fast-growing REIT based in Boston, Beacon Properties, has a few significant office and mixed-use properties in downtown Boston; the SNL database does not have data for some of these properties.⁴³ No attempt has been made to estimate these missing values.

What form does the distribution take if we look only at a single use? Table 10 provides the MSA hierarchical breakdown for REIT office investment. Because there is relatively little office property investment in the earlier periods (office REITs are a fairly new phenomenon and garnering increased recent interest), a few sizable investments can have a substantial impact on the distribution. However, in each period, the share of REIT office investment in the largest MSAs is less than that found by the NCREIF distribution, although the most recent period actually shows indication of convergence, with REIT flows into the first tier at 30.6% versus the NCREIF flow of 40.4%. Again, a great degree of caution should be used in comparison of these numbers over time: the REIT database does not include net outflows (dispositions) while the NCREIF data do reflect such activity. For the NCREIF data, these dispositions are responsible for a large portion of the shift away from the first tier places, as many MSAs showed negative flows in individual years during this period.

Anecdotal evidence, though, lends support to the notion that REIT acquisitions are focusing increasingly on the larger urban areas. Mishra (1997) in a commercial real estate online news service article, identifies a number of REITs that have expanded from their traditional locations to seek out Boston real estate, for example, which has been noticeably absent from the current boom (except for the activities of Boston-based Beacon Properties, as noted above). Carrins (1997) in a recent Wall Street Journal column, notes similar tendencies for REITs to expand outside their once use- and locationally-

⁴³ These properties include One Post Office Square and Rowes Wharf, two of Boston's most notable commercial properties.

focused specialties. This has occurred because of the rapid expansion in REITs, who are flush with capital and are both having difficulty finding new acquisitions in their markets as well as changing their attitudes towards diversification. Whereas many of the original strategies of the REITs were to focus on particular markets and allow investors to seek their own diversification choices, the REIT entities themselves are now seeking to avoid vulnerability to single market downturns. Further, there has been a great deal of recent consolidation within the industry: larger REITs are merging and acquiring smaller ones, fueled by competition and the strong flow of investor capital. The industry is in a tremendously dynamic phase and this is shifting its geography as well. In this sense, it could be interpreted as going through Clark and O'Connor's (1994) transformation from a highly opaque to translucent product.

Table 10 Flow of REIT investment into office properties by population size of MSA

		% of Total Flow			
		Pre-1980	80-84	85-89	90-96
1st Tier	Pop. - 3.7 million+	37.5%	24.0%	12.0%	30.6%
(8 MSAs)					
	New York, NY	0.4%	0.0%	0.0%	0.6%
	Los Angeles-Long Beach, CA	0.0%	1.2%	2.5%	1.9%
	Chicago, IL	0.0%	0.0%	2.7%	2.0%
	Boston, MA-NH	0.0%	0.0%	0.0%	8.4%
	Philadelphia, PA-NJ	0.0%	0.0%	2.1%	4.0%
	Detroit, MI	0.0%	5.0%	1.4%	0.5%
	Washington, DC-MD-VA-WV	0.0%	13.8%	3.1%	12.9%
	Houston, TX	0.0%	3.9%	0.3%	0.3%
2nd Tier	Pop. - 1.5-3.3 million	36.3%	43.7%	48.8%	38.2%
(24 MSAs)					
	San Francisco, CA	0.0%	1.4%	5.4%	0.8%
3rd Tier	Pop. - 0.6-1.5 million	16.8%	24.6%	23.0%	27.2%
(54 MSAs)					
4th Tier	Pop. - 56,000 - 560,000	9.4%	7.7%	16.2%	4.0%
(227 MSAs)					
TOTAL		100%	100%	100%	100%
(313 MSAs)					
Total Flow		\$0.2	\$0.2	\$1.0	\$4.8
(\$Billions)					

Source: SNL Securities, 2nd Q, 1996.

SUMMARY OF REIT GEOGRAPHY

The recent emergence of REITs — an instrument that would fit well within Martin and Minns' (1995) definition of a secondary market innovation, which they argue, is highly core-focused — has rapidly shifted a sizable capital flow into non-core markets, by virtue of their origins and the increasingly greater amount of money being invested in them. While the process of actually investing in the REITs themselves is most likely a very core-oriented activity (e.g., the geography of the securities industry), the investment in properties demonstrates a very dispersed pattern. This dispersed pattern is seen in both the locations where the property acquisition and management decisions are made and the destinations of the investment. Moreover, the shift that is occurring on the part of traditional institutional investors, from direct investment to holding securitized instruments such as REITs, results in an even further dispersal of these institutions' portfolios.

GEOGRAPHY OF FOREIGN INVESTMENT

Although foreign investment into US real estate has been documented by other researchers (e.g., Bacow, 1987; Bagchi-Sen, 1995), particularly for Japanese investors (E&Y / Kenneth Leventhal Real Estate Group, 1996; Edgington, 1995a; Warf, 1988), there are few studies evaluating these investments at the metropolitan level over a sustained period of time. As discussed in Chapter One, data on foreign investment vary, due to the large amount of capital invested through channels which are not considered foreign direct investment (FDI) in a specific real estate enterprise. The most widely used source of data is from the Department of Commerce's Bureau of Economic Analysis (BEA), who track specific FDI transactions. Again, these transactions will substantially undercount the aggregate amount of investment, but there is no other publicly available source which details transactions at such a geographically-specific level. Further, with such data, we can construct proportions of investment flowing at the MSA level, similar to that for institutional investors and REITs, although these data only show property acquisitions and do not reflect dispositions, or sales (as is reflected in the institutional data reported earlier).

Table 11 presents the flow of foreign commercial real estate investment (including land, resorts, and some residential uses, in the form of large developments, but excluding most hotels) into MSAs by population tier, based on both the percentage of the number of transactions as well as the percentage of total investment. Both figures are employed due to the large number of missing values in the data set with respect to the sales prices of the transactions (approximately 29% of these data are missing).

Table 11 Foreign investment into commercial real estate^a by MSA, 1985-1994

		% Properties		% Capital Flow	
		85-89.	90-94	85-89	90-94
1st Tier	Pop. - 3.7 million+	34.0%	34.9%	51.0%	41.1%
(8 MSAs)					
	New York, NY	7.4%	12.0%	24.5%	18.0%
	Los Angeles-Long Beach, CA	10.8%	7.4%	12.2%	10.6%
	Chicago, IL	2.2%	2.3%	1.8%	2.6%
	Boston, MA-NH	4.0%	0.6%	5.1%	0.3%
	Philadelphia, PA-NJ	0.3%	0.6%	0.1%	1.0%
	Detroit, MI	0.0%	0.6%	0.0%	0.4%
	Washington, DC-MD-VA-WV	5.3%	3.4%	4.9%	5.2%
	Houston, TX	4.0%	8.0%	2.5%	2.9%
2nd Tier	Pop. - 1.5-3.3 million	39.5%	44.0%	35.3%	36.8%
(24 MSAs)					
	San Francisco, CA	1.9%	2.9%	4.2%	4.4%
3rd Tier	Pop. - 0.6-1.5 million	10.5%	8.0%	3.1%	8.9%
(54 MSAs)					
4th Tier	Pop. - 56,000 - 560,000	1.2%	2.9%	0.5%	5.7%
(227 MSAs)					
Hawaii		9.9%	8.6%	3.4%	6.8%
Non-Metropolitan or Unknown		4.9%	1.7%	6.7%	0.7%
TOTAL		100%	100%	100%	100%
(313 MSAs and non-metro)					
Total Properties and Investment (\$ billions) of Sample		324	175	\$19.9	\$6.9

Source: US Department of Commerce, Bureau of Economic Analysis, *Foreign Direct Investment Transactions, 1985-1994*

- Notes:
- a) Includes some residential projects in addition to land and resort uses. Excludes hotel properties.
 - b) 29% of the transactions did not include a transaction price, thus the investment values are substantially undercounted. There appears to be no systematic bias by use or location in these missing values.

Similar to the institutional figures identified in Table 7, total flow of foreign investment is highly concentrated in the first tier cities, at 51% in the 1985 to 1989 period. However, in contrast to the institutional distributions, New York City dominates investment in this tier at nearly 25% of total foreign investment. Los Angeles is also an important destination at 12.2% of investment during the 1985 to 1989 period. Second tier cities encompass approximately 35% of investment (again, similar to institutional patterns), and there are relatively smaller amounts in third tier MSAs, and negligible levels in fourth tier MSAs. Hawaii is categorized separately because of its unique status as a major destination of Japanese investment, with nearly 10% of the total number of properties during the 1985-1989 period (see Edgington, 1995b; Edgington, 1995a). Many of these Hawaiian properties are resort developments throughout the islands, although there is also a significant amount of office property and other commercial investment as well.

The drying up of Japanese investment in the late 1980s has reduced the total amount of foreign investment substantially; however, new players have emerged, with German, Swedish, Hong Kong, and Australian players entering the markets along with the continued involvement of UK and Netherlands investors. The geography of the most recent period, like the trends we observed for institutional investors, demonstrates a moderate dispersion from the first tier cities and the growth in the third and fourth tier proportions (from a combined 3.6% of total investment during 1985-1989 to 14.6% during the 1990-1994 period), although there has been little shift in the proportion of properties across the urban hierarchy. This stability in the number of property percentages, in conjunction with a dispersion in the investment value figures, suggests that the shift may be a reflection in the lower property values found in the largest cities (explained in greater detail in Chapter Four). This may be especially evident in New York, where investment percentages fell from nearly 25% to 18%, while the percentage of transactions actually increased.

A closer analysis of foreign investment trends focusing on office uses reconfirms the trends reported for all foreign investment, as identified in Table 12. Again, the concentration of foreign investment in the first tier cities is dramatic: nearly 70% of investment during the 1985 to 1989 period was in these largest of places. If we add San Francisco, this number increases to nearly 77% (compared to 72% for institutional

investors for the same period, as seen in Table 8).

Table 12 Foreign investment into US commercial office space, 1985-1994

		% Properties		% Capital Flow	
		85-89.	90-94	85-89	90-94
1st Tier	Pop. - 3.7 million+	49.7%	43.6%	69.9%	49.2%
(8 MSAs)					
	New York, NY	12.7%	17.9%	36.4%	25.2%
	Los Angeles-Long Beach, CA	15.2%	10.3%	15.5%	12.1%
	Chicago, IL	3.6%	3.8%	1.8%	4.1%
	Boston, MA-NH	6.1%	0.0%	7.6%	0.0%
	Philadelphia, PA-NJ	0.7%	1.3%	0.2%	2.0%
	Detroit, MI	0.0%	1.3%	0.0%	0.8%
	Washington, DC-MD-VA-WV	7.9%	2.6%	5.8%	2.9%
	Houston, TX	3.6%	6.4%	2.6%	2.2%
2nd Tier	Pop. - 1.5-3.3 million	36.4%	43.6%	25.7%	39.5%
(24 MSAs)					
	San Francisco, CA	3.0%	3.8%	6.5%	7.0%
3rd Tier	Pop. - 0.6-1.5 million	7.3%	6.4%	2.3%	8.9%
(54 MSAs)					
4th Tier	Pop. - 56,000 - 560,000	1.2%	3.9%	0.6%	0.9%
(227 MSAs)					
Hawaii		4.2%	2.6%	1.2%	1.5%
Non-Metropolitan or Unknown		1.2%	0.0%	0.2%	0.0%
TOTAL		100%	100%	100%	100%
(313 MSAs and non-metro)					
Total Properties and Investment (\$ billions) of Sample		165	78	\$13.0	\$3.6

Source: US Department of Commerce, Bureau of Economic Analysis, *Foreign Direct Investment Transactions*, 1985-1994.

- Notes:
- Includes some residential projects in addition to land and resort uses. Excludes hotel properties.
 - 28% of the transactions did not include a transaction price, thus the investment values are substantially undercounted. There appears to be no systematic bias by use or location in these missing values.
 - The data source did not identify the specific use of the property in all cases. The author used his discretion in determining the likely use based upon the listed name of the property.

As with institutional investment, the dispersion of investment in Table 12 away from the first tier cities is dramatic (although not to the same extent), dipping to under 50%. There is also a drop in the percentage of properties, though not as pronounced, again likely due to the decreases in property values between these periods. Second and third tier cities receive the bulk of this redistribution, while fourth tier activity remains small, though increasing.

SUMMARY OF FOREIGN GEOGRAPHY

Similar to institutional investment, foreign investment into US commercial real estate has been highly concentrated in the nation's largest urban centers; however, this concentration is diminishing, although not at the same rate as the dispersal trends seen for US institutional investors. The players have changed, with the notable absence of Japanese investment activity, and the levels of investment are substantially less than experienced during the 1980s boom period. The tendency of less movement down the hierarchy by these foreign investors speaks to the continued attraction of the large cities as the most likely conduits for such investment.

Again similar to their US institutional counterparts, foreign investors are purchasing, or expressing a desire to purchase in the future, securitized real estate investments, particularly REITs. A 1995 survey of foreign investors found that 21% of the respondents had purchased REITs during 1995, and 45% planned to invest in them in the future, up from only 16% in 1993 (Association of Foreign Investors in US Real Estate, 1993-1995). This leads to a dual dispersion trend in aggregate: the purchase of REITs (themselves a spatially dispersed form of real estate investment) combines with a trend away from first tier cities in their direct holdings to potentially alter the geographical portfolio diversification of foreign investors. Certainly, investors from different countries and different institutions will practice varying spatial behaviors in both their direct and indirect US real estate investments, but in aggregate, we could expect to see a changed geography of foreign investment quite different from the last round during the 1980s.

THREE DIFFERENT SEGMENTS, THREE DIFFERENT GEOGRAPHIES

This chapter has presented evidence on the investment patterns of three important segments of the commercial real estate capital markets. It began by asking two simple questions: a) do different types of real estate investors exhibit varied patterns of investment over space, and b) have these patterns changed over time — specifically, has investment become more or less concentrated geographically? The simple answers to these questions are, first, that, yes, different types of investors practice different strategies that result in varying spatial consequences; and, second, investment patterns have changed over time, with a general trend towards dispersal down the urban hierarchy. On the surface, these findings do not lend support to the perspective that as the finance economy progresses and markets integrate there will be increased concentration of capital in the largest of places. In fact, the opposite trend is occurring, evidenced by the spatial behavior of three capital market segments that epitomize the so-called finance economy.

Yet, these trends are quite new, on the heels of a major cyclical shock to the commercial property and capital markets. Will these trends be sustained or are they merely a short-term phenomenon? Is this evidence of structural convergence, where players in the capital markets behave in a similar fashion across space (e.g., institutional and foreign investors move down the urban hierarchy while REITs move up and meet somewhere in the middle)?

To begin answering these questions, we must return to some of the concepts developed in Chapter Two as they apply to the spatial investment patterns of these three players, buttressed with informal empirical observations based on interviews I have conducted in my research, analysis of the many newsletters and trade journals that pervade the industry,⁴⁴ and highlights of research findings of other studies. Before looking at aspects of change, particularly the trend towards dispersal, a first question is cross-

⁴⁴ Some of these journals and newsletters include: *Real Estate Capital Markets Report*, *Real Estate Finance and Investment*, *Real Estate Review*, *Journal of Real Estate Research*, *Wall Street Journal's "Property Report"* (weekly column), *Institutional Real Estate Universe*, *The Institutional Real Estate Letter*, *Korpacz Investor Survey*, *The Stanger Report*, *Commercial Mortgage Alert*, *Capital Sources for Real Estate*.

sectional: why did institutional and foreign investors have such a high concentration of their investments in the largest places?

Table 13 provides a comparison of these two segments, within the context of the conceptual components developed in Chapter Two. For institutional investors, the primary force driving the concentration in larger places is both liquidity and, particularly, a minimum property size threshold found in the largest cities.⁴⁵ Smaller places simply will not provide investments with transactions in the \$20 million+ range, a minimum level for many of these larger institutions (Real Estate Capital Markets Report, Various issues). Second, the generally conservative behavior of institutions, particularly pension funds as discussed in Chapter One, has led them to invest on what has been perceived the “trophy” buildings in the “trophy” places. During the real estate boom of the 1980s, the “institutional-grade” places of San Francisco, DC, LA, Chicago, and New York were considered the safest havens of investment, where there was a steady supply of highest-grade tenants providing stability and predictability (Chapter Four will show how these assumptions were fatally flawed). Third, as previously discussed, there are layers of bureaucracies in many of these institutions. As one example, the California Public Employees Retirement System (CALPERS) is notorious among pension fund advisors for being extremely slow and conservative in their investment decisionmaking. According to one pension fund advisor, it has been typical for CALPERS to sit on an acquisition recommendations for five months or more. Finally, as Lizieri (1995c; 1995b) has noted, the concentration of the institutional investment industry in the largest financial centers results in a bias towards investing in these same places, merely due to familiarity and the shaping of the perceptions of decisionmakers as a result of being in the center of this activity. Certainly, there are other factors which have influenced these patterns, but the four identified are believed to be of primary importance in explaining the high concentration of institutional investors in the larger urban areas, as documented earlier in this chapter.

⁴⁵ This analysis of institutional investors is largely based upon representatives from three prominent real estate consulting firms, three research directors of pension fund advisory firms, and the director of real estate investment for a major life insurance company

Table 13 A comparison of institutional and foreign investor behavior - a cross-sectional perspective

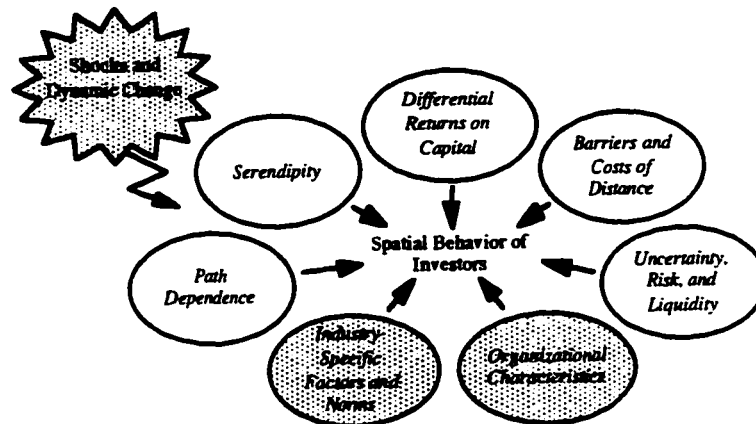
Institutional Investors	Foreign Investors
<p>1) Liquidity and Availability of Acceptable Assets</p> <p>2) Risk</p> <p>3) Organizational Characteristics</p> <p>4) Industry Characteristics</p>	<p>1) Differential Returns on Capital</p> <p>2) Uncertainty, Risk, and Liquidity</p> <p>3) Path Dependence</p> <p>4) Barriers and Costs of Distance</p> <p>5) Serendipity</p>

Although many of the same factors that have influenced the spatial behavior of institutional investors certainly apply to the patterns of foreign investment (such as the need for a minimum size of property and liquidity only found in the largest places), there are differences which result in even a more concentrated channeling to certain investment destinations. While differential returns on capital, as well as portfolio diversification,⁴⁶ may be an initial reason to invest in the US (such as the high differences between Japan's cost of capital and what it could achieve on US real estate in the mid 1980s), these differentials did not have much influence on directing the flow of investment amongst specific metropolitan markets. As Edgington (1995a; 1995b; 1996) has documented in great detail for Japanese investors in North America (other foreign investors have exhibited similar behavior but not to the same extent), the location decisions were driven by a desire for the highest-grade properties in the best locations, even more so than their domestic institutional counterparts. This combined with a "path dependence" herding behavior to create strong channels of investment, many of which were distinguished by the origin location, as shown in Table 13. While domestic institutional investors also demonstrated some of this "path dependence", it was far more pronounced with the foreign investors: a function of physical and cultural distance.

With this understanding of the concentrated behavior of institutional and foreign investment, why do REITs demonstrate such a different pattern? This has been answered, in part, by the discussion of the particular organizational histories of REITs, borne from local and regional property companies who by their very nature were geographically focused, with more holdings in smaller places. Yet, there are other factors which contribute to these spatially dispersive patterns, as seen in Table 14. First, the combination of factors which has fueled the demand for REITs as a viable investment asset by Wall Street investors has flooded the most successful REITs with capital.

⁴⁶ Worzala (1994) has found in a survey of British, Dutch, German, Japanese, Swedish and US investors that the primary reasons to invest overseas is "because correlation coefficients between markets are low or negative" (35% noted factor as very important) and "diversify due to different economic and political environments" (29% noted as very important). The least important factors (of those that were asked in the survey) included "to match overseas investments to overseas liabilities" and "lack of domestic opportunities."

Table 14 Interpreting the spatial behavior of REITs



- | | |
|---|--|
| 1) Industry-Specific Factors | <p>a) REITs born from local and regional property companies with holdings at all levels of urban hierarchy.</p> <p>b) Investors have preferred a geographically-focused REIT structure; more capital will lead to search for acquisitions, wherever available.</p> |
| 2) Organizational Characteristics | <p>Little bureaucracy, vertically integrated. Results in quick decisions and driven by a few individuals. Shareholders have had little say in these decisions.</p> |
| 3) Differential Returns on Capital | <p>REITs have low costs of capital and can bid on properties in all types of places, large or small. Are outbidding institutional and other traditional players.</p> |
| 4) Shocks and Dynamic/Structural Change | <p>Undervalued property markets due to bust has allowed REITs to capitalize upon opportunities, esp. with their property management expertise. REITs have also acquired many of the failed S&L assets, many of which in smaller places.</p> |
| 5) Serendipity | <p>Expansion out of their traditional markets not driven by formalistic methods but by the need to make acquisitions quickly; may result in "haphazard" decisionmaking.</p> |

This has led to multiple outcomes: a) where REITs are limited to specific regions, they must continually search for new acquisitions, leading to the expansion into overlooked (i.e., smaller) markets; b) where REITs are expanding from their traditional markets, they are so flooded with capital that they are buying whenever opportunities arise, often without a formal locational strategy; and c) outbidding of other players because of a lower cost of capital in large and small places. Further, REITs have an organizational structure which allows quick decisionmaking, eliminating the centralizing effects of multiple levels of bureaucracy.

These factors, then, help explain the cross-sectional spatial investment differences of these three players. The final question, though, is what has led to the shifts in investment patterns over the first part of this decade, especially for institutional and foreign investors, and can we expect these trends to continue based upon these reasons?

Without any formal survey of these players which would provide further insight into these trends, the following reasons seem to be primary factors behind the shift in investment down the urban hierarchy:

- 1) There are currently no “deals” to be found in the large markets. Investors have become more “yield-driven”, and until recently yields have been more attractive in smaller places (Chapter Four will demonstrate this in greater detail). Also, the recognition that larger markets do not necessarily mean the safest markets, and a greater willingness and ability to invest in smaller properties.
- 2) Diversification models are being more rigorously applied, with economic-base diversification becoming a more popular mode of analysis; in contrast, however, a few pension fund advisors and consultants mentioned that the application of MPT has lost a bit of its luster, because of a recognition that the data necessary to apply these models are insufficient.

- 3) In contrast, the proliferation of investment information about new markets has made an impact; the now well-established national data sources of Torto-Wheaton and Koll National Real Estate Index (recently merged), in addition to the introduction of network-based clearinghouses such as Teleres and REIS Reports, has allowed institutional research departments to assess quantifiably the behavior of many markets without having to commission special, customized research efforts.

As for foreign investors, some of the players have changed — which leads to different pathways — as well as a diffusion-effect which has taken place, as the investors who have been well-established (such as the Dutch, the British, and the Canadians) are more comfortable seeking markets outside their traditional core. Yet the factors detailed in continue to funnel foreign capital to certain places — factors which are more difficult to overcome for these players than domestically-based institutions.

In sum, then, the factors that have led to dispersal of investment across and down the urban hierarchy have in large part stemmed from the major shock of the 1980s property bust. The search for yields, found in the smaller markets, would appear to be a short-term phenomenon. Yet, the emergence of REITs and other securitized instruments, attitudes towards risk — evident in the application of modern portfolio theory and the purchase of more indirect investments, the proliferation of market information and the *accessibility* to this information, and the search for expertise and methods to avoid the experience of the 1980s would seem to be lasting, structural changes which have contributed significantly to this altered investment landscape. Although this analysis has only addressed three components of a large and complex capital market system, we would expect to see similar trends in the other components, as each of these factors to varying extents influences each of the players in this system. Further research on these other players would yield additional insights to contribute to a new understanding of the dynamic changes taking place in the financing of commercial real estate.

The next chapter further explores the patterns and behaviors documented in this chapter, particularly as they affect property values in specific markets, and how these changes in value then feedback to modify the behaviors of the investors.

CHAPTER 4: CAPITAL STAMPEDES – HERDING AND FLEEING IN US OFFICE MARKETS

What implications do spatially differentiated capital flows have on local property markets? The last chapter demonstrated a high degree of concentration of investment by two segments of the capital markets, institutional and foreign investors, — two segments which were very much a part of the high flows of capital into US real estate during the 1980s. This next section addresses how this concentration — or, more generally, uneven or inefficient flows of capital from all segments — affects the value increases and declines in specific places. In effect, we are addressing the northwest quadrant in Figure 12 of Chapter Two which has not received much attention at a geographically-specific level. While the investment patterns seen by institutional and foreign investors show high concentrations in the largest markets, do other segments of the capital markets counterbalance these flows, so that there is some level of equilibrium? Or, is there evidence of “herding”, where investors of all types flock to similar markets, driving asset prices up and encouraging overcapitalized markets? And, what impact, if any, do REITs have on particular real estate markets since their rebirth over the past few years?

The analysis in this chapter is not a formal attempt to model time-series value cycles but is more exploratory. First, this analysis confirms the patterns in the last chapter in that the supply of finance capital to particular markets is uneven; further, this unevenness has resulted in tremendous cyclical swings in value volatility. Second, these swings in values, purely as a result of differences in the supply of capital, have a tremendous influence on investor portfolios, a question of interest to researchers and practitioners in the real estate industry. While there have been many analyses of optimal diversification strategies that incorporate asset categories of use, region/location attributes, and regional economic variables (e.g., Firstenberg, Ross et al., 1988; Mueller, Black et al., 1996; Williams, 1996), the analysis here will show that a diversification strategy based on market-specific capital market factors could also be an effective, if not superior, diversification method in combination with other established geographical allocation strategies.

Finally, this chapter will come back to the issue of why there is differentiation of capital flows over space and whether it is a result of irrational “herding” behavior, or, rather, stemming from rationally-based analyses of uncertain future property market performance which themselves create spatial clustering of capital.

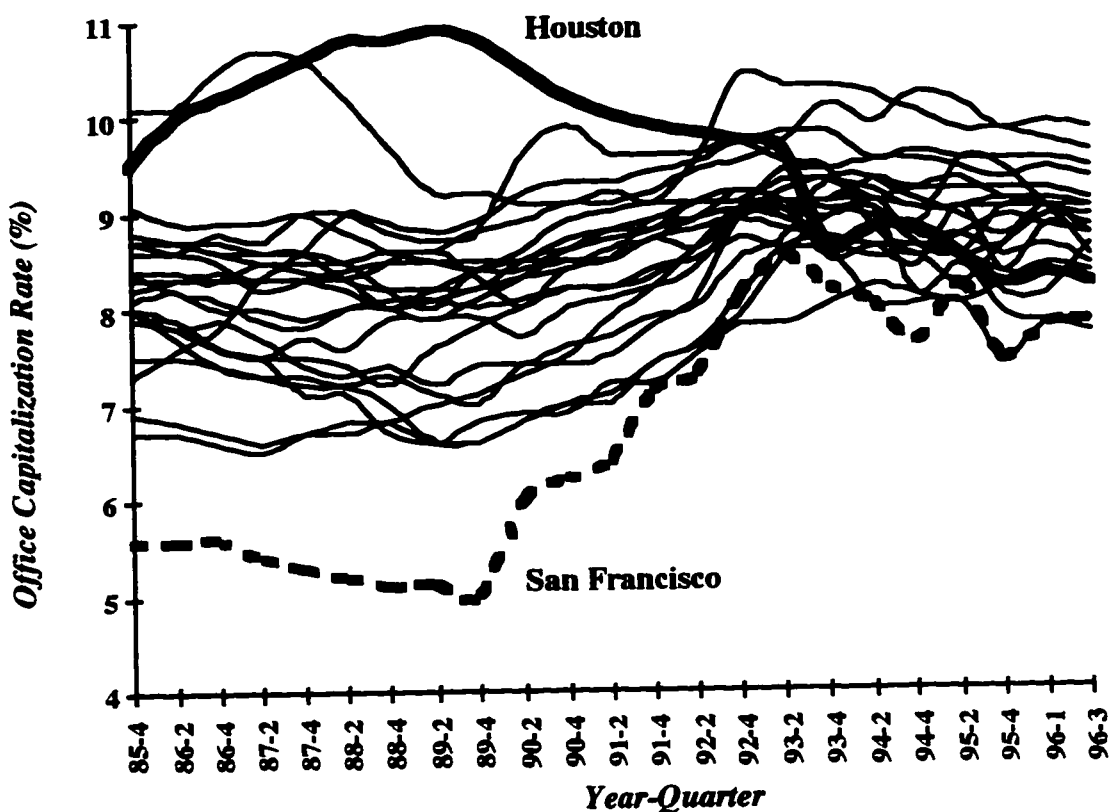
THE OVERRIDING POWER OF DIFFERENTIAL RATES OF RETURN

How can we measure the impact of capital flows on the behavior of real estate markets? This analysis is not concerned with the flow of capital that results in an oversupply of space (as has been well-documented by other researchers including Wheaton, 1987; Wheaton and Torto, 1988; Pollakowski, Wachter and Lynford, 1991; and others). Construction trends certainly have an impact on property markets, but mainly in their contribution to the stock of space, which determines vacancy rates, and rents (as conceptualized in Figure 12 of Chapter Two). These factors do influence value, but mainly in their impact upon net operating income, and not in the supply of capital to already existing properties. So instead, the analysis here focuses the effects of capital flows on value changes for existing property assets. In other words, values will change in markets where no construction is taking place. In these markets where oversupply is not a problem, value changes will mainly be a function of changes in the demand for space (as well as any changes in property expenses), but, most importantly, in the flow of capital into these assets as investments. More flow increases value; a net outflow decreases value, holding other factors constant.

The capitalization rate (NOI divided by value) is an adequate and measurable indicator of the status of the asset market in a particular region. A low average cap rate for a particular type of property in a region will typically imply that investors have a higher degree of confidence for these assets than comparable properties in regions with lower cap rates. A low cap rate is often associated with low risk. In other words, an investor will accept a lower yield on an investment (and there are other measure of yield or return than a cap rate, which is a static measure) if that asset is either lower risk or there are high expectations about its future prospects. The trophy buildings in the financial core of the largest urban centers will typically yield the highest values relative to the property’s net

operating income. These low cap properties have been the epitome of “institutional-grade” assets.

If properties had equal risk characteristics across space, we would expect a relative convergence of rates of return, or cap rates, across regions. This point was developed in detail in Chapter Two. What does the empirical evidence tell us about these actual regional differences?



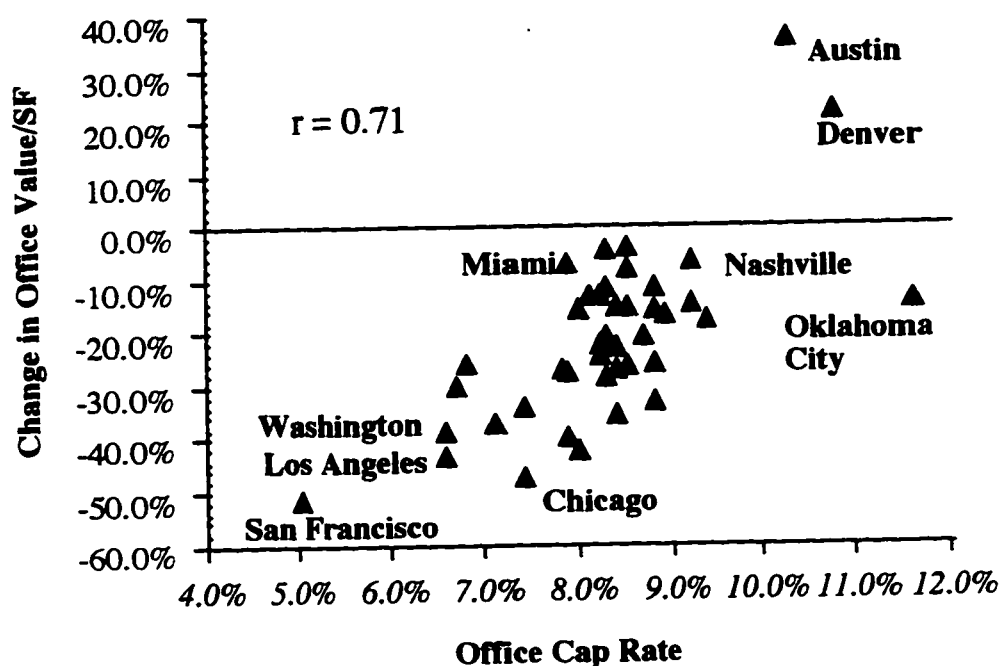
	85	86	87	88	89	90	91	92	93	94	95	96
Max	10.1	10.5	10.6	10.8	10.8	10.2	9.9	10.4	10.3	10.2	9.8	9.8
Mean	8.1	8.1	8.1	8.0	8.0	8.3	8.5	9.0	9.0	8.8	8.7	8.7
Median	8.2	8.1	8.3	8.0	8.2	8.4	8.7	9.0	9.0	8.7	8.7	8.7
Min	5.6	5.6	5.3	5.1	5.0	6.2	7.1	7.8	8.0	7.6	7.4	7.7
St. Dev.	0.9	1.0	1.2	1.1	1.1	1.0	0.8	0.6	0.5	0.6	0.7	0.5

Source: Koll National Real Estate Index

Figure 41 Office capitalization rates for 21 major metropolitan markets, 1985-1993

Figure 41 shows the trend in cap rates over the course of the latter half of the 1980s to the present. Here we find that until as late as 1990, there was a wide divergence in cap rates

across the 21 major office markets represented in the Koll National Real Estate Index. In as few as three years, the divergence in cap rates as measured by the standard deviation, was halved and remains in a tight band between 7.7% and 9.8%. In other words, during the period of high flows of capital into real estate markets during the peak of the boom in the 1980s, there were large differences in the rates of return across regions. When markets plummeted, beginning in 1987 and continuing through 1993, instead of a general increase in yields across all markets (an increase in yields means that capital is flowing out of markets), what happened instead was that the places with the lower cap rates increased. And, some places with higher cap rates, such as Houston, actually fell back to the levels of most other markets.



Source: Koll National Real Estate Index, Market History Report Disk

Figure 42 1989 office capitalization rates v. 1989-1993 change in office value per sq. ft.

An even more telling picture of this oversupply is seen in Figure 42. The places with the lowest cap rates — where so much of the institutional and foreign investment had been concentrated because of their “investment-grade” properties — were in fact exactly the opposite. As Figure 42 indicates, *the office markets with the lowest cap rates at the peak*

of the cycle in 1989 experienced the greatest declines in value in the following four years. Again, at the time, a low cap rate was perceived as the least risky places for investment. In fact, they were the riskiest. The once-perceived rock-steady markets of San Francisco, Chicago, Los Angeles, and Washington each experienced the most severe declines in value (49%, 45%, 41%, and 36% respectively) out of 43 markets tracked by the Koll National Real Estate Index, with only Jacksonville (40%) and San Diego (37%) slipping into this group. At the other extreme, the cities with the highest cap rates, including Denver and Austin, were the only markets out of all 43 office markets to experience increases in value during the same 1989-1993 period (and these increases were substantial, at 38% for Austin and 24% for Denver). In other words, the simplest and one of the most widely available variables of the capital markets was indeed a harbinger of future asset values; yet at the time, common wisdom would have suggested the opposite.

In attempting to explain the strong, and seemingly paradoxical, relationship ($r=0.71$) between cap rates and value decline in Figure 42, one possibly plausible demand-side explanation is that the “service sector recession” of the late 1980s and early 1990s was overly concentrated in the largest financial centers, the places that had the lowest cap rates in the mid 1980s. As demand dried up in these places, so this logic goes, rents declined, vacancies increased, and investors left these markets. We would then expect that these value declines were more a result of losses in net operating income as opposed to losses associated with an outflow of capital from the asset market.

Although recognizing the implications of the complicated lag and lead relationships between employment growth, space demand and supply, rent adjustment, vacancy rates, and net operating income (see Wheaton, 1987 or Dokko and Edelstein, 1996), one simple method of identifying the capital supply component of value change is by subtracting the percentage change in NOI over a certain period from the percentage change in value over that same period. While such a measure does not capture the likely lag between falling NOI and value change (or even the lead, if investors are able to anticipate falling NOI because of the “stickiness” of lease terms) as well as the fact that all markets will not be experiencing the same cycle over the same period, strong patterns emerge when one identifies these components over three periods of the past office market cycle.

Table 15 through Table 17 identify the NOI and “herding/fleeing” components of changes in value for three time periods: 1985 to 1989, when most markets were continuing to experience positive increases in NOI and value; 1989 to 1993, when almost all markets went through a period of substantial deterioration in value; and 1993 to 1996, where many markets entered into either a period of stability or recovery. In each period, the three values for each metropolitan area were grouped through the use of cluster analysis, using Ward’s hierarchical method as the clustering algorithm (with a heavier weighting assigned to the “herding/fleeing” residual factor). The herding/fleeing factor is a simple measure of the relative flow of capital into a market relative to all of the other market fundamentals embedded in NOI. During periods of NOI growth, a positive residual implies that investors are buying assets at a greater rate than increases in the fundamentals. Conversely, during a period of NOI decline, a negative residual would indicate “fleeing”, where investors are valuing assets below the change in NOI. Positive or negligible values during periods of NOI decline would imply that investors have not overly discounted that market, and likewise negative or negligible values during periods of growth would imply that there is little herding occurring (or even rare instances of undervaluation).

While there is a substantial amount of information in these three tables to interpret, some patterns are particularly evident. First, during the 1985 to 1989 period, the places that experienced the greatest amount of herding, seen in cluster groups I and II in Table 15, consequently experienced the greatest amount of fleeing in the subsequent periods, seen in cluster groups V and VI in Table 16. And, again, the places that experienced both high herding during the 1980s and high fleeing during the early 1990s were the places that had garnered the most confidence in commercial office markets: San Francisco, Washington, Los Angeles, and Chicago (and to a lesser extent New York, although the time periods do not exactly coincide with New York, which entered the downward cycle earlier and would likely show the same patterns if the analysis shifted by 2 years prior in this instance, as with Boston). In other words, investors and lenders to property did not simply hunker down in these seemingly safe havens and wait out the cycle, but disposed of and wrote-down properties at a rate greater than the smaller office markets, exacerbating the value declines associated with falling rents and increasing vacancies.

Table 15 Cluster groups of changes in office NOI, value, and "herding/fleeing" residual, 1985-1989

Cluster group	Δ NOI	Δ Value/SF	Residual (herding v. fleeing) ^a		
			85-89	89-93	93-96
I High Growth, Substantial Herding					
Washington DC	+37%	+65%	+29%	-22%	+18%
Mean	+37%	+65%	+29%	-22%	+18%
II Slow NOI Growth, High Herding					
Los Angeles	+6%	+29%	+23%	-19%	-2%
San Francisco	+7%	+20%	+13%	-30%	6%
Chicago	+7%	+16%	+9%	-14%	6%
Mean	+7%	+15%	+22%	-21%	+3%
III Growing NOI, Low Herding					
New York City	+13%	+17%	+5%	-16%	+4%
Sacramento	+26%	+30%	+4%	-1%	+3%
Baltimore	+19%	+22%	+3%	-9%	+1%
Orange County	+16%	+17%	+2%	-13%	-4%
Philadelphia	+18%	+18%	0%	-11%	+3%
San Diego	+16%	+16%	0%	-11%	0%
Boston	+25%	+18%	-7%	-14%	+12%
Mean	+19%	+20%	+1%	-11%	+3%
IV Slow Growth/ Moderate Decline, Low Herding					
Orlando	0%	+6%	+6%	-9%	+6%
Seattle	+5%	+10%	+5%	-6%	-1%
Charlotte	+1%	+3%	+2%	-2%	+1%
Tampa/St. Petersburg	-10%	-3%	+7%	-10%	+4%
Riverside/San Bernardino	+10%	+10%	0%	-11%	+3%
Atlanta	-3%	-5%	-1%	-4%	0%
Minneapolis/St. Paul	-1%	-2%	-1%	-5%	+5%
Phoenix	-4%	-7%	-2%	-5%	+10%
Mean	0%	+2%	+2%	-7%	+4%
V Substantial NOI and Price Decline					
Houston	-29%	-22%	+7%	-10%	+8%
Denver	-18%	-28%	-10%	+25%	+6%
Dallas/Fort Worth	-15%	-30%	-15%	-9%	+4%
Mean	-21%	-27%	-6%	+6%	+6%

Source: Koll National Real Estate Index, Market History Report Disk.

Notes: ^a Residual represents the difference between the change in NOI and change in value for the period.

Table 16 Cluster groups of changes in office NOI, value, and "herding/fleeing" residual, 1989-1993

Cluster group	Δ NOI	Δ Value/SF	Residual
I Growing/Surging, Substantial Herding			
Austin	+17%	+38%	+21%
Denver	-1%	+24%	+25%
Mean	+8%	+31%	+23%
II Declining, No Fleeing			
Atlanta	-14%	-18%	-4%
Cincinnati	-15%	-19%	-4%
Salt Lake City	-16%	-15%	-1%
Columbus	-8%	-10%	-2%
Indianapolis	-10%	-14%	-4%
Sacramento	-12%	-13%	-1%
Charlotte	-3%	-6%	-2%
Miami	-13%	-4%	+9%
Oklahoma City	-21%	-12%	+9%
Mean	-12%	-12%	0%
III Flat Growth, Moderate Fleeing			
Nashville	+1%	-4%	-5%
Oakland	4%	-2%	-6%
Las Vegas	7%	-1%	-8%
Dallas/Fort Worth	-5%	-14%	-9%
St. Louis	-4%	-13%	-8%
Seattle	-7%	-14%	-6%
Kansas City	+1%	-9%	-10%
Philadelphia	0%	-11%	-11%
Houston	-2%	-12%	-10%
Orlando	-2%	-11%	-9%
Mean	-1%	-9%	-8%
IV Strong Decline, Moderate Fleeing			
Tampa/St. Petersburg	-26%	-33%	-7%
Phoenix	-26%	-31%	-5%
Detroit	-20%	-25%	-5%
Minneapolis/St. Paul	-19%	-25%	-5%
Cleveland	-18%	-24%	-6%
Baltimore	-14%	-22%	-9%
Fort Lauderdale	-15%	-24%	-9%
West Palm Beach	-17%	-24%	-8%
Mean	-19%	-26%	-7%

Table 16 (cont.)

<i>Cluster group</i>	Δ NOI	Δ Value/SF	Residual
V Moderate to Strong Decline, Strong Fleeing			
Nassau/Suffolk, NY	-6%	-20%	-14%
San Jose	-6%	-20%	-14%
Honolulu	-13%	-28%	-15%
New York City	-15%	-32%	-16%
Portland	-14%	-25%	-11%
Riverside/San Bernardino	-12%	-24%	-11%
Orange County	-10%	-24%	-14%
Boston	-21%	-35%	-14%
Jacksonville	-30%	-40%	-10%
San Diego	-26%	-37%	-11%
Chicago	-31%	-45%	-14%
Mean	-18%	-31%	-13%
VI Substantial Decline, Substantial Fleeing			
Los Angeles	-22%	-41%	-19%
Washington DC	-14%	-36%	-22%
San Francisco	-17%	-49%	-30%
Mean	-18%	-42%	-24%

Source: Koll National Real Estate Index, Market History Report Disk.

The other important aspect from these tables is that while almost all markets experienced value declines greater than the declines in NOI, there was far less fleeing in the markets that had not experienced the herding of the earlier period. Places such as Minneapolis/St. Paul and Tampa/St. Petersburg, for instance, each had severe declines in NOI (19% and 26% respectively), yet values fell only slightly more (33% and 25%). While there are certainly exceptions to this relationship (for example, Orange County demonstrated low herding in the first period but had substantial fleeing in the second, likely as a result of the avoidance of all southern California real estate), there is a significant inverse correlation ($r = -0.58$) between the herding residuals in 1985 to 1989 and the subsequent fleeing residuals in 1989 to 1993 (for the 21 markets which have historical data for both periods).

Table 17 Cluster groups of changes in office NOI, value, and "herding/fleeing" residual.
1993-1996

Cluster group	Δ NOI	Δ Value/SF	Residual
I Substantial Growth, Substantial Herding			
Salt Lake City	+19%	+38%	+19%
Washington DC	+12%	+30%	+18%
Mean	+16%	+34%	+18%
II Substantial Growth, Moderate to Strong Herding			
Boston	+21%	+34%	+12%
Phoenix	+23%	+33%	+10%
San Francisco	+25%	+31%	+6%
Denver	+18%	+23%	+6%
Minneapolis/St. Paul	+45%	+50%	+5%
Mean	+26%	+34%	+8%
III Moderate Growth, Moderate to Strong Herding			
Riverside/San Bernardino	+5%	+8%	+3%
San Diego	+4%	+8%	+3%
Indianapolis	+5%	+10%	+5%
Kansas City	+4%	+9%	+5%
Oklahoma City	+5%	+9%	+4%
Dallas/Fort Worth	0%	+5%	+4%
Jacksonville	+2%	+6%	+5%
St. Louis	+3%	+6%	+3%
Cleveland	+1%	+7%	+6%
Cincinnati	-6%	-1%	+4%
Fort Lauderdale	+8%	+21%	+13%
Nashville	+6%	+16%	+10%
Nassau-Suffolk	+8%	+10%	+2%
Sacramento	+8%	+11%	+3%
Columbus	+9%	+13%	+4%
News York City	+10%	+14%	+4%
Tampa/St. Petersburg	+9%	+12%	+4%
Orlando	+9%	+15%	+6%
Portland	+9%	+15%	+6%
Chicago	+6%	+12%	+6%
San Jose	+5%	+12%	+7%
Houston	+3%	+11%	+8%
Mean	+5%	+10%	+5%

Table 17 (cont.)

<i>Cluster group</i>	Δ NOI	Δ Value/SF	Residual
IV Moderate to Fast Growth, No Herding			
Atlanta	+17%	+17%	0%
Charlotte	+16%	+17%	+1%
Austin	+13%	+14%	+1%
Las Vegas	+12%	+12%	0%
Detroit	+4%	+4%	0%
Philadelphia	+4%	+4%	0%
Baltimore	+4%	+5%	+1%
Seattle	+7%	+6%	-1%
Los Angeles	+2%	0%	-2%
Oakland	+2%	+1%	-1%
Orange County	+5%	+1%	-4%
West Palm Beach	+9%	+4%	-5%
Mean	+5%	+7%	+2%
V Moderate Decline, Strong Fleeing			
Honolulu	-7%	-15%	-8%
Mean	-7%	-15%	-8%
VI Mid-Cycle Anomaly			
Miami	+19%	-1%	-21%
Mean	+19%	-1%	-21%

Source: Koll National Real Estate Index, Market History Report Disk.

Finally, Table 17 highlights the most recent period, as most markets rebound again to positive or stable NOI and value growth (with the exception of Honolulu, where there remains a sizable amount of fleeing and NOI decline, and Miami which is emerging from a substantial spike in values during the early 1990s). Washington DC again emerges as a market prone to herding, with 30% value increase over three years compared to NOI growth of only 12%. Remember in Table 7, in Chapter Three, that the institutional share of flow into Washington DC office properties had increased from 11% between 1985 to 1989 to 17% of total flow between 1990 and 1996. This suggests that institutional investors may be a significant factor in this capital supply. Likewise, REITs have been active in the Washington market, with at least \$0.6 billion in office property investments since 1991. Foreign investment, based on data through 1994, has been limited in this market, although two recent surveys of foreign investors cite Washington DC as their preferred investment destination next to Atlanta (Association of Foreign Investors in US Real Estate, 1993-1995).

The other markets which had been prone to severe herding and fleeing are mainly flat or shifting slowly, with the exception of San Francisco, which is again seeing a substantial amount of capital inflows. Newer growth markets have also emerged, such as Salt Lake City, with a booming 38% increase in prices, versus a more modest 19% increase in NOI. Fort Lauderdale, Nashville, and an old boom-bust favorite, Phoenix, also have strong signs of capital inflows above NOI growth. Both Salt Lake City and Nashville have been targets of REIT office investment, with at least \$80 million invested in Salt Lake and nearly \$20 million in Nashville over the past four years. In Phoenix, there does not appear to be a large amount of institutional nor foreign investment, yet REITs have placed at least \$80 billion there, and non-residential bank lending in Arizona (not including construction lending) has increased 48% between 1993 and 1995.

There is a relationship between the concentration of institutional and foreign investment patterns documented in Chapter Four and the “herding/fleeing” patterns described above, at least for the first two periods. Institutional investment into office uses between 1985 and 1989 has a correlation coefficient of $r=0.49$ with the “herding” residual during the same period. Likewise, institutional investment during that same period has a negative correlation of $r=-0.40$ with the “fleeing” residual of the following period. Foreign investment shows a similar relationship with correlations of $r=0.40$ for the 1985-1989 period and $r=-0.40$ in the 1989 to 1993 period. These coefficients are considered reasonably robust given the caveats associated with the foreign investment data (e.g., high number of missing values, estimation technique for determining use, etc.). This does not necessarily mean that these players alone caused the overvaluation in these markets, but at the very least their portfolios were highly exposed to the places that had the most dramatic fluctuations in value. Clearly, if investors had applied even the most simple of diversification strategies to their portfolios based on the supply of capital (such as rebalancing portfolios away from places with rapidly declining cap rates), many of the severe value declines could have been avoided.

For practitioners within the industry, further analysis of the relationships between specific sources of capital to specific places is warranted and necessary in developing a formal diversification strategy based on the capital markets. Such a strategy can buttress those developed based on economic diversification and other methods of geographic

classification. The research reported in this dissertation has addressed only three of the 15 or so segments of the commercial real estate capital markets. Data on other segments are available in various forms but are difficult to obtain historically at the necessary geographical and use specific level of detail. But data that are available can yield further insights into developing a more formal and comprehensive model.

WHAT'S DRIVING THE HERD?

By now, it should be quite evident that capital markets are not perfect over space. Yet, over the long-term, the power of different rates of returns across markets can be quick and dramatic, as Figure 41 and Figure 42 demonstrated. Chapter Three has already highlighted the patterns of investment for specific players and how these spatial behaviors are shaped by longer term structural changes and the shocks of a widespread property market downturn. The herding behavior evidenced in this chapter, and suggested in Chapter Three, would in hindsight seem to have been led by irrationality, greed, unbridled fervor, and a general “orgy of commercial lending” and investment (Warf, 1994 p. 324). Certainly, these factors were at play, but this is a far too simplistic vision of what actually occurred.

In this last section, I want to return to a concept summarized earlier in Chapter Two and that is the use of the discounted cash flow analysis, and how the application of this method — which is so widespread in the industry — can lead to the types of herding and fleeing behavior documented earlier. Further, this behavior was not necessarily “irrational”, but based upon the accepted application of these discounted cash flow models. Although there has been a fairly thorough revisiting of the DCF method of analysis and the many problems associated with its misuse (see Handorf and Sachlis, 1991, for example), it remains the primary means by which investment decisions are made, and its application continues to require assumptions about future market behavior. And, here lies the problem. A problem that stems from a reliance upon flawed assumptions about the perceived riskiness of markets, and particular assumptions about the future behavior of the capital markets. Yet, these are the very assumptions in which the least information is known and available, and until it becomes available and is properly applied, the herding and fleeing patterns are bound to repeat themselves.

In the review of DCF analysis in Chapter Two, recall that there are three main components which influence the outcome (e.g., net present value or internal rate of return) produced by the analysis: 1) assumptions about future income in the form of rents, absorption, vacancy, etc.; 2) assumptions about a capitalization rate in order to calculate a 10th year sale; and 3) choice of a discount rate. Now, let us say an investor in 1987 were evaluating the feasibility of two possible property acquisitions: one in Washington, DC and the other in Austin.

At the time, the Washington market had an office vacancy rate of 15%, a moderate increase from the 12% rate two years earlier; rents averaged \$25 to \$30 per square foot, and had been increasing at an average of 5% per year, although recent increases were positive but more modest; and absorption of space continued to grow, from 8.7 million square feet annually in 1984 to 15.4 million by 1987 (CB Commercial - Torto-Wheaton Research, 1996). Cap rates averaged 7.3% (Koll National Real Estate Index, 1996). In contrast, Austin had cap rates approaching 11%, vacancies had reached a numbing 40%, rents averaged less than \$15.00 from \$24.00 only two years prior, and absorption had actually been negative in 1986, though increasing over 1987, to 591,000 square feet (CB Commercial - Torto-Wheaton Research, 1996; Koll National Real Estate Index, 1996).

Our investor is faced with a choice of two properties — say both are good quality in good locations, with comparable occupancy rates (in spite of the high vacancy levels in the Austin marketplace). How would this investor determine either the value he/she would be willing to pay or the return on an investment, if the property sales prices were known given this knowledge of the marketplace at the time?

First, the investor would have to develop assumptions about the property's future income potential over a ten year period in a typical DCF analysis. Developing such assumptions is actually not a complete shot-in-the-dark, because information on rent trends, projected employment growth, new developments which will add to the stock of space, and projected vacancy rates allow reasonably accurate assessments for at least a few years into the future. However, even with such knowledge, it is highly likely that our investor will be more conservative in these assumptions for the Austin market than for the Washington

market, given its history as well as its status as a third-tier city in comparison to Washington's status. Further, there would have been little to suggest that the Washington market was going to go through any severe downturn given its history in comparison to the wild ride of Austin. For the investor's assumptions about rents, vacancies, etc. in the latter years of the cash flow — the sixth through tenth years — he/she would still likely treat the Austin market with a higher degree of caution and thus might assume that vacancy stabilizes at 10% instead of a possible 5% for the Washington market. The impact on the outcome of the DCF analysis from these different sets of assumptions — which at the time would be quite rational given the actual histories of each place and the *perceptions* about the future — would result in a lower net present value for Austin (or a lower internal rate of return) than that for Washington. This is assuming that the discount rate and the capitalization rate at the 10th year is held constant.

Now let us assess how our investor would develop the second component of the cash flow — assumptions about the exit capitalization rate which determines the assumed sale of the project in the 10th year. From the example in Chapter Two (Table 4 and Figure 13), recall the residual 10th year sales value represented nearly 50% of the total NPV (based on the particular assumptions in that example). Further, remember that the calculation of this residual value is extremely sensitive to even a 1% change in the cap rate. How is this prediction of a cap rate 10 years in the future derived? *By assuming that the rate will be roughly equal, or slightly higher, than it is today.* So, for our example of Austin and Washington, our investor — assuming he/she is practicing what is standard procedure — would take the 7.3% cap rate of Washington, perhaps add 0.5% to 1.0% to account for any potential fluctuations, then use this 7.8% to 8.3% rate to capitalize the 11th year net operating income (and remember, this NOI has been developed with at least a bit more aggressiveness than that for Austin). In Austin, on the other hand, if we add 0.5% to 1.0% to the 10.5% observed in the market at the time of the decision (and, it is highly probable that an even higher increment could be chosen due to the assumptions about the riskiness of the market), then the investor will be capitalizing a conservative NOI, at an 11% to even 12% capitalization rate. This will result in a residual sales value well below that of the property in Washington, even given identical assumptions about the property's current characteristics.

Finally, our investor must choose a discount rate (or, if he/she is developing an internal rate of return based upon a known purchase price, have a minimum rate threshold). The discount rate will reflect the investor's cost of capital as well as some assessment about the relative risk of the project compared to other assets of comparable risk. A riskier investment requires a higher rate of return. There will be no question in the investor's mind that an Austin property is a riskier investment; thus, he/she will apply a higher discount rate. Although the development of this discount rate is supposed to take place independently of the other elements in the cash flow, it is highly likely that our investor will remember all of the other aspects which have led him/her to see that a DC investment is safer. Rents are growing, vacancies are lower, absorption is positive, and *cap rates are low*, meaning that other investors have also placed faith in this marketplace. If other investors have faith, then, our investor is saying to him/herself: a) I am probably correct in my conservative treatment of Austin compared to Washington; and b) I can be assured that the Washington market is liquid because of the demonstrated confidence other investor's have about this market, thus I can sell my property quickly if appropriate.

This illustrative calculus in developing a cash flow analysis has, thus, led to a triple-counting of the perceived risk (and uncertainty) of two spatially and capital differentiated markets: a calculus that if repeated by multiple investors will almost always result in more capital flowing into the Washington market than to the Austin market. Of course, if a shock should occur, as it did, and suddenly there is a recognition that the values in the DC market were unsustainable, then the analysis changes suddenly. An increase in vacancy will be projected into the future, decreasing rents will cause an investor to increase the discount rate, and so on. Also, this analysis is based upon investors who have a choice between multiple regions. A locally-based investor in Austin, for example, may only be making a binary choice of whether or not to invest in the property. If this is the case, we would expect local players to be the first ones into a market and the players with a choice across regions to not enter until the proper signals had been initiated (such as a drop in the cap rate). Further research of the timing of when certain players enter and leave a market — particularly the local versus the non-local players — is needed to identify these nuances.

This analysis is not to say that individuals and organizations making decisions about investments are dull-witted, short-sighted, or somehow incapable of recognizing how these methods result in such outcomes. Instead, what is important is that any decision based upon a projection of the future will require judgments. And these judgments will be based not upon a world of perfect information and knowledge of known probabilities, but on the conscious and even sub-conscious perceptions of how current and past observations of markets will play out over time. Each of the components developed in Chapter Two of this dissertation and shown empirically to influence spatial behaviors (differential rates of return, uncertainty/risk/liquidity, organizational characteristics, path dependence, etc.) will contribute to this judgment process, which can result in “rational” spatial unevenness and inefficiencies in a world of imperfect information.

CHAPTER 5: FROM A CLOSED TO AN OPEN CAPITAL MARKET — STOCKHOLM

This final empirical chapter takes our analysis from the story of the US — a story mainly of interregional flows of capital (or the many regional options of foreign capital choosing the US as a destination for investment) — to Europe, where the focus is less upon the interregional (intranational) but rather on the incentives and barriers which both promote and restrict capital flows across national boundaries. Specifically, we look at the story of Stockholm, Sweden as both a destination and source of capital. To a lesser extent, the story will continue to London, but only so much as to demonstrate the context by which Swedish investors flocked here at the tail end of the property boom in the late 1980s.

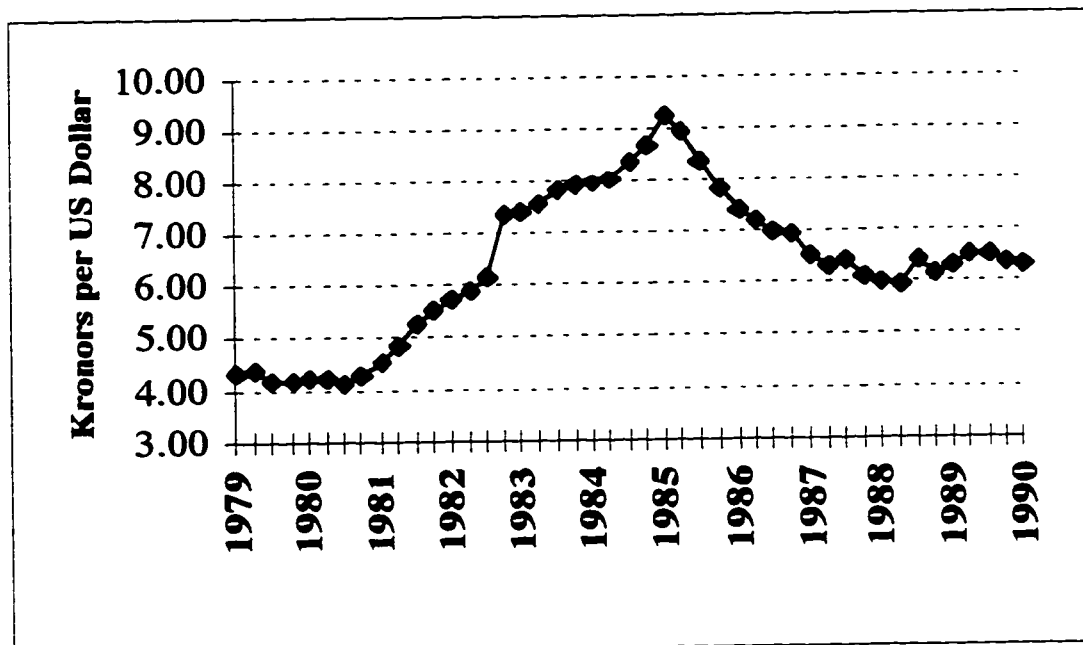
Originally, I chose Stockholm for its status as a second or even third tier global city in a setting peripheral from the rest of Europe, where one might observe both the physical costs of distance as well as other factors, such as language barriers and a national economy tremendously dependent on trade. I also knew Stockholm had experienced its own property boom during the 1980s, like so many other cities around the globe, and wanted to observe the forces behind such a boom in a place that is hardly a blip on global investor radar screens compared to places such as London, Hong Kong, New York, or Frankfurt.

In the Winter of 1996, after undertaking as much background work a continent and an ocean away as one can on a place where the language is unfamiliar (although English is practically universal) and the topic of inquiry is one where information has been a privileged commodity, I soon learned that the story of Stockholm was much richer than the one I had imagined. It is a story not just of distance and “peripheralness”, but of a country’s efforts to boost its position in the global economy, in a series of monetary and regulatory actions, and, in the process, unleashing a barrage of unforeseen forces ending in a national banking crisis and recession, where the commercial real estate markets took center stage. Yet, it would be overly simplistic to attribute this story merely to deregulation and the influences of political decisions, as there are other components which

require an understanding of how investors behave under a given set of circumstances, and the results of this behavior on the allocation of capital over space.

MACROECONOMIC BACKGROUND - THE SEEDS OF A BOOM

In the early 1980s, the Riksbank, Sweden's national monetary authority, was faced with a national recession, evidenced by high interest rates and a substantial trade deficit. Sweden has always been heavily dependent upon trade, in the form of both exports (such as forestry products as well as heavy machinery and automobiles) and imports, for Sweden is limited in its endogenous resources to support its approximately \$225 billion economy (1990 dollars) and 8.6 million population base. Between 1981 and 1982, the Riksbank took action to address the trade imbalance by devaluing the Kronor (SEK) in a



Source: US Federal Reserve website, historical currency exchange data series:
<http://www.bog.frb.fed.us>.

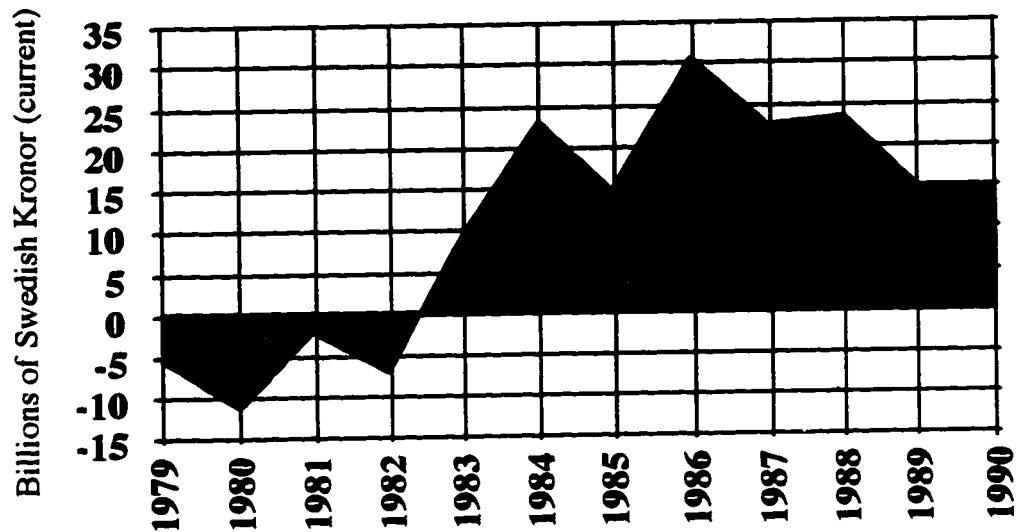
Note: Data are quarterly averages based on daily closing rates.

Figure 43 Kronor exchange rate with the US dollar: 1979 to 1990

series of monetary actions. These devaluations resulted in nearly a 30% increase in the value of the US dollar compared to the Kronor (similar to the trend in exchange for other currencies) between late 1980 and the last quarter of 1982 (see Figure 43). By 1985, the dollar could buy 9.25 SEK, a nearly 120% increase from the 1980 level of 4.22.

The devaluation at first provided the intended results: a positive trade surplus (see Figure 44) and GNP growth rates reaching 4% by 1984. Moreover, inflation declined from the double-digit levels in the late 1970s and early 1980s to under 4% by 1986 (Kalbro and Mattsson, 1995).

The export dollars that now flowed into the economy as a result of the tremendous price attractiveness of Swedish goods and services pumped a similar level of money into the Swedish banking system as well as to other financial intermediaries. Deregulation of the



Source: Sveriges Riksbank, 1990.

Figure 44 Sweden balance of trade: 1979-1990

Swedish banking and finance industry in 1985 (abolishing lending ceilings), a taxation system which encouraged borrowing, and employment growth — much in office-using sectors and occupations, provided the impetus for a burst of lending to all sectors of the economy, especially commercial real estate.⁴⁷ Rising rents and lowering vacancies encouraged both new construction and investment in existing properties. Banking institutions, with their newfound property lending abilities, provided a large amount of the capital for both of these activities. One-half of all lending by credit institutions was being directed towards property and construction (Sweden Ministry of Finance, 1994). High construction costs and a subsidy system for all multi-family financing encouraged

⁴⁷ Much of this background is taken from Chapters 1 and 3 in Kalbro and Mattsson (1995).

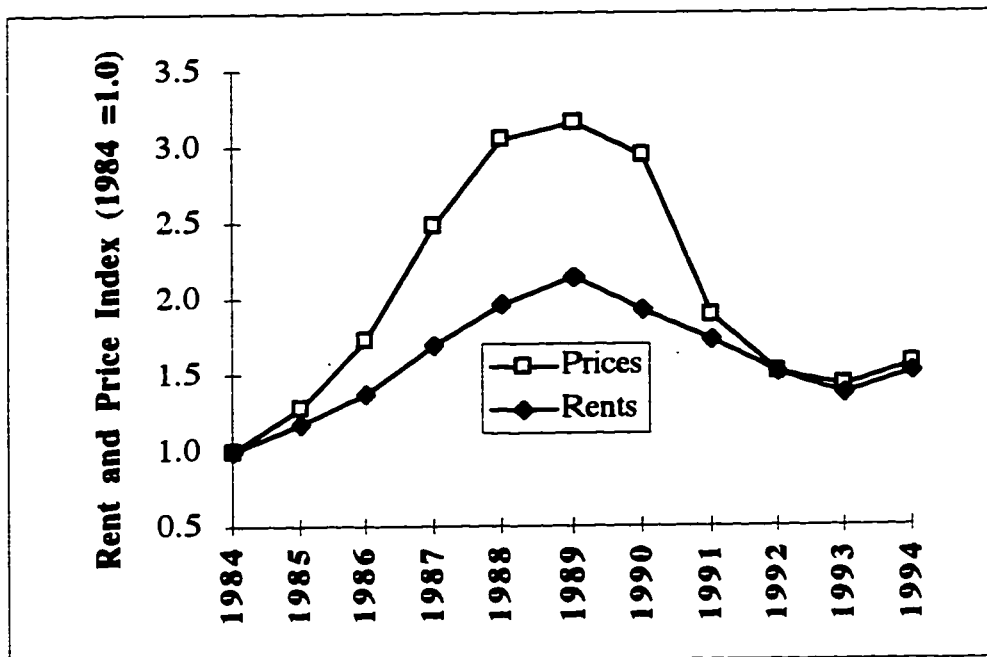
loan-to-value ratios of up to 100%.

Adding to the loose monetary and regulatory environment surrounding banks and other finance companies were exchange restrictions that, with few exceptions, prevented Swedish institutions from investing into real estate abroad. Also, insurance companies, pension funds, and other non-bank financial institutions saw real estate as an important component of their investment portfolios and dramatically increased their property acquisition activities in Sweden⁴⁸ (especially Stockholm) since they had no other locational choice.

All of these factors resulted in an increase in property prices much faster than the corresponding increase in rents (Figure 45), with prime commercial property prices increasing nearly 300% in a five-year period between 1984 and 1989, while rents also increased dramatically, but only by twofold. All of the price increase was a result of Sweden-based capital: there was effectively no investment by non-Swedish investors. There are a few reasons for this lack of investment by foreigners, including an uncertain regulatory and tax environment in Sweden's socialist-based political system, the country's location at the geographical margin of Europe, and a property industry based in large part upon social networks and vertically-integrated property and investment companies, unwilling to share their information and expertise with outsiders.⁴⁹ But, aside from these reasons, the dominant deterrent to outside investment is the most fundamental (i.e., *differential returns on capital*): yields that were far below the those in other European and foreign markets.

⁴⁸ Unlike US insurance companies, the real estate investment by Swedish insurance companies are 100 percent direct ownership, thus, they did not have the long history of mortgage lending that US companies had (based on interview with the research director of a major Swedish insurance company).

⁴⁹ Interview with Dag Klerfelt, independent investor and prominent figure in the Stockholm financial and real estate communities.



Source: Catella, 1995.

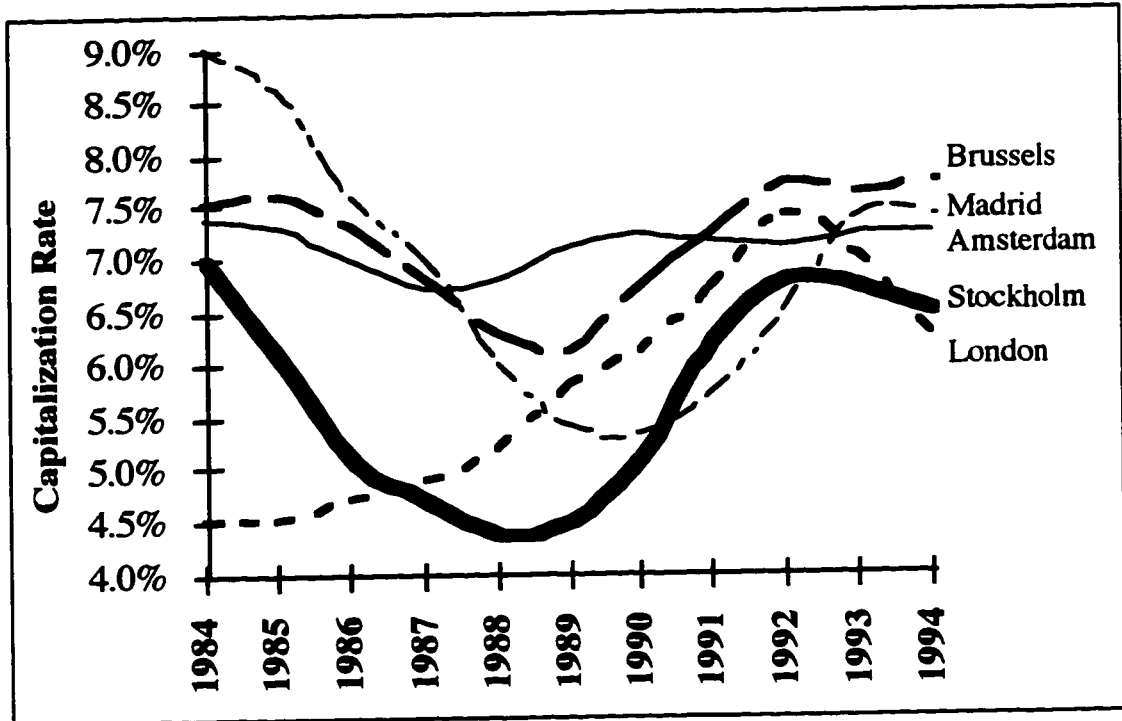
Figure 45 Stockholm prime property rent and price trends: 1984 - 1994 (in current SEK)

Figure 46 documents this difference in yields during the mid 1980s (capitalization rates) across some of the major European markets. There are number of trends evident in this figure. First, we can see the steep decline in yields in all markets (other than London) between 1984 and the late 1980s, but particularly evident in Stockholm real estate (from 7.0% in 1984 to 4.3% by 1988).⁵⁰ Because Stockholm was not a London, a San Francisco, or a New York City (where a low capitalization rate is justified as being lower risk), no foreign investors in their right mind would have touched Stockholm real estate (and they did not).

The second important aspect about this figure is the increase in yields in Stockholm real estate beginning in mid 1988, a trough experienced earlier than any other market (other than London, where yields had been increasing steadily). This yield increase is primarily due to a single reason: the relaxation on foreign real estate investment by Swedish investors in 1987 (restrictions on insurance company investment were relaxed in January

⁵⁰ In fact, yields on some property transactions were as low as 2%, according to Hans Lind, Professor at the Kungliga Tekniska Högskolan (KTH).

of 1989), which, with the exception of banks, all but dried up any support for the high property prices of Stockholm real estate.

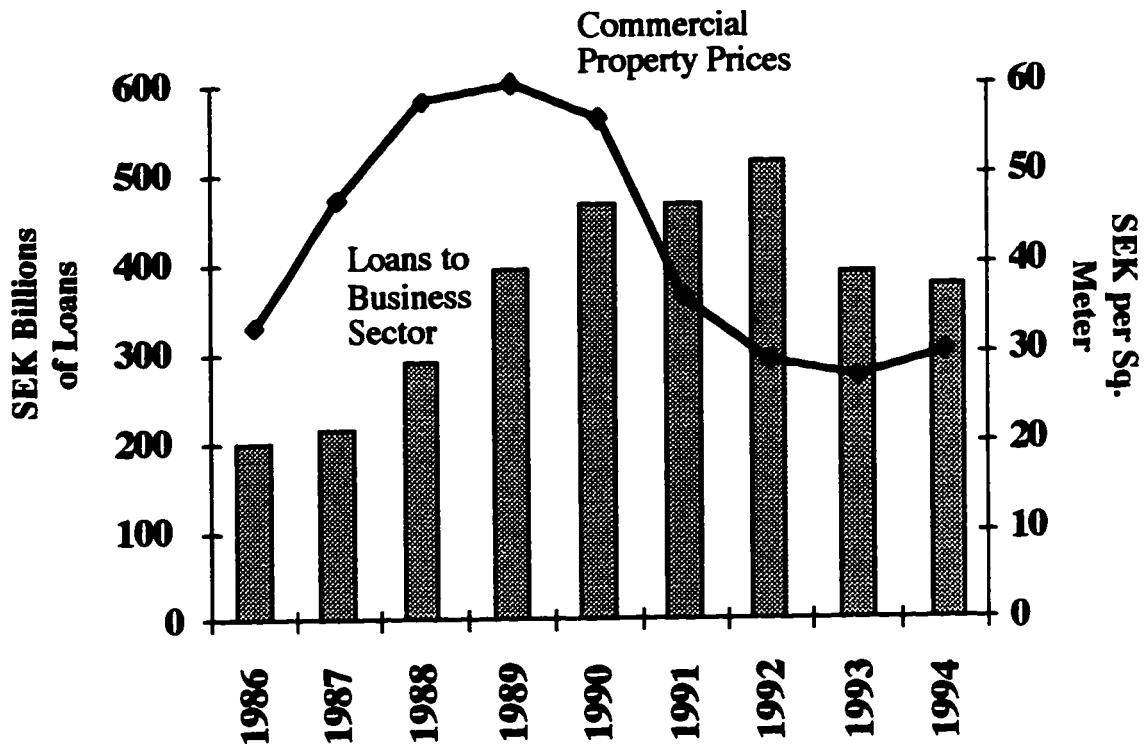


Source: Catella, 1995.

Figure 46 Commercial property yields (capitalization rates) for prime locations in five European cities: 1984 - 1994

A final note about this figure is the striking similarity to the trends in US capitalization rates across metropolitan markets identified in Figure 41, with the convergence in yields during the early 1990s that continues to the present.

As property prices began to fall in 1989, instigated by the outflow of capital when foreign investment restrictions were lifted and an abandonment of the market by many of the "professional investors," bank lending continued through the early 1990s (see Figure 47). It was not until 1990 that the first signs of a crisis began to emerge, when a few prominent finance companies defaulted on payments to their creditors.



Source: Sveriges Riksbank; Swedish Federation of Property Owners, 1996.

Figure 47 Sweden bank lending to business sector and Stockholm commercial property prices: 1986 - 1994

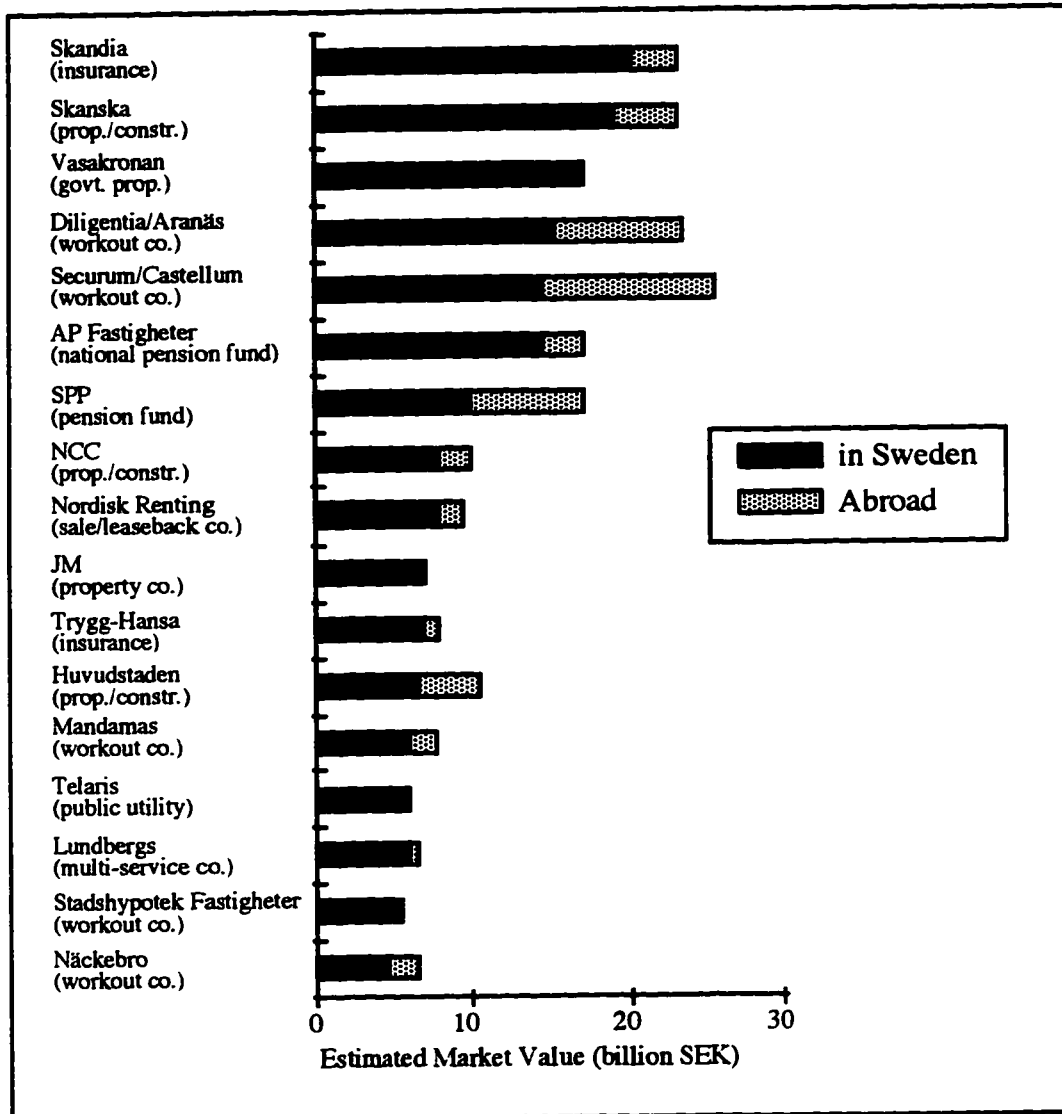
Finance companies, which were private companies providing credit in areas where banks and savings institutions were not suited (such as equipment leasing and credit cards), had entered aggressively into the property market, particularly in their financing of the numerous publicly traded property companies on the Stockholm stock exchange. The finance companies obtained their source of capital from issuing short-term commercial paper, so when their property loans began to falter, they were caught in the classic pinch of being short-term borrowers and long-term lenders of funds. Moreover, many of the loans made by these finance companies were secured not primarily by real estate but by the shares in the properties companies themselves, whose share prices plummeted even more than property prices (Bank Support Authority, 1993). In 1990, the first finance company, Nyckeln, suspended payments to creditors, many of which were the country's largest banks. Although the government did not directly bail-out these finance companies, strict regulations were passed on their methods of obtaining funds, and their problems were only a harbinger of a much deeper crisis to come.

By 1992, five of the nation's banks, including its largest — S-E Banken — had filed for government support, as the combination of the high exposure to construction and property loans coupled with the indirect exposure as a result of credit to the faltering finance companies prevented the banks from meeting their state-imposed capital requirements (Bank Support Authority, 1993; Lundström, 1994).⁵¹ While a special Bank Support Authority was established (and continues) to administer the financial and organizational support to the problem banks, they did not play the role of liquidating problem assets, as did the RTC in the US. Instead, separate companies were created, as entities owned by the shareholders of the problem banks, solely devoted to the management and disposition (where necessary) of the real estate now owned as a result of the massive foreclosures and bankrupt property companies in receivership.

By the middle of 1994, the banking crisis had passed its most critical stage. Over 90 SEK billion (approximately \$14 billion) of government funds had been committed in the bailout of the problem banks (Swedish Ministry of Finance, 1994), representing approximately 6% of one year of Sweden's GNP. This compares to a figure of approximately 4% of US GNP for the costs of the \$231 billion S&L bailout (Warf and Cox, 1994).

Even though the immediate crisis on the banking system, and entire Swedish economy, has passed, the Swedish property and capital markets continue through a phase of restructuring. As Figure 48 demonstrates, close to 100 SEK billion of an estimated 600 to 800 SEK billion commercial property market is owned by these new "workout" companies (Swedish Federation of Property Owners, 1996; interview with Hans Engblom of S-E Diligentia).

⁵¹ S-E Banken subsequently withdrew its application for support; 98% of total government support went to two banks: Gota Bank and Nordbanken .



Source: The Swedish Federation of Property Owners, 1996; Diligentia.⁵²

Note: "Workout co." refers to the six special entities established to manage the problem bank real estate assets.

Figure 48 Sweden's largest property owners

These problem properties are certainly not limited to Swedish real estate. Diligentia, the workout company managing the problem real estate assets of S-E Banken, had approximately 50% of its assets in foreign real estate, largely a result of acquiring the nearly 10 SEK billion in assets of Aranäs, at one time the third largest property company

⁵² Interview with Hans Engblom of Diligentia/Aranäs.

on the Stockholm exchange.⁵³ As will be discussed in greater detail below, the real estate problems of the Swedish banks as well as the other major players in the property markets was not only a result of the collapsed Swedish property market, but the double-whammy of investing in foreign markets at the very point when these markets had reached their own peak. Again, this foreign exposure had come about purely due to the sudden relaxation of foreign investment regulations in 1987 and 1989.

Similar to the US experience after its real estate crash, Sweden's property crisis has promulgated a modest level of securitization activity. Although securitized forms of real estate financing had already existed in Sweden, where there has been a high concentration of publicly-traded property companies and bonds issued which were backed by residential mortgages, true commercial mortgage-backed securities have only recently emerged and a REIT-type structure (known as an FIAB⁵⁴) has been proposed, but currently there are no laws which recognize such an ownership entity. There have been three multi-family mortgage-backed securities issued (at the time in which the field research was undertaken in March of 1996), at a total of 2.25 SEK billion (Månsson and Andersson, 1995). The same reasons that have driven the US trend towards securitization have fueled Sweden's activity, although the investment environment is not as favorable since 55 SEK billion of property companies are already sold on the Stockholm exchange, allowing indirect investment in real estate. Further, the political environment is currently unsuitable to allow a tax-favored securitized status of FIABs. However, the mortgage-backed securities which have emerged stem from a need to rid problem properties and package the loans to spread risks in order to better match the needs of investors.

The dramatic events over the past decade and a half in Sweden's property and financial markets provide a context for observing two distinctly spatial processes, in some ways unique to Sweden's commercial real estate finance industry. The first process is the unleashing of institutions and investors to the international property markets following the deregulation in 1987 and 1989. What is interesting is not only the mere suddenness in which these restrictions were relaxed but that there was such a large yield difference between what property investors were achieving in Sweden versus what they now could

⁵³ Discussion with Hans Engblom of S-E Diligentia.

⁵⁴ FIAB stands for "Fastighetsinvestningsaktiebolag."

achieve (or perceive to achieve) abroad. The flood of capital which ensued provide an almost unique opportunity to observe a sudden diffusion process and test some of the notions put forth in Chapter Two of this dissertation.

The second spatial process which the events in Sweden allow one to observe is how the investment industry, in this case real estate, in a specific locale reacts to a severe crisis, particularly when that crisis was fueled by local capital. In the US experience, for instance, many regions went through similar plunges in their real estate markets; however, there were few places where these swings were completely driven by local players and investors, particularly in an urban setting the size of Stockholm.

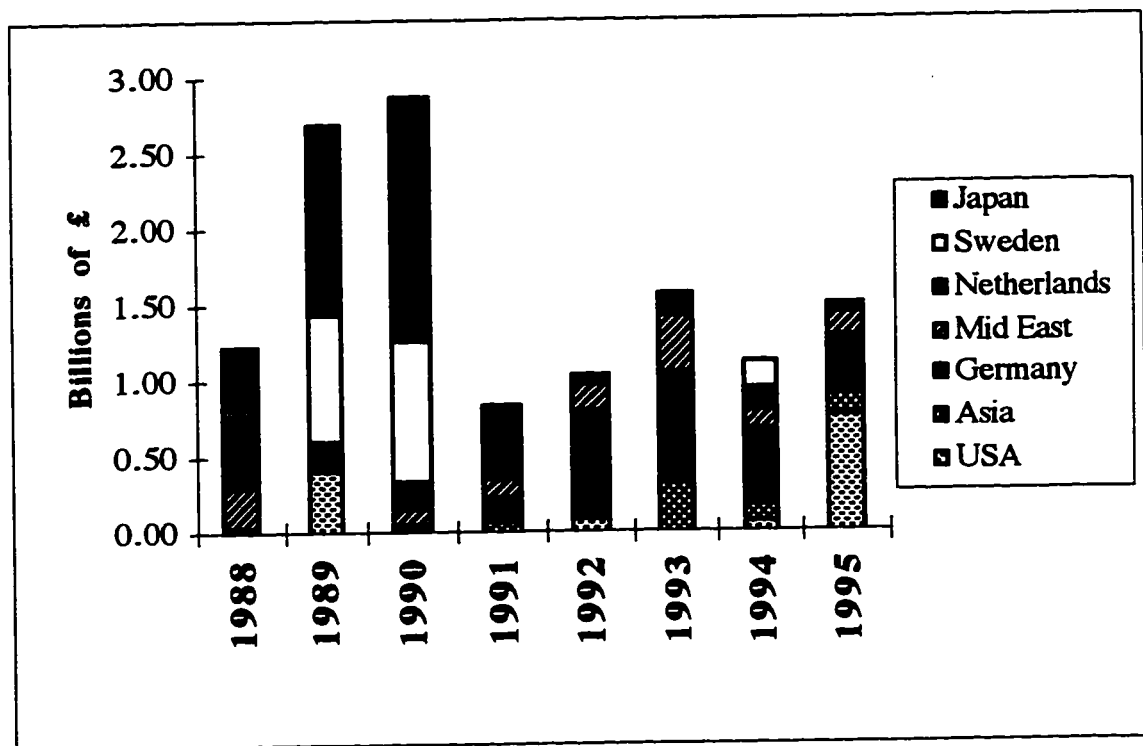
The next sections provide a brief perspective on these two spatial processes, based largely upon personal semi-structured interviews I conducted in March of 1996 with representatives of the most prominent institutional investors in Sweden (an insurance company and a pension fund), private investors, workout companies of the problem bank assets, real estate consultancy firms, government representatives, academics, and other key industry figures.

WHERE AND WHY DID SWEDISH INSTITUTIONS INVEST INTERNATIONALLY?

In 1987, when the first foreign exchange restrictions on property investment were lifted, Swedish real estate investors suddenly had the entire global real estate market as their opportunity portfolio. Although figures on Swedish foreign investment vary, The Bank of Sweden reports that 32.5% of the estimated 30 SEK billion in Swedish direct investment in property between 1987 and 1991 went to the UK, followed by 30.9% in the Netherlands, 6.2% in Norway, 6.0% in Germany, 5.4% in the US, and 19% in other countries, especially Belgium, Spain, and Portugal (from Fyrö and Lindberg, 1991). Other estimates by the Swedish International Property Association (SIPA), peg the total figure of Swedish property investment abroad during the same period at close to 100 SEK billion, which includes money raised by Swedish investors abroad (Fyrö and Lindberg, 1991). SIPA figures also document the highest level of investment in Germany followed by the UK.

The high levels recorded in the Netherlands in the Bank of Sweden figures reflect the large (though unspecified) amount of investment into companies established there which then invest in other countries across Europe. This is attributable to favorable corporate tax laws associated with Dutch ownership. Much of this Netherlands figure likely went to UK property (Fyrö and Lindberg, 1991).

The new Swedish money had a substantial impact on the few markets where it was directed, especially London. As Figure 49 shows, in 1989 and 1990 Swedish investment into London commercial property was second only to the Japanese.



Source: DTZ-Debenham Thorpe, 1996.

Figure 49 Foreign investment into London commercial real estate, 1988 - 1995

According to a survey of Swedish property ownership in the UK, there were 10 property investments made in 1987, increasing to 32 in 1988, peaking at 67 in 1989, then declining rapidly to 40 in 1990 and 5 for the first half of 1991 (Fyrö and Lindberg, 1991). This flood of capital was sudden, brief, and largely directed towards new construction. Although private investors, corporations, and development companies

dispersed some of their real estate investments in areas around London and even some in northern England, 100% of Swedish institutional investment (accounting for 30% of total market value in 1991 by Swedish investors) was directed to central London (Fyrö and Lindberg, 1991). Unfortunately, the London market was just peaking: between November 1989 and November 1992, the value of office properties fell an average of 50% (Hillier Parker, Various years).

What led Swedish investors to direct so much of their newfound international investment capital into London, especially since yields there were lower than other parts of Europe? First, the London market offered attractive characteristics that had lured investors from all over the globe. The market was highly liquid, the costs of transactions were relatively low, and most importantly, the typical lease for commercial tenants was 25 years in length, compared to the three to five year structure in Sweden. Thus, fully leased UK properties were in many ways like a long-term bond, highly protective of the landlord in the case of a market downturn (as well as the tenant, when rents were increasing substantially). For Swedish investors, there were other benefits. Favorable tax laws established between the two countries encouraged investment. Further, many Swedish companies already had well-established contacts and operations in London, more so than in other cities.

Finally, Sweden shared a common cultural trait with the London marketplace that could not be found in other European countries: the English language. Sweden has long recognized the geographical confinement of its native language, and all but the eldest citizens speak English fluently and use it in their daily business activities. At the time when Swedish investors were suddenly allowed to invest outside their home country in 1987, they were very unfamiliar with the activities of investing abroad. London offered a familiarity that other markets did not, and this had perhaps the greatest impact on Swedish investor's behavior, particularly the more conservative financial institutions.

A representative of a major Swedish life insurance company expressed this influence of market familiarity in their foreign investment activities. The company had recently taken over the assets of another organization, which included a number of properties in the Madrid market. When asked if the company had plans to continue participating in that

marketplace, the response was “it is not within our culture to do business there.”

The other complicating factor about Swedish institution’s forays into international real estate investing was the management of distant assets, given Swedish insurance companies’ and pension funds’ tradition of maintaining a full 100% equity ownership in all of their properties. On the one hand, this provided complete control on the part of the institutions in managing their assets; on the other hand, direct property ownership is a very labor intensive investment, in all stages of its acquisition, management, and disposition activities. This becomes particularly problematic when these assets are in distant markets. Swedish institutions have rarely outsourced these functions, unlike other investment assets, unless absolutely necessary. An example of the bizarre internal resource imbalances this highly vertically integrated behavior can lead to is best exemplified by the example of one major Swedish institution. This organization holds approximately 3.5% of an extremely large portfolio in real estate assets⁵⁵; of their 160 employees devoted to the management of their entire portfolio (stocks, bonds, real estate, etc.), 100 are solely devoted to the real estate management, leaving 37% of employees to operate 96.5% of the portfolio.

This desire for control by Swedish institutions also combined with the layers of bureaucracy endemic to these types of organizations, which contributed to spatially channeled investments, partly explaining the high concentration in central London. The investment manager of one pension fund, with a sizable portion of its real estate portfolio in London, expressed some frustration with a committee-based micro-management of property assets. In one case, the real estate investment department of this organization had initiated acquisition activities of an office building in London. In a presentation to the institution’s Board of Directors about the fund’s current real estate activities, a slide of the building was shown. A number of members of the board did not appreciate the outward appearance of the building (a post-modern black glass design) and the project was abandoned. Similarly, properties acquired in Brussels through the acquisition of a defunct property company were frowned upon by the same board because of its uninspiring quality, in spite of generating stable income. This institution has since scaled

⁵⁵ Revealing the size of this portfolio would reveal the identity of this investor. Many of the interviews I conducted were under the agreement that they would be completely confidential.

back on its activities in the Brussels property market.

OUT OF THE ASHES OF A CRISIS

The declines in the European property markets, especially London, began about 1990. By 1993, these declines combined with problems in Swedish institutions' home real estate, hitting them particularly hard. While the outward results were not as severe as the impacts on the banks and credit institutions, write-downs of assets were as high as 50% for some insurance companies, leading to layoffs and company restructuring. Like the experiences of the US life insurance industry, the Swedish Financial Supervisory Authority instituted risk-based capital requirements which established high reserve requirements for real estate assets and a cap on the proportion of assets which could be held outside of Sweden. Thus, the regulatory environment has again modified the behavior of Swedish investors, from a period of strict control prior to 1987 to loose control and back to some medium in-between.

Today, the Swedish insurance and pension fund institutions are scrambling for a means to manage risk in a way that will avoid their painful past experiences. Modern portfolio theory, while always considered to some extent, is now being rigorously examined, and like their US counterparts, there is a search on for the optimum geographical classification scheme which will allow attractive returns in a minimal environment of risk. The problem, as one institutional manager noted, is that markets are becoming more synchronized. Based on a detailed study commissioned by this institution evaluating the behavior of 70 major real estate markets across Europe, the investment manager noted there were practically no combinations of investment in these cities that would have prevented significant losses during the last real estate crisis. However, where there seems to be the possibility of diversifying against systemic risk is in the smaller cities, according to this individual.

Another major institutional investor has come to a similar conclusion and initiated a regional economic model to explore investment opportunities in markets (mainly within Sweden) which have never been in the domain of such organizations. The parameters of this model are mainly demand-oriented variables, but the creation of such a model was

driven by the severe exposure this institution had to the markets with the greatest price declines. Their modeling efforts, which they keep proprietary, is an attempt to find not just the markets with the greatest liquidity, but where there represents the greatest potential for growth in the underlying factors that drive property income growth. These efforts are certainly not novel in the sense that almost everyone in real estate seeks to find overlooked opportunities, yet the formal adoption of data-driven models to explore once ignored markets is new, and driven by both the availability of this data, the continued incorporation of quantitative modeling efforts in real estate decisionmaking, and the outcomes of a real estate crisis, necessitating a high priority upon managing risk and uncertainty. Yet, again, even these rigorously applied methods of risk management must pass through the stickiness of organizational bureaucracy. As another institutional investment manager commented, “we would like to diversify into lower level cities, but it is hard to convince upper management.”

Swedish institutions’ painful foreign real estate experiences has also led them to curtail their long-held tradition of direct property ownership. Instead, they are on the one hand hiring more local specialists to assist them in these endeavors, but most recently, becoming active in the purchase of securitized instruments in pursuing their foreign investment desires. All of the institutions to which I spoke expressed a desire to invest indirectly, through REIT-like structures. One institution wished to enter the US real estate market, and their strategy was to hire a US adviser to create a list of REITs in which they would purchase, diversified by region. In other words, this institution would not invest in the US without the existence of a securitized instrument. This example, magnified many times, is a prime example of how the integration of capital markets (via securitization) leads to an increased flow of capital across places in the aggregate.

One related issue that has emerged within these Swedish financial institutions is that their efforts to invest in more securitized real estate instruments are often replicated by separate intra-organization divisions responsible for equities investments. Often, there is little communication between these divisions in formulating their strategies. Real estate securities, such as property companies, are usually one part of a diversified equity portfolio. This situation was expressed as an important area of concern to the interviewed institutions, but there was difficulty in implementing a solution to this “double-counting”,

in part because of organizational barriers.

One other outcome of the shock to the Swedish property investment industry is a recognition of the need for better market information. The high degree of vertical integration on the part of institutions, combined with a lack of foreign interest in the Stockholm and other Swedish markets (in part due to lack of information!) had discouraged the creation or growth of any independent consultancy and real estate services, as is commonplace in other “developed” property markets such as the United States or London (Keogh and D’Arcy, 1994). The crisis changed all of this. First, there was need for information and expertise to value the declining asset values of the bank and institutional portfolios. Valuations, or appraisals, are highly dependent upon market information. Second, as has been mentioned, investors came to recognize the value of information and formal analysis in their ongoing portfolio management activities.

Two firms have emerged in the Stockholm market capitalizing upon this new demand for information. Catella, which now has offices across Europe, has grown by 200% between 1991 and 1996. The other firm, Newsec, has combined its expertise as a sales and brokerage company to create an information database on the entire Stockholm market, where the leases on 25,000 companies are kept. The increase in vacancy rates in the Stockholm marketplace means that owners are constantly searching for new tenants. The information held by Newsec can both find companies with expiring leases as well as properties where there will be a vacancy. In the past, a property owner would have to rely upon advertising and a degree of chance to find tenants, or, especially in the 1980s, the occupancy rate was so low that there was never a problem finding tenants. Since 1991, property owners have sought to differentiate themselves in order to attract tenants. This differentiation has in large part spawned these new real estate services companies.

A STOCKHOLM EPILOGUE

The story of Stockholm and the Swedish real estate crisis is one which touches upon practically all of the components which modify the flow of capital over space — components comprising the theory of spatial investor behavior described in Chapter Two. What began as a relatively closed system in the early 1980s due to high spatial barriers of

currency controls, foreign investment and banking regulations, and a locational setting removed from the global financial scene, opened up in a series of stages. The first stage — the deregulation of the Kronor — created in effect a one-way barrier: money could flow into the system, but could not flow out. The results were, in hindsight, very predictable: capital flowed into local assets, prices skyrocketed, and rates of return on capital fell. The pressure that built up as a result of the differential rates of return on real estate assets compared to other markets was suddenly released when the first shock hit the system: the removal of the one-way spatial barrier. However, instead of capital flowing freely to the places where it was most needed — as a purist neo-classical interpretation would predict — it went to the place where it was least needed. This happened because of the powerful modifying influences of organizational characteristics, industry and cultural norms, path dependence, and a search for liquidity and the minimization of uncertainty. The series of additional shocks to the system in the form of plummeting property prices and a severe national financial crisis — this time brought about by the endogenous processes of capital flows within and outside the region — has led ultimately to changes in these components of behavior, which in turn modifies the spatial outcomes. These outcomes include not only the flow of real estate investment capital over space — including dispersal to smaller places and indirect forms of ownership — but the effects on an industry and a regional economy located in space.

The lesson of Stockholm is that the industry that we call real estate — which includes both the *land* and *capital* portion of the land, labor, capital triumvirate of the theory of production — is more than just a passive player in an economy, merely greasing the wheels of capitalist systems. Instead, it is intricately intertwined within modern finance economies, behaving in ways that are in some means predictable, but certainly not in an equilibrating manner in which we have been led to believe.

CHAPTER 6: CONCLUSION — NEW FRONTIERS?

This dissertation was initially motivated by a recognition that the volatile experiences of numerous regional and national economies over the past decade has been intertwined with the seemingly bizarre behavior of commercial property markets. From national economies of Japan, France, Switzerland, and Hong Kong to regional economies of New England, California, and Texas (Case, 1992; Brauchli, 1994; Renard, 1996; Steinmetz, 1997), something appeared to have gone seriously wrong over the course of the 1980s to lead to such dramatic impacts on banking systems, corporate balance sheets, and a myriad of downsized activities once surrounding the commercial real estate industry. Upon further examination, however, it becomes clear that this was not only a story of real estate and its unexplored linkages to the broader economy, but of an industry that has undergone dramatic structural changes — changes which lie at the heart of a shift to a globalized system of finance in advanced economies.

While much has been written about the aggregate flow of capital that led to overbuilding of markets, less is known about the specific effects of capital flows on values of existing property assets. Further, because real estate represents perhaps the most place-based of all assets and therefore real estate markets are highly dependent upon the flow of capital to specific locales, I have argued that there is a critical need to understand the spatial components of commercial property capital markets. To achieve this understanding, I posed two basic questions: 1) what determines the flow of capital over space (i.e., the spatial behavior of the players making investment decisions) and how has this process changed? and 2) what are the implications of these spatially-differentiated capital flow patterns on property markets and, to a lesser extent, on regional economies?

To answer these questions, this dissertation, first, refuted any notion that there is a generic capital market system “out there” efficiently delivering capital to the assets and places where it is needed. Instead, as Chapter One described, it is comprised of multitudes of players, each with complex motivations and constraints. Further, there has been a dramatic amount of turbulence in both changes in the conditions surrounding these

players (such as the adoption of more analytically-informed decisionmaking methods and the reactions to severe property losses experienced in the early part of this decade) as well as in the proportional mix of players, particularly with the emergence of securitized forms of investment.

With this knowledge of a complex array of players, situated in an environment of both long-term structural changes (e.g., a shift to a globalized finance economy) as well as dramatic dynamism (e.g., the boom and bust of property markets in the 1980s and early 1990s), I developed components of a theory of investor behavior over space, based on the assumption that the collective decisions of individuals and organizations who control the pursestrings of capital are the ultimate determinants of how that capital is allocated into commercial property markets which are spatially situated. This theoretical framework was constructed based on, first, on an inductively-based, *a priori* understanding of the industry to identify the seven elements which comprise a framework for analysis, which, second, then led to deductive reasoning to determine the cross-sectional (point in time) spatial expectations of investors. By adding an eighth element — an element of both long-term and sudden change — this framework could be put into motion, to construct explanations of past changes in capital markets over space.

On the surface, the expected outcomes from this theoretical framework seem uncertain: a “concentration-dispersion” or “efficiency-inefficiency” dichotomy, while possibly easier to test empirically, is overly simplistic. Unfortunately, however, reality is messier. And by not recognizing this messiness, simplistic visions are poor at both explaining past and existing patterns, to say the least about predicting future patterns. These alternative visions are, on the one hand, narrow neo-classical prognostications about the efficient flow of capital over space, constrained only by transaction and information costs (such as represented by Borts and Stein, 1964; DiPasquale and Wheaton, 1992b; Romans, 1965). Likewise, they are also embodied in the empirically problematic structuralist theories of capitalist switching (“dubious theories,” as Ball, 1994, asserts)— where capital rhythmically shifts in a dramatic fashion between the primary, secondary, and tertiary circuits as each progress through their various “crises of accumulation”. This latter vision has somehow managed to represent the only substantive theoretical treatment of property investment by geographers since it was introduced by Harvey (1978) nearly 20 years ago.

This is not to say that many of the underlying fundamentals behind structuralist theory are not applicable to an understanding of capital market flows in property over both time and space. Certainly, one can apply this perspective (to an extent) to an understanding of the oversupply of capital within the Swedish economy that led to deposit-gorged banking institutions. One could also link such a perspective to the behavior of corporations in their real estate investment activities, diverting profits into property assets, as Feagin (1987) has done. Yet, the weak empirical evidence supporting switching theory (e.g., Feagin, 1987; Feagin and Beauregard, 1989; Beauregard, 1991; Beauregard, 1994), in addition to its lack of considering the many other industry-specific factors which this dissertation has gone to lengths to address, should at the very least hearken a call for the massive restructuring of switching theories. I explicitly chose not to pick one of the existing capital “theories” in the literature, test its applicability, then proceed on to say that it does not work very well, arguing for the development of a new theory, or the continued tinkering of the existing one. Instead, I chose to develop a new multifaceted framework to go to the heart of what appears to be the true engines that drive the allocation of capital. It is only through such exercises, particularly for research issues which are either new or unexplored, that we can begin the process of developing more meaningful theories of social behavior.

The theoretical framework developed in Chapter Two, then, resulted in a range of possible expectations about spatial outcomes, *dependent upon an understanding of both the characteristics of decisionmaking players and their relative mix*. If we had perfect knowledge and could measure each of the components embodied in this theoretical framework (e.g., a test of risk-willingness versus risk-averseness for all decisionmakers coupled with the landscape of investment possibilities, measures of information availability about secondary and tertiary markets coupled with a quantified measure of the abilities of players to process this information, etc.), I argue that we could construct a realistic model of capital flows over space and time. This dissertation did not undertake such a formal exercise, but instead provided evidence — some quantified and some more anecdotal and qualitative — which demonstrated how the components of the theoretical framework of investor behavior shape the allocation of capital over space, leading to unintended consequences.

The first body of evidence identified historical and current patterns of investment for three important segments of the commercial real estate capital markets: institutional investors, real estate investment trusts (REITs), and foreign investors. These findings, first, support the theory of spatial behavior by demonstrating that different players do indeed exhibit different spatial patterns of investment. In other words, there is a geography to the many players involved in the capital markets, described in Chapter One. Second, these findings show a dispersal of capital down the urban hierarchy resulting from both changes in the behavior of the players as well as a shift in the mix of players where REITs, which have come onto the capital markets scene from an initial spatially dispersed pattern, have become increasingly important over the course of the past five years. This evidence stands in stark contrast to visionaries (Sassen, 1991; Martin and Minns, 1995) who hold that an unfettered shift to a finance economy necessarily leads to a spatially polarized economy, where the centers of capitalist power squeeze capital from a credit-starved periphery. The exact reasons for this dispersal require further work, specifically survey and transaction-based research. However, based on a non-rigorous analysis of the industry, including a limited number of interviews, the motivations for this dispersal (for institutions and foreign investors) have been driven initially as a reaction to the oversupply of capital in the large places (*differential rates of return*), but are sustained by the application of modern portfolio theory (*risk*), and a greater familiarity and availability of information about smaller and distant markets (*uncertainty*). As for REITs, their management structure (*organizational characteristics*), and cost of capital, has made them a more efficient instrument for allocating capital to the places where it is most needed. While there are certainly other nuances to this story, these appear to be the driving elements. But again, these findings are only pieces of a complex system currently in an enormous period of change. In other words, further research is warranted, a topic I will return to later in this chapter.

As for the second question posed in this dissertation — what are the impacts of spatially-differentiated capital flows on property markets, particularly on changes in property values — the evidence in Chapter Four and Five speaks directly to this issue. In sum, not only do differentiated flows of capital result in places where property values are divorced from their underlying market fundamentals during periods of market expansion, but these are the same places which had the strongest declines in value, again separate from

fluctuations in the components driving the income of properties in these places. Further, these places were at the time viewed (and are, to an extent, still viewed), as the least risky places to invest. In fact, they were the most risky — a result not due to overconstruction or falling rents, but due to oversupply of capital. This finding is perhaps the most significant single piece of evidence of interest to the real estate academic and industry literatures, where the spatial aspects of capital markets have largely been ignored. In other words, for some markets — especially the largest, “institutional-grade” places — it would be in the best interests of players in the industry to compile information on the place-specific flows of capital rather than to allocate resources towards modeling changes influencing property income, such as rent and vacancy projections. More specifically, a diversification strategy based on a capital markets geography, as opposed to one based on poorly formulated regions or even more informed economic-base diversification methods, would likely achieve higher returns and less risk than in cases where that does not consider such factors. Again, there is a need for further research to test empirically (through the construction of efficient frontiers) various combinations of such a strategy.

The combination of the dispersal trends identified in Chapter Three with the actual behavior of property markets in Chapter Four, where differences across regions in their relative return on real estate assets have converged, leads to one final conceptual analysis stemming from these empirical tendencies. A central question emerging from this dissertation is whether the trends towards spatial “efficiency” or dispersal, combined with regional convergence, is a temporary phenomenon, as a result of the shock which hit the system, or is a lasting phenomenon. Will, for instance, capitalization rates remain within a tight band across places, or will they again diverge as new capital flows into markets in a spatially-differentiated manner? The likely scenario is that there will again be some divergence, but that it will not be nearly as pronounced as the last decade. Further, the shift to securitized instruments may indeed retract somewhat, as the “traditional” forms of finance again enter the marketplace and a possible overheating of the REIT (and even CMBS) markets cause another pullback from these instruments on Wall Street. However, this retraction will likely not be to the extent of previous ones — such as the bust in REITs during the 1970s or the diminishing of public RELPs during the 1980s. Instead, there seems to be a sense that these instruments are here to stay and will probably become even more dominant in years to come.

What are the long-term implications for real estate markets based on both a possibly permanent shift towards securitized instruments as well as the changes in behavior observed by the other players in the markets, where institutional investors, for instance, place capital more efficiently into markets based on improved analytical tools and a recognition of past mistakes?

The first implication is that existing property assets will be valued more “efficiently” (although always in at least some state of disequilibrium). In other words, we should not see the high “herding” and “fleeing” residuals identified in Chapter Four. Instead, we would expect prices to increase more closely with increases in property income, and vice versa. Differences in yield across markets would be based not on an irrational herding of investment, but on actual, predictable fluctuations in the underlying property fundamentals. In other words, a 7% capitalization rate in one market compared to a 9% capitalization rate in another would, with the test of time, serve to be a true reflection of stronger rents, occupancy rates, absorption, and other contributors to property income.

The second implication of a “new” more efficient capital market system is that new stock will expand more efficiently. Although the flow of capital into new construction was not the focus of this dissertation, if the same trends in the market for existing assets hold true for the development of new space (and so far, there has been limited experience of these “new” capital market players to participate in a round of this development), we would expect the over and undershooting of construction to diminish in the future. Again, though, the evidence in this dissertation does not speak directly to this issue.

A third implication is that both existing and new stock will be more “valuable”, in the sense of creating more value for users, due to a lower cost of capital and the more efficient management of property assets. If, for instance, REITs have a cost of capital 200 basis points lower than institutional and traditional forms of finance, we could expect through the process of competition this spread would not only accrue to the shareholders of these REITs, but that some portion would funnel into the properties to create, perhaps, better designed space, technologically efficient, amenity-enhanced, and other characteristics at the margin which go beyond the status quo.

Finally, a fourth implication of a new finance system is a willingness to enter markets where the old system's players were unwilling to tread. This is merely an extension of the empirical trends towards dispersal identified in Chapter Three. What this would imply is an availability of capital in more distant places — or even in the places where capital is concentrated but for projects which would have previously been overlooked or required a high cost of capital in exchange for a risk or uncertainty premium. In other words, capital would be willing to enter new frontiers, where it was previously unavailable or provided only by a constricted, high cost supply from local sources.

Such a vision of capital markets — an old versus a new system of finance — in effect assumes that the spigot of capital flowing into markets is self-regulating. In other words, when all of these needs are met — the funding of existing assets, the production of new space, the increase in user-value of existing and new space, and the funding of assets in areas previously ignored — it is assumed that the flow will stop. That the investors supplying funds — be they institutions, banks, mutual fund managers, or the retired accountant in Dubuque dabbling in REITs — will then say “enough”, and an equilibrium outcome is then reached. But this last outcome is unrealistic.

Today, nearly 50% of all families in the US hold shares of stock, up from less than 32% as recent as 1989 (Cuniff, 1997). As Table 1 in the introduction to this dissertation illustrated, this trend is echoed across all types of financial assets, growing far faster than what one would expect based on increases in economic output. In other words, there is a supply of investable capital, in the form of financial assets, that is searching for an outlet. If a portion of this supply is directed towards not only an obvious need to invest in real estate assets (and remember, this supply does not only include securitized instruments) but a strong desire to invest in these assets, in spite of what may appear to be an already sufficient supply of capital, then there is one likely outcome (and, this continues to hold the assumption that this new system will remain relatively “efficient” even in the face of being flooded with a supply of new capital). Funds will flow back into existing assets (and perhaps the new ones in the once-untrodden regions) and yields will fall. But instead of a situation where there is a high spatial differentiation to these yield changes, they will fall in tandem. In other words, investors will be willing to accept a lower rate of return due to the greater desire to hold real estate assets as a result of new players

providing capital. While there may be a period in which there is a retraction in prices, where yields again increase, this retraction will occur in a synchronistic fashion rather than the spatially differentiated manner seen under the old system.

The vision just presented is extreme, but one of which we could expect to find more and more examples, if indeed the trends identified in this dissertation sustain themselves in years to come. But, as a strong caveat to such a vision, there will never be a time in which capital flows freely over space in a perfectly undifferentiated manner. While I have emphasized the tendencies towards efficiency and dispersal as a result of a “new” capital markets system, the components influencing investor behavior (e.g., path dependence, risk, organizational characteristics, etc.) will never completely subside. Further, there is evidence that some of these factors are indeed becoming more important as markets move towards a new finance economy and integration. As one brief example, the Investment Property Databank (IPD) — similar to the NCREIF index in the US — tracks the property investments of close to 75% of the total portfolio value of British pension funds and insurance companies (Investment Property Databank, 1995). Since its inception in 1985, the IPD has become the standard by which fund managers are judged in comparison to the returns on their portfolios to the average portfolio. What this has led to is a decline in the standard deviation of portfolio returns and asset allocations: in other words, institutions are mimicking each other as a result of an incentive system in which decisionmakers are judged based on a resource epitomizing the “new” analytically informed financial system. Such factors lead to further “herding” and, consequently, more spatial inefficiency. In other words, I am not arguing in this dissertation that there is an “end to geography”, but rather spatial tendencies that seem to be leading towards more efficiency over space, though still constrained by modifying influences.

A final question this dissertation initially set out to answer, and in fact was the driving motivation for choosing this topic as a focus of interest in the first place, remains largely unanswered — that is, what is the impact of commercial real estate markets, particularly the flow of capital, on regional economies. While this has been addressed to an extent in the case of Stockholm, where local capital flooded into property markets and created a severe national financial crisis, there is far more research needed to explore and theorize these links. What should be somewhat embarrassing to economic geographers and

regional scientists (other than the school of structuralist theory followers) is the minimal amount of attention paid to both real estate markets and the financial system in their theoretical and empirical work on regional economic systems ("regional" defined broadly). How do existing regional economic theories (e.g., economic base theory, flexible specialization and the "new" industrial geography) and econometric models (e.g., input-output models) contribute to our understanding of why Japan is mired in an economic crisis, like Sweden a result of a property-collateralized bubble? How do they help us understand the S&L collapse and the New England and California recessions/depressions? How about the dramatic fluctuations in the Hong Kong economy, where 70% of the value of the Hang Seng stock index is comprised of property-related companies? The simple answer is that they are of little help. The focus on the "productive" sectors of the economy, including the few studies which evaluate the flow of investment from a production theory perspective (e.g., Clark, Gertler et al., 1986; Rigby, 1995), ignore factors significant in explaining the new finance economy.

While there is a well-defined stream of literature which has explored the incorporation of monetary and banking variables into these regional economic theories (e.g., Roberts and Fishkind, 1979; Moore, Karaska et al., 1985; Dow, 1992; Amos and Wingender, 1993) practically all of this literature is focused on the banking system, with hardly any mention of property.⁵⁶ As Table 1 made clear, the explosion in financial assets and their resulting activities is not largely a function of an increase in banking-related activity — it is the increase in a myriad of financial instruments and institutions, like the ones described in this dissertation, which are the new engines of change. As Bolton (1985) called for over a decade ago in his review of regional econometric models, it is time for incorporating these considerations into regional theory, then empirically testing these models for their veracity. While the lack of such research has to some extent been a result of lack of data with respect to capital flows, as this dissertation has demonstrated it is possible to collect such data. In fact, while not reported in this work, metropolitan-level data similar to that reported in Chapter Three are available (at a price) for at least three other segments of the commercial real estate capital markets: life insurance lending, mortgage-backed securities, and real estate limited partnerships. Also, bank and thrift lending data are available at the

⁵⁶ There are some exceptions including Ball (1996), Carbonaro and D'Arcy (1993), Turok (1992), Lizieri (1995a), and Case (1992), although these are not formal attempts at modeling or building of a theory to examine these links.

state-level of analysis, and possibly even at a more refined level of detail. Further, there are methods for deriving the remaining segments based on a “bottoms-up” approach, where specific property transactions can be analyzed with information concerning ownership and financing. The combination of computer technologies with the proliferation of market information in this industry (and others) now makes such research possible.

This dissertation has laid a foundation for developing knowledge about the interactions of financial variables in regional economic systems, as well as in related topics of research. There are three areas in which the conceptual and empirical knowledge stemming from this dissertation offer a starting point. They are as follows.

First, within the real estate-specific arena, there is a need to replicate and expand upon the analysis of the segments evaluated in Chapter Three as well as other unexamined segments of the capital markets. Priority segments to evaluate include banking institutions, life insurance lending, mortgage-backed securities, and, most especially, coming to terms with the vast amount of unknown private capital in the form of partnerships, real estate companies, individuals, and corporations. These latter forms represent the “black box” of real estate finance, and as we saw in the analysis of ownership patterns in Chapter One, they hold a vast amount of property, and these holdings can have just as much impact upon a market as the well-tracked sources of capital. Tracking such data, for all sources, requires a combination of “top-down” approaches, like the ones employed in this study, where investment patterns are measured for different types of investors, as well as “bottoms-up” approaches, or transaction and property-by-property ownership based records. Further, there is a need for more formal time-series modeling, if the data allow, to track the timing of different players in their investment practices compared to the behaviors of those markets. It is important to not only evaluate different types of investors based upon their function (e.g., pension fund versus bank), but their location as well. For instance, during periods of a property market boom, does local capital enter the market first, then outside sources follow? Do herding tendencies, portrayed in Chapter Five, occur mainly as a result of outside capital or is it a combination of both local and non-local activity? Can we find quantifiable examples of locally-fueled property markets at the regional level, as we did in Stockholm?

What are the differences between a property market that is fueled from local sources versus one mainly attributable to outside capital?

Also, as I have already alluded to, this research strongly suggests that formal portfolio diversification strategies could employ a capital markets approach, creating a more optimally diversified real estate portfolio. However, testing and employing such a strategy requires data on capital markets — data which are still difficult to come by. As these data become more widely tracked and available, the testing of these strategies can move forward more quickly.

There is also a need to test formally many of the components described in the theoretical framework of investor spatial behavior, through survey-based methods or more detailed analysis of transactions and industry-based publications and resources. While the research in this dissertation has provided insight into many of the processes that lead to spatial differentiation amongst different players as well to changes in these spatial behaviors, a more thorough, rigorously-based analysis will truly test the veracity of the theoretical framework developed here and likely eliminate, add, and embellish certain components and provide a better understanding of their linkages. This effort would lead us closer to developing a formal theory of the spatial behavior of investors.

Beyond the specific research needed in the real estate industry, a second area is within the broader body of scholarship surrounding the growth of a finance economy, particularly the new finance geography. Real estate is only one part of what has become an increasingly important role of financial assets and activities in modern economies, as Table 1 demonstrated in the first chapter of this dissertation. What, for instance, are the spatial implications of the very recent explosive growth in the mutual fund industry, which is not necessarily locationally tied to Wall Street and the major financial centers? Boston, for instance, has emerged as a center of the mutual fund industry (led by Fidelity Investments), and this has rippled through what had been a basket-case economy for nearly a decade (Kindleberger, 1997). Analyses similar to those employed here, where there is a recognition of the complexity of the processes and players and the tremendous amount of change occurring in these activities, can provide the seeds of developing an informed understanding of how these new financial activities play out over space.

Moreover, there is a link between the growth of these types of financial activities and the demand for commercial real estate (Lizieri, 1995c).

Finally, as I have alluded to, there is need to develop formal theoretical and empirically testable models of the links between not only property capital market but other financial activities to regional and national economic systems. The view of a financial system acting solely as a means to translate savings into investment (Benston and Smith, 1976) is becoming an increasingly anachronistic vision. Like the growth of the services economy, financial activities are no longer just a subservient necessity of capitalist systems, for the sole purpose of promoting economic production somewhere down the value chain. In effect, they have gained their own independence, providing their own fuel. This is not to say that the financial system has been transformed into a mechanism focused primarily upon the “commodification of money”, where financial activities are lawyer-like parasites sucking resources from the broader economy for its own purposes (Martin and Minns, 1995), but instead this system has developed a complex set of linkages and activities, that in their own right represent a component of a modern economy’s “output”. It is time to develop an understanding of these workings within the framework of mainstream economic geography and regional science. Studies of the new finance economy have in large part, thus far, been dominated by political economy perspectives, and while these perspectives are valuable, the role of property investment deserves the attention of regional economic theorists considering other approaches.

The last decade has been a tremendous period of change in modern economies. Many of these changes, particularly those surrounding the emergence of a finance economy, have been unexpected and unexplained by our current knowledge of regional and national economic systems. This dissertation has demonstrated, for one important and overlooked component of this new economy, that while these changes are complex and do not yield simple answers, we can come to understand the fundamental processes behind them to develop a richer knowledge of economic systems.

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VITA

DAVID P. LINDAHL

University of Washington

1997

EDUCATION

- University of Washington** Seattle, WA
Ph.D., Geography 1997
Dissertation title: New Frontiers of Capital: a Geography of Commercial Real Estate Finance
- M.A.*, Geography 1992-1994
Thesis title: Import Substitution of Producer Services in Peripheral Regions: the Case of Anchorage, Alaska
- MBA Environmental Management Program, Graduate School of Business 1993
- Dartmouth College**
A.B. in Geography 1982-1987
Honors thesis: Development and Farmland Loss in Norwich, Vermont: 1939-1986

PROFESSIONAL EXPERIENCE

- University of Washington** Seattle, WA
Predoctoral Lecturer, Dept. of Finance and Business Economics 1995
Developed and taught upper-level undergraduate course in corporate environmental management.
- Research Assistant, Dept. of Geography* 1993-1996
Supported under grants from the National Science Foundation and Economic Research Service for a project directed by William B. Beyers entitled, "Producer Services Development Processes."
- Teaching Assistant, Dept. of Geography* 1992-1993
Undergraduate courses in introductory geography and economic geography.
- Bonz & Company, Inc.** Boston, MA
Associate 1991 to 1993
Commercial real estate consulting and appraisal services to property owners, developers, financial institutions, government agencies, and non-profit institutions.
- Arthur Andersen & Co.** Washington, DC
Senior 1988 to 1990
Market research, feasibility studies, fiscal and economic impact analyses, and specialized consulting services in commercial real estate.
- Booz, Allen & Hamilton Inc.** Bethesda, MD
Consultant 1987 to 1988

Policy and management consulting to the EPA's Superfund Program.

Dartmouth College, Office of Grants and Contracts
Grant and Contract Specialist

Hanover, NH
1984 to 1987

U.S. Forest Service
Researcher

Warren, NH
1986

Field research studying the effects of acid precipitation on alpine environments, funded under the National Acid Precipitation Assessment Program (NAAP).

PUBLICATIONS AND PRESENTATIONS

Journal Articles With Peer Review

1997. 'Strategic Behavior and Development Sequences in Producer Service Businesses.' *Environment and Planning A*. 29: 887-912 (with William B. Beyers).
1996. 'Explaining the Demand for Producer Services: Is Cost-Driven Externalization the Major Factor?' *Papers in Regional Science*. 75, 3: 351-374 (with William B. Beyers).
1996. 'Croissance et Localisation des Services aux Entreprises aux États-Unis.' *L'Espace Géographique*. 25, 4, 315-322 (with William B. Beyers).
1996. 'Lone Eagles and High Fliers in Rural Producer Services.' *Rural Development Perspectives*. 11, 3: 2-10 (with William B. Beyers).

Other Publications

1997. *The Economic Impact of Technology-Based Industries in Washington State*. Seattle, WA: Technology Alliance (with William B. Beyers).

Forthcoming Publications

1998. *Information Merchants: Leaders in the New Economy*, London: Guilford Press, forthcoming book (with William B. Beyers).

Presentations at Professional Meetings and Invited Colloquia

- 1997 *New Frontiers of Capital: The Geography of Commercial Real Estate Capital Flows*, Annual Meetings of the American Real Estate Society, Sarasota, FL.
1997. *New Frontiers of Capital: the Geography of Institutional and Securitized Forms of Commercial Real Estate Finance*, Annual Meetings of the Association of American Geographers, Fort Worth, TX.
1996. *The End of Work? The End of Geography? The End of Industrial Districts? What's Left for Advanced Economies*, 43rd North American Regional Science Meetings, Washington, DC (with William B. Beyers).

1996. *The Impact of Commercial Real Estate Financial Securitization on Capital Rates and Flows: A Theoretical Analysis*, Annual Meetings of the Association of American Geographers, Charlotte, NC.
1995. *Changes in Commercial Real Estate Finance and the Transformation of Regional Economies*, Annual Meetings of the Association of American Geographers, Chicago, IL.
1995. *Development Sequences in Producer Service Businesses*, Annual Meetings of the Association of American Geographers, Chicago, IL (with William B. Beyers).
1995. *Lone Eagles and Other High Fliers in the Rural Producer Services*, Pacific Northwest Regional Economics Meetings, Missoula, MT (with William B. Beyers and Ezra Hamill).
1995. *What Explains the Growth of Producer Services in Rural America in the 1990s?* Western Regional Economics Association Conference, Rapid City, SD (with William B. Beyers).
1995. *Rural Hopes and Entrepreneurial Dreams: Producer Services in the American Economy*, invited colloquium, University of Washington, Seattle, WA (with William B. Beyers).
1994. *Market Differentiation and Competitiveness in the Producer Services: Can Local Firms Compete with Large Multi-Establishment Firms?* 41st North American Regional Science Meetings, Niagara Falls, Ontario.
1994. *Paper Pushers and Data Apes: the Growth and Location of Business Services in the American Economy*, invited colloquium, Dartmouth College, Hanover, NH (with William B. Beyers).
1994. *Import Substitution and Development of Endogenous Producer Services in a Peripheral Economy: Alaska Since Statehood*, Annual Meetings of the Association of American Geographers, San Francisco, CA.
1994. *Competitive Advantage and Information Technologies in the Producer Services*, Annual Meetings of the Association of American Geographers, San Francisco, CA (with William B. Beyers).
1994. *On the Dynamics of Producer Service Markets: Externalization, Internalization, and Innovation Processes*, Symposium on Externalization or Internalization of Business Services, Roskilde University, Denmark (with William B. Beyers).
1994. *Service Industries and Development: the Case of the United States*, C.E.A.T. Lausanne Seminar on Service Industries, Lausanne, Switzerland (with William B. Beyers).
1987. *Farmland Loss and Development in Rural Vermont*, Conference of the New England and St. Lawrence Valley Geographers.

AWARDS AND HONORS

- 1996. Edward E. Ullman Award to recognize outstanding doctoral degree program student, Department of Geography, University of Washington.
- 1994. Edward E. Ullman Award to recognize outstanding masters degree program student, Department of Geography, University of Washington.
- 1994. "Student of the Year Award", Environmental Management Program, Graduate School of Business, University of Washington.
- 1987. Best student paper at the New England and St. Lawrence Valley Geographers conference.
- 1987. George Perkins Marsh Award for outstanding scholarship, Department of Geography, Dartmouth College.
- 1987. Graduated high honors and cum Laude, Dartmouth College.

PROFESSIONAL ASSOCIATIONS AND AFFILIATIONS

- Association of American Geographers** - Intern, Spring 1986. Currently an active member.
- Regional Science Association** - Active member.
- House Wednesday Group** -- Advisor on land use issues to a Republican congressional caucus in Washington, DC, 1987-1990.