The Long Cycle
in Real Estate[†]

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Abstract. **The experience of the 1985–1993 boom/bust in real estate has left industry players nervous about when it might happen again. This study examines the possible causes and the periodicity of such major real estate cycles. A search of the literature for return evidence from this century suggests that there was only one other period of negative total returns for national real estate—the late 1920s and early 1930s. The evidence suggests that both periods of negative returns were caused by excessive levels of new construction, induced by an unusual rise in NOI, which in turn was the result of an inflation spike in the general level of prices. Evidence from even earlier periods suggests a periodicity for such real estate boom/busts of some fifty to sixty years. Perhaps the caution of today's Federal Reserve Board about containing inflation means that we will not likely see another boom/bust period for real estate during the remainder of our careers.**

Introduction

Nearly all studies found in current literature assume that the available data from NCREIF are a fair representation of real estate returns, and that they encompass a full real estate cycle. They certainly are the only *institutional quality data* available. Yet, by our view, they only encompass the top portion of a very long cycle and therefore offer only a very limited view of real estate performance.

This study will explore earlier studies of real estate returns, dating back as far as 1919. In so doing, we will discover the possible existence of a very long (fifty–sixty years) cycle in real estate, where the boom/bust of 1920–34 exhibited many similarities to the boom/bust of 1980–93 that we recently experienced. Both periods were initiated by an unusually high period of inflation and rapidly rising rents. Perhaps the next period of pervasively negative returns for equity real estate investments will not recur for some time, at least not until inflation once again rises out of control.

Some Background on Real Estate Cycles

Most studies involving real estate cycles define them in terms of vacancy fluctuations around a long-term "equilibrium" line, and analyze the forces that cause new construction, the absorption of space, etc. A comprehensive study by Born and Pyhrr (1994) summarized much of the property cycle literature to date and concluded that economic cycles do impact real estate returns. Further, traditional appraisal practice is "trend driven" and that resulting linear models in discounted cash flow projections tend to undervalue property in cycle troughs and to overvalue property near peaks. An entire cycle was contained in the ten-year study period.

Mueller (1995) defines the relationships between the physical attributes (occupancy, construction, etc.) and the financial market cycle. Mueller and Laposa (1995) analyze thirty-one metropolitan office markets that have data running from 1967 to 1993, concluding that there are four groups of cities with varying cycle length and amplitude, but with the most common cycle length running 7.25 to 8 years. Most cycle studies focus on cycles of this length, primarily because of data availability, and because the ability to accurately forecast such cycles can lead to optimum property purchase and sale timing. *Indeed, we view the study of these shorter-term cycles as highly useful in the management of real estate portfolios—in the timing of purchases and sales—but of very limited use in deciding how much to allocate to the real estate asset class.* We need to examine longer-term returns to decide on the relative worth of real estate in institutional portfolios.

A few studies encompass a broader view of cycles, with Pyhrr and Roulac (1996) arguing that some fifteen different kinds of cycles (inflation, construction, business, social change, technology, etc.) need to be considered in making truly intelligent market timing forecasts. In their collection of "macro real estate cycles," they include the Wenzlick 18.3-year cycle (Rabinowitz, 1980) and several longer-period cycles (thirty year, fifty–sixty year, and several 100-year) described by Downs (1993). These longer cycles, we believe, better explain the behavior of the real estate markets since 1980 than any of the shorter term views.

The eighteen-year cycle first started to appear in the work of Hoyt (1933) in which he detailed one hundred years of land values, rents and various kinds of real estate activity in Chicago. Wenzlick's name became attached to the cycle because he regularly referred to it in his *Real Estate Analyst* periodical in the 1950s and '60s. However, it failed to reappear in any convincing form for some time after the 1934 trough. Hoyt (1960) and Rabinowitz (1980) developed arguments as to why the old periodicity was no longer occurring.

In Hoyt's 1960 study "The Urban Real Estate Cycle," he concluded that "the weight of the evidence seems to be against the recurrence of any sharp depression that will pull down all real estate with it as it did in the past . . . . The real estate cycle may thus have been a phase of a youthful . . . society . . . subject to few controls by national or local governments, and which was the result of alternating moods of optimism and depression of masses of people." "It remains to be seen, of course, whether our mixed economy, with its national and local controls, will eliminate the real estate cycle altogether, or whether it will break out from the underground caves in which it may be hiding to assert itself again with its old time violence." Once the eighteen-year cycle became obscured by the post-war boom, even the fathers of long-cycle theories came to believe that government regulation could moderate the excesses of booms and busts that had previously occurred.

Not noted by most observers, however, was that every third cycle peak contained a major boom/bust cycle: the early 1800s; the 1870s; the 1920s; and the late 1980s! If this is so, perhaps the eighteen-year cycle still persists, but the one we would have expected in the 1950s was postponed and distorted by the prolonged period of underdevelopment in the 1930s and World War II. The resulting "catching up" period masked the normal cyclicality. Perhaps the wash-out of mortgage REITs and the S&Ls in the 1973–74 period indicated the cycle was back on track, and foreshadowed the speculative boom of the 1980s and the washout of the early 1990s.

In any case, perhaps what institutional investors experienced in the past decade was an anomaly, not likely to be experienced again for another generation. The boom/bust of

1980–93 was merely a repeat of the same boom/bust that occurred from 1920–34. The inflationary years of the teens and the 1970s led to dramatic rises in net operating income in the '20s and '80s that then led to disastrous levels of overbuilding.

Return Data from Earlier Studies

What evidence can we find that other decades were much more rewarding for real estate investors than we experienced recently? Investment property does not enjoy as comprehensive a database as stocks or bonds, but an extensive searching of the literature has turned up some useful studies to fill in the picture. Comprehensive studies by Sirmans and Sirmans (1987) and Norman, Sirmans and Benjamin (1995) provide a thorough perspective on the investment return data commonly available in the literature. However, much of this work is limited to the most recent quarter-century, and is fairly well studied. What was lacking is a longer term perspective. The few studies that attempted to extend the data farther back in history either relied upon single-family home or farm data, considered not directly relevant to institutional property investment, or were theoretical constructs from other data, e.g., Fogler (1984) and Ibbotson and Siegel (1984) and were not included here because the data were not based upon observed returns of investment property. However, further digging into some of the dustier portions of libraries did turn up some useful older studies of investment property returns.

Several of the studies chosen for this study were academically rigorous: Wendt (1953); Grebler (1955); Case (1960). However, they each dealt with returns in one metro market: San Francisco, New York and Los Angeles, respectively. Others were not as in-depth, but still reasonable and thoughtful, and more broadly based geographically: Kelleher (1976) and Miles; McCue (1984). These studies, plus data from PRISA (the Prudential Realty Institutional Separate Account), the First National Bank of Chicago real estate fund, and the early data compiled by the Frank Russell Company for commingled real estate equity funds, all provide pieces that combine to give an impression of returns from earlier periods.

The data in Exhibit 1 has been arranged around the major stages of the fifty-to-sixty-year long-term real estate cycle that we mentioned earlier and will describe in more detail later. Notes about the various studies' methodologies and our compilation or recalculation of returns are contained in numbered footnotes. The annual data behind these compound period returns in Exhibit 1 are found in the Appendix.

In the comparative data of Exhibit 1, the superior performing asset for each period has its return highlighted in bold type. (Where the returns are within a factor of 0.9–1.1 times each other, both are highlighted.) Not surprisingly (to seasoned real estate professionals), *common stocks and real estate have a similarly frequent distribution of superiority.* The boldface type is about equally distributed between the real estate returns and stock returns. Bonds are worse. Only during the boom/bust cycle of the late '20s or late '80s do bonds emerge as a superior asset class.

We should note that it is difficult to be academically rigorous in drawing any conclusions from the return data in Exhibit 1. Demanding statisticians will point out that we are comparing small sample property studies with broad market indices for stocks and bonds. Yet, when all the studies are plotted on one chart (Exhibit 2), one can see the pattern of a long period of consistently good returns between the 1930s and 1990s trough periods, with a brief period of exceptional returns prior to each trough. In the 1920s the

Exhibit 1
Compound Annual Total Returns
for Various Property Types, Geographies and Time Periods

	Period Covered	Annual Total Returns		
		Annual Return	Stocks	Bonds
Prior Boom/Bust Cycle 1920–1934				
Grebler[1]				
NY Apartments	1923–30	**13.4%**	11.7%	4.9
	1923–40	4.4	**6.1**	5.0
	1923–50	4.9	**8.6**	4.2
NY Lofts	1923–30	**10.9**	11.7	4.9
	1923–40	1.0	**6.1**	5.0
	1923–50	4.7	**8.6**	4.2
NY Apartments	1928–40	(0.4)	1.3	**4.5**
	1928–50	2.9	**6.4**	3.7
NY Lofts	1928–40	(2.2)	1.3	**4.5**
	1928–50	1.6	**6.4**	3.7
Wendt[2]				
SF CBD Office/retail	1919–27	10.6	**12.7**	5.0
	1928–34	(2.3)	(3.5)	**4.0**
Between the Cycle Peaks 1935–1980				
Wendt				
SF Central Business				
District (CBD) Office/retail	1935–45	4.9**%**	**11.5%**	4.5%
	1946–51	9.9	**12.9**	0.5
Case[3]				
LA Diversified	1935–39	2.6	**10.9**	4.8
	1940–44	**17.0**	7.7	3.0
	1945–49	**13.6**	10.7	3.5
	1950–53	**17.4**	**17.6**	0.2
Kelleher[4]				
Diversified Multi-				
tenant, nationwide	1961–73	**13.2**	7.4	2.6
Hodges[5]				
Apartments and offices,				
Washington, D.C.	1966–70	**9.0**	3.4	0.3
PRISA[6]				
Office and industrial,				
nationwide	1973–82	**12.9**	6.6	6.3
FNBC[7]				
Office and industrial,				
nationwide	1975–82	11.2	**14.9**	7.3
Miles and McCue[8]				
Apartments, nationwide	1974–81	**15.5**	**17.9**	3.2
Industrial, nationwide	1974–81	**16.2**	17.9	3.2
Office, nationwide	1974–81	**15.0**	17.9	3.2
Retail, nationwide	1974–81	**11.5**	17.9	3.2
Recent Boom/Bust Cycle 1980–1993				
NCREIF[9] Index	1984–93	3.9	**14.9**	**14.3**
Apartments	1988–93	5.1		
Office	1984–93	0.0	14.9	14.3
R&D	1984–93	3.9	14.9	14.3
Retail	1984–93	8.0	14.9	14.3
Warehouse	1984–93	5.9	14.9	14.3

Exhibit 1 (continued)

Recovery to the Next Cycle Peak (around 2040–45?)

NCREIF Index	1994–95	7.8	**18.0**	9.9
Apartments	1994–95	12.2	18.0	9.9
Office	1994–95	5.8	18.0	9.9
R&D Properties	1994–95	8.2	18.0	9.9
Retail	1994–95	5.5	18.0	9.9
Warehouse	1994–95	11.2	18.0	9.9

[1]Grebler (1955) studied the records of 581 properties in New York City that had at least twenty years of operating records. Apartments are an equal mix of walk-ups and elevator, with rent control being a factor from 1942–50. Lofts are typically two–three story business structures, with offices or stores downstairs and open office, warehouse, or light manufacturing upstairs. Grebler calculated his own internal rates of return, which we were able to confirm in some cases by the data provided in the study. Returns are based upon purchases grouped into five-year periods (1920–24 and 1925–29), unleveraged, with resales based upon adjusted assessed values (adjusted to market by the ratio of actual price to assessed value) for a sample of thirteen apartments and fourteen lofts.

[2]Wendt (1953), primarily a study of annual operations, provided detailed data for thirty-nine properties in downtown San Francisco, all commercial buildings, primarily office but often with retail or restaurant on the lower floors. From these he constructed a net operating income index for each five years. Using this data, plus actual purchase and sales prices for twelve properties in the sample (several transactions on some), we calculated the total returns shown. The other twenty-seven properties were not included because only listing prices, owners' opinions, or uncertain appraisals were available as sale proxies.

[3]Case (1960), primarily a study of annual operations, reviewed the records of all properties that had at least ten years of operating data in the City of Los Angeles: fifty-seven apartment buildings, thirty-seven commercial properties, and fourteen mixed-use properties. We calculated the total returns shown by applying the capitalization rates calculated for each period to determine price changes, and combined this with the net operating income figures to obtain the total returns.

[4]Kelleher (1976), was an officer of the Dain Corporation in Minneapolis, real estate investment managers and investment consultants. That company collected net operating income data on "many seasoned rental properties across the nation and is constantly updated. The data are used to construct a Net Operating Income Index for Multiple-Tenant Real Estate." Capitalizing this data with the "prevalent rate of capitalization . . . used by large insurance companies" produced an annual return index for seasoned investment properties. Over the period of the study, cap rates rose from 8.9% to 9.5%, so all of the price appreciation had to come from the rise in the Net Operating Income Index from 77.6 to 140.1.

[5]Hodges (1971), surveyed seventeen apartment and commercial office property sales in the Washington, D.C. area , between July 1966 and June 1970 and found total returns concentrated around the 9% level.

[6]Prudential Realty's commingled real estate fund, the industry leader (in size) for institutional investment in the 1970s. Founded in 1970, it grew to over $5 billion in total assets by 1984, heavily oriented to office and industrial property in the 1970s. Returns are calculated in similar fashion to NCREIF, based heavily upon annual appraisal values.

[7]First National Bank of Chicago's commingled, unleveraged, real estate fund, smaller than PRISA, with returns reweighted by Ibbotson (1984) to reduce geographic imbalance: equal-weight regional portfolios were calculated for north, south, east, and west regions, then combined by weighting to reflect relative census populations in each region.

[8]Miles and McCue (1984) studied the component returns of a large commingled fund (either Prudential's or Equitable's, by virtue of its size), and developed these figures from a fund that had 113 properties in the beginning and over 300 at the end of the study, diversified into 51% office, 28% industrial, 17% retail, 3% apartment, and 2% motel.

[9]The National Commingled Real Estate Investment Fiduciaries (NCREIF) Index, formerly called Frank Russell Company Index (FRC), tracks the annual returns of thousands of unleveraged properties in institutional portfolios, using annual appraised valuations except when there is a purchase or sale and actual prices are used. As of mid-1988, this index was 58% in offices or R&D properties, 22% in retail properties, 15% warehouses, 4% apartments, and 2% hotels.
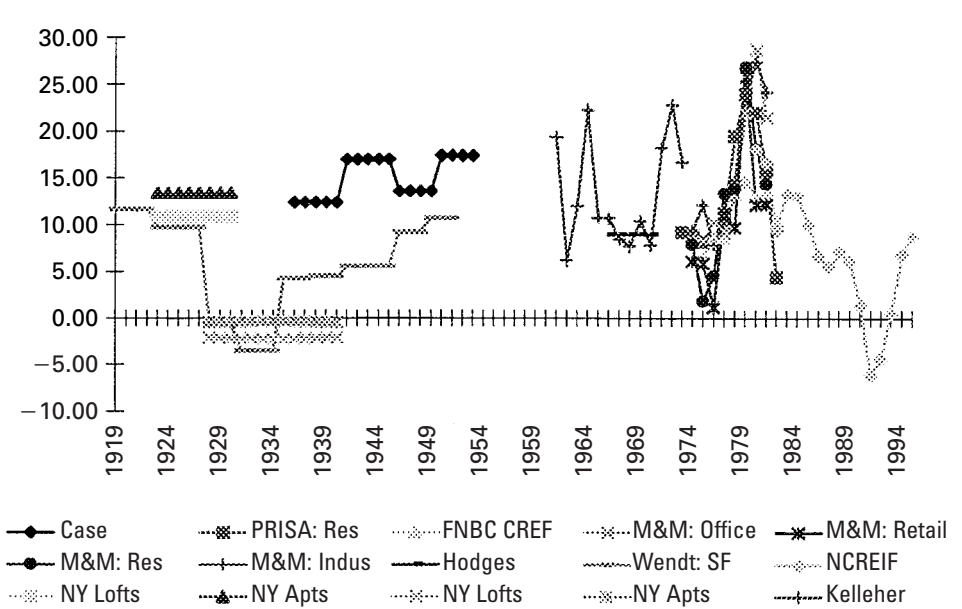
effect of having only compound annualized data for five-to-eight-year periods probably smoothes over and hides the peak return years that anecdotal evidence and the NOI chart in Exhibit 3 indicates likely occurred around 1927. By way of comparison, if the NCREIF returns for 1977 through 1985 were annualized, the resulting 4.1% figure would "hide" the peak return years of 18% and 21%. It is still not a cleanly continuous picture, but it does rough justice to portraying the behavior of real estate returns in this century. It shows:

- good returns in the 1920s (possibly with some very high return years not discernible from the available data);
- weak to *negative* returns from the late1920s into the 1930s;
- moderate to high returns from the 1930s into the 1970s;
- high double-digit returns in the late 1970s and into the 1980s;
- weak to *negative* returns in the early 1990s;
- moderate returns in the mid-1990s.

Construction Booms Are Rent Driven

What other information can we glean about the earlier boom/bust period? In addition to the return data available from historic studies, three studies contained details of net operating income trends: Grebler (1955) for New York City commercial property and apartments; Hoyt (1933) for Chicago Central Business District (CBD) office buildings; and Case (1960) for Los Angeles commercial property and apartments. These data, converted to index values and plotted in Exhibit 3, offer a clear picture of the economic
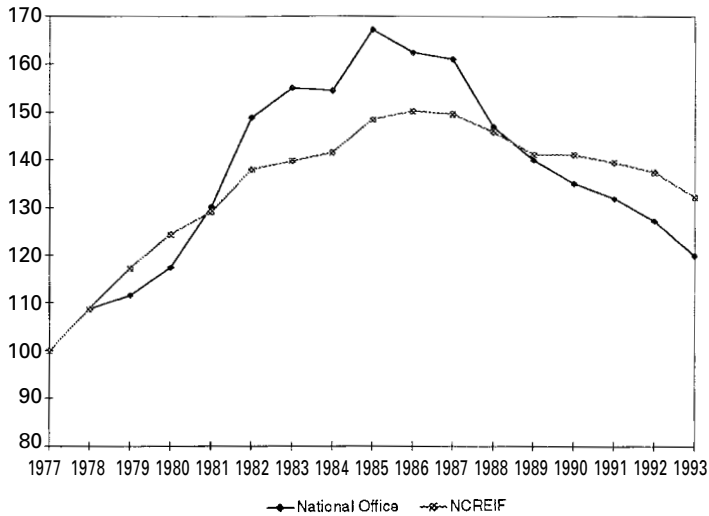
Exhibit 2
Real Estate Total Return 1919–1995

Exhibit 3
Net Operating Income (NOI) Index,
**the 1920s Operating Income Boom**

NOI Index

NY Commercial Property   NY Residential Property
Los Angeles Commercial Property   Los Angeles Residential
Chicago Office NOI Index
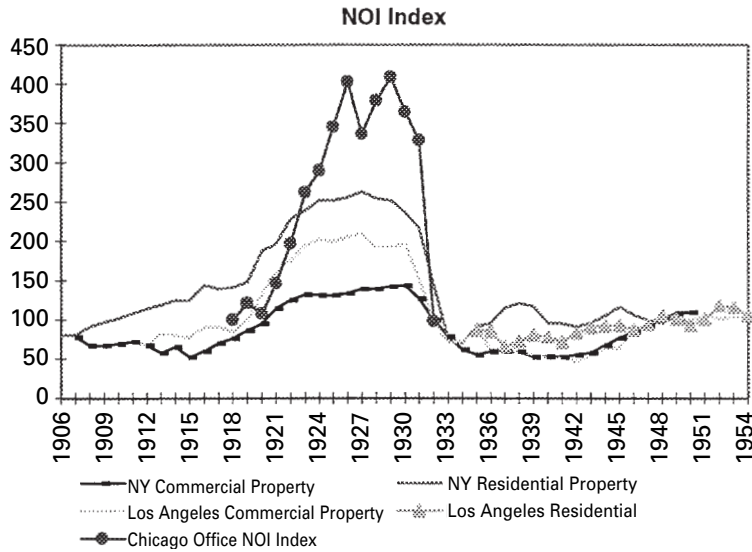
Exhibit 3A
Net Operating Income (NOI) Index,
the 1980s Operating Income Boom

National Office   NCREIF

Source: FRC Property Index 1978–1981, NCREIF NPI Index 1982–1993 (Income Components); the NCREIF Index includes leveraged properties.

Exhibit 4
Total Expenditures for New Construction in
Constant 1929 Dollars: 1889–1940
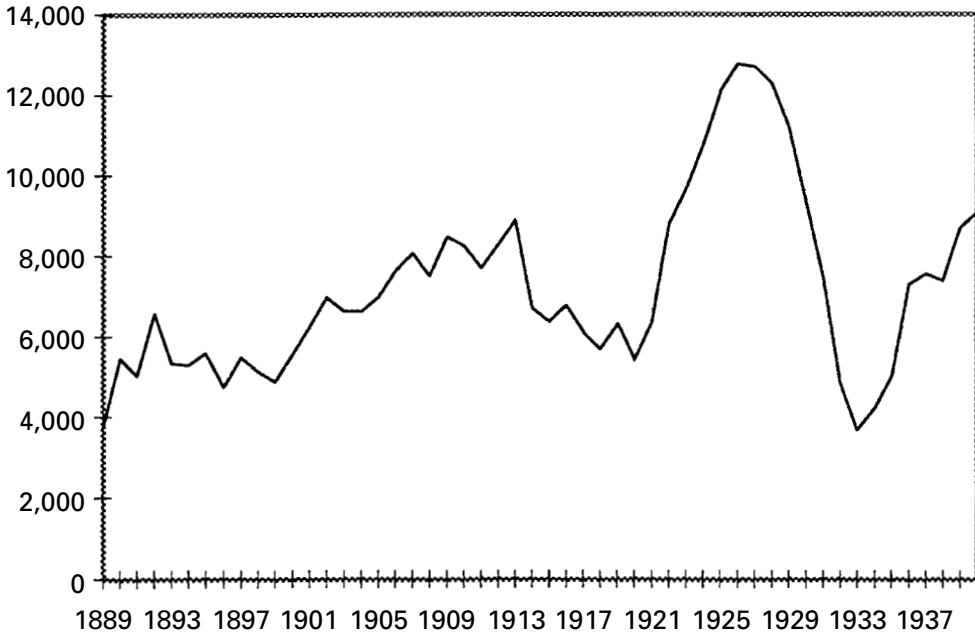

Source: Wenzlick (1972)

motivation for the capital markets to create a building boom in the 1920s. How big was the boom? Exhibit 4 plots the total value of new construction in constant 1929 dollars, and shows a doubling in construction levels at the 1925–26 peaks. (It is interesting to note that the Empire State Building began construction in 1927.)

In Exhibit 3A we created an NOI Index (similar to those in Exhibit 3) for the NCREIF Index and for NCREIF office data by stripping out the price change in these series. The resulting rise and fall of the net income echoes the patterns of Exhibit 3, but without the extremes of some individual cities, since Exhibit 3A plots only national averages.

Also illustrative is a comparison of the construction booms in this century normalized for population growth. Arbour (1993) calculated the real value of commercial construction in this century, and divided it by total finance, insurance and real estate employment (the traditional census employment data used to evaluate office markets). His findings, plotted in Exhibit 5, were that both the 1920s and the 1980s had several years of new development in excess of $2000 per employee, levels not reached in any other year of this century! And both periods resulted in occupancy problems (with the 1930s made worse by the Fed's contraction of the money supply and the worsening economic depression). The boom/bust of yesterday was not that different from our modern experience.[1]

Exhibit 5
Commercial Construction per Trade/FIRE Employment
versus Office Occupancy*
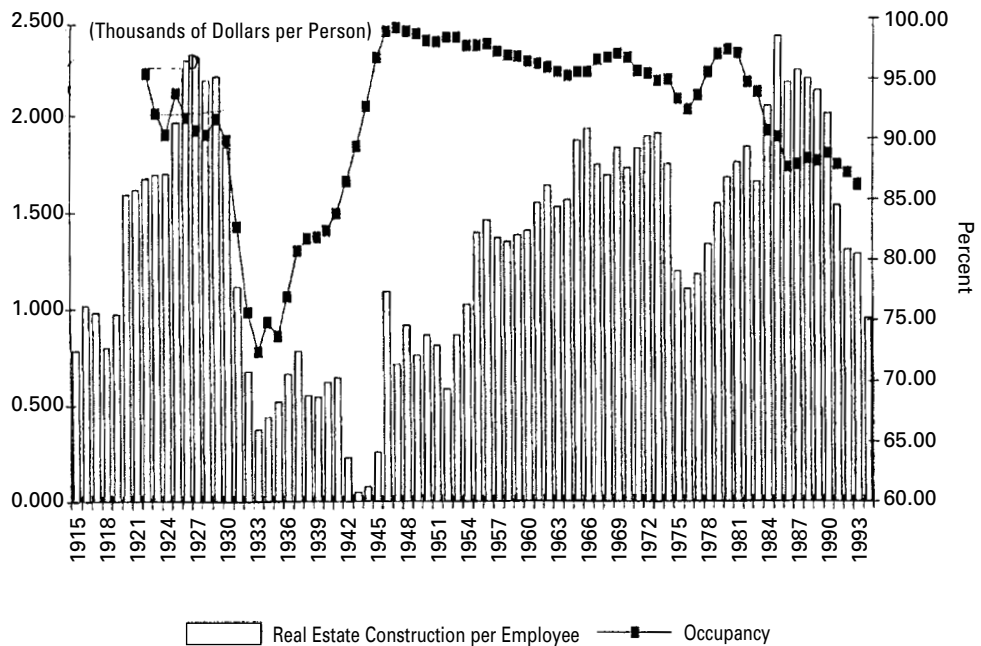
*Construction is adjusted by using the Marshall & Swift building cost index for eastern steel frame office buildings.

Abnormally High Inflation Precedes Each Boom

In searching for an explanation of the cause of each boom, we find a period of general price inflation preceding and accompanying a rapid rise in property rents. Referring to Exhibit 6, we see that the boom/bust of the 1920s came just after the inflation spike of 1918–20, and the recent boom/bust was preceded by the high inflation of 1973–81. Because scaling difficulties obscure the most recent inflation peak, we have isolated it in Exhibit 7, where the inflation (and interest rate) pressure clearly peaked and began to subside with Fed Chairman Volker's resolve to control the growth in the money supply beginning in 1981.

Along with the inflation peaks in both periods, we see a peak in long-term interest rates, as market forces sought to maintain a real rate of return margin for such investments. Also, immediately following both inflation peaks, the early reaction in real estate was a period of strongly improving net operating income and property value increases. In our view, these *periods of boom and deterioration occur as a chain-reaction of events set in motion by a prior period of above-average inflation.*

Industry experience indicates that the initial response to unexpected inflation is that rents rise faster than expenses. Expenses are often contractually fixed or rise in lagged step-function (such as taxes, insurance and utility rates) while asking rents can be moved

Exhibit 6
**The Long Cycle of Inflation in the U.S.**
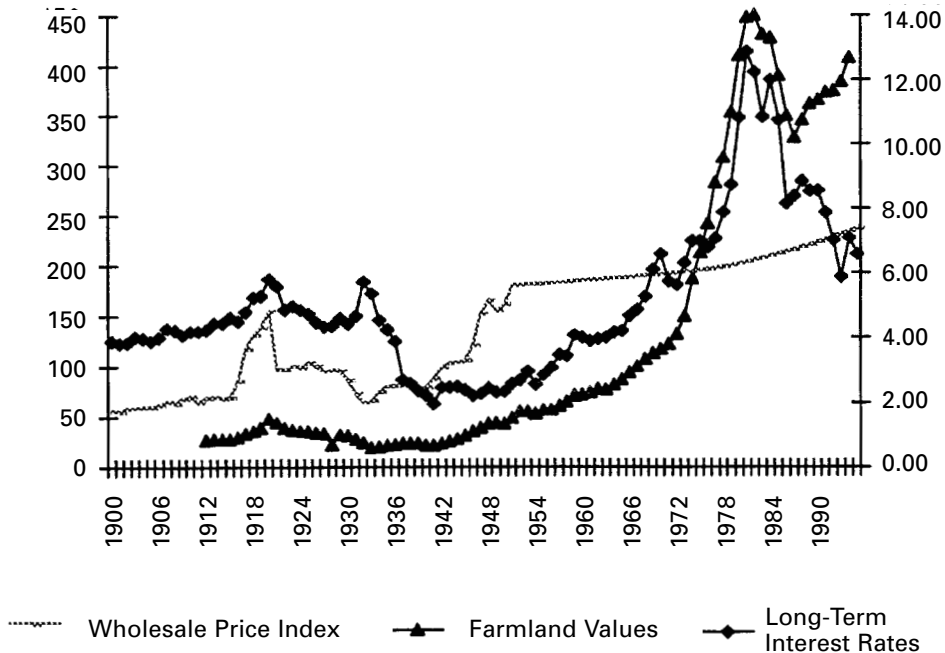
as quickly as the markets will allow. The result is a rise in net income that is faster than the rise in general inflation in the early years.

Next, the sources of investment capital take note of the improving income returns and begin to pay more for properties, moving prices up and attracting even more capital. Eventually, prices move above replacement cost, making it profitable to invest in new development. However, the time lags involved in the planning, design, financing, and construction of new projects is on the order of years, resulting in a prolonged rise in NOI before new capacity begins to provide competition, and a continuation of the construction boom lasting beyond the point where vacancies have begun to drive rents back down. Exhibit 5 shows the magnitude of the capital-driven investment booms in both eras.

As the new supply of space outstripped the demand, rents softened and vacancy costs rose. As a result, NOI peaked between 1927 and 1930. The ensuing depression, of course, made things worse for a while, though there was always positive NOI for the markets as a whole. This looks surprisingly similar to the story of the 1980s, when rising rents and NOI brought in a flood of new capital and new construction.

Even so, with only two such major boom/bust cycles in this century, it could be argued that such a sequence of inflation-NOI rise-construction boom/bust was just fortuitous. However, later we shall see some evidence of a possibly similar boom/bust in the 1870s, following on the heels of the Civil War inflation spike, indicating there may well be a fifty-to-sixty-year periodicity to these major real estate events.

Exhibit 7
The Recent Experience of Long-Term Rates and Wholesale-Level Inflation
and Real Income Return
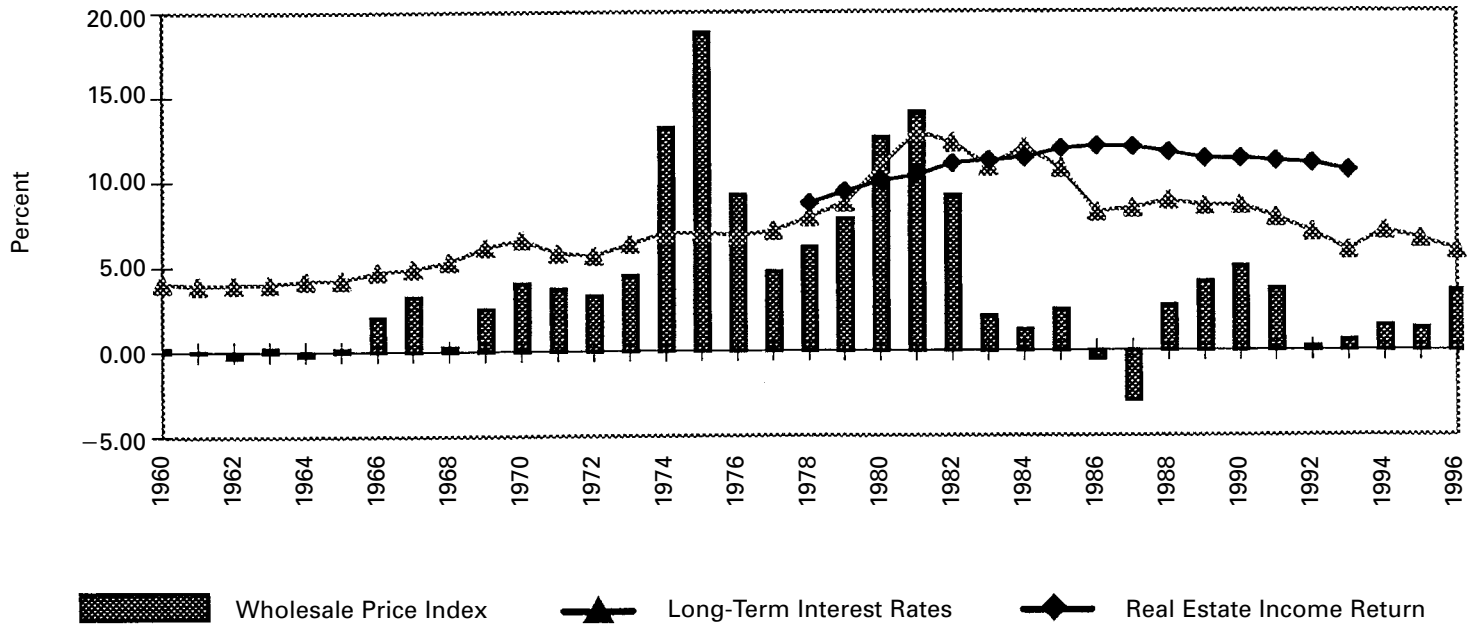
## Farmland Prices May Be An Early Indicator of a Peak

As a final confirming indicator of an impending boom/bust for commercial real estate, we see an early peak in farmland prices—in 1920 and in 1982—followed by a prolonged period of decline. Farmland acreage prices seem to closely track wholesale prices, reflecting the fact that farm incomes are heavily influenced by, and respond quickly to, the rise and fall in commodity prices. Yet, the farmland peak precedes the general real estate boom/bust cycle by a number of years. The normal time lags in instituting property rent increases and in new construction result in years of delay in the urban property peak versus farmland.

The Five Inflation Peaks in American History

In addition to the two inflation cycle peaks in this century, we find three others in American history (1780, 1814 and 1864) as shown in Exhibit 8. In the most recent three cycles, we see the peak in long bond yields coinciding with wholesale prices, while the CPI Rent Index lags the peak by six-to-ten years.

   While there is almost no real estate return data available for the earlier cycles, we do find in Hoyt (1933) that Chicago land values peaked in 1869 at 60% above trend and troughed in 1878 at 50% below trend. A boom/bust of this magnitude did not recur in Chicago until 1925 (+65%) and 1933 (−40%). Also, in Exhibit 9 we offer a chart of foreclosure rates for three cities and find the largest peaks occurring in the down cycle of the 1870s and 1930s.

Exhibit 8
250 Years of the Long Cycle of Inflation in the U.S.

WPI ——— CPI Rent ——— Long-Term Interest Rates
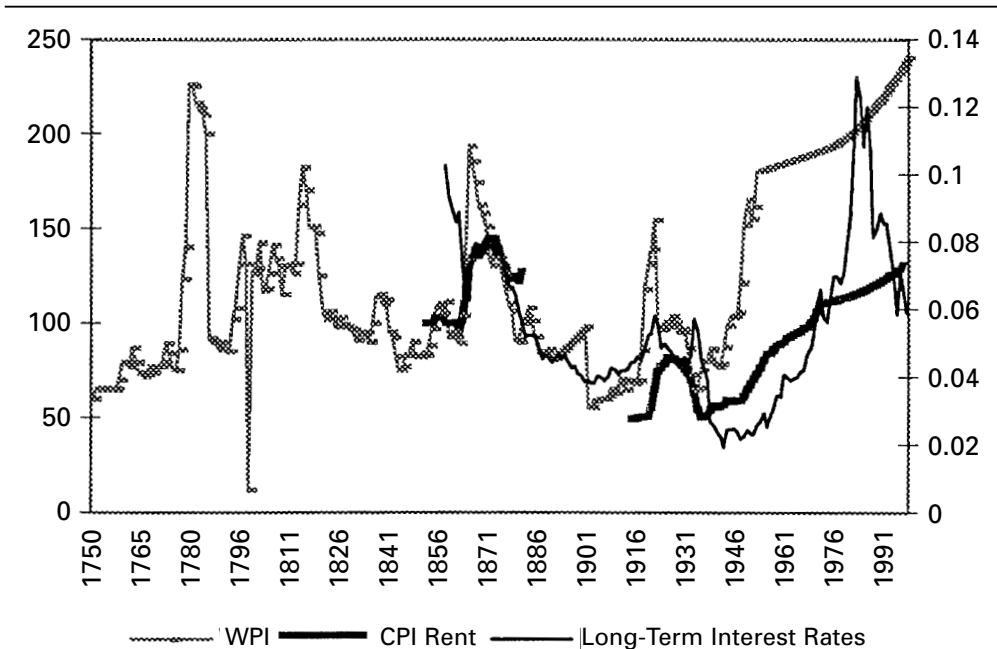
Exhibit 9
Foreclosure Rates for Manhattan, Philadelphia and
St. Louis per 100,000 Families
(annual data)
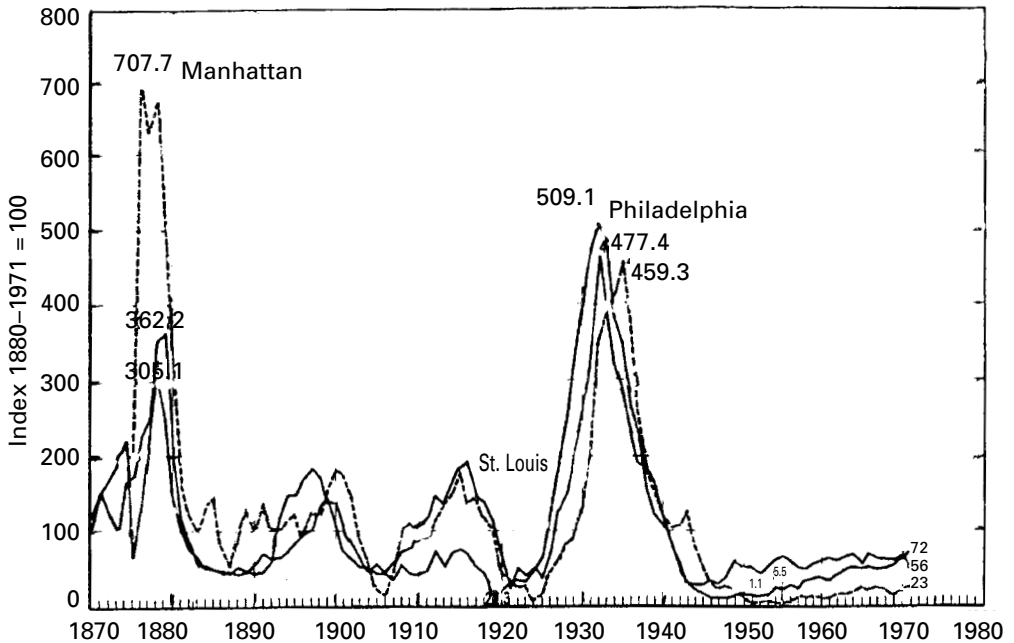
Source: Wenzlick (1972)

Although Exhibit 9 deals with single-family homes—not the investment property covered in this study—we believe the concurrence of housing market weakness in the '80's with the office and other markets indicates that the underlying forces in all real estate markets may be similar in their effect and their broad timing, not withstanding the fact that local market peaks and troughs may vary by several years from each other.

Possible Explanations for the Cycle Length

What might account for the length of these long cycles? The first one was thirty-four years peak to peak, the next two fifty and fifty-six years, and the last one was about sixty-two years. Three possible answers are offered by Ayres (1990), Forrester (1976) and Kaiser (1979). Ayres speculated that clusters of innovations (technological transformations) fostered the long-wave cycle. Forrester modeled the lead/lag relationships in the capital equipment and consumer durables sectors of the economy and found that fifty years was the amount of time needed to develop cycle peaks of excess capacity and cycle troughs of deferred investment.

Kaiser investigated the sociopolitical changes that occur through different portions of the cycle and hypothesized that "each individual is deeply affected by the state of the economy during his or her adolescent and early business years. Thus, a person's influence

on the economy, whether as a businessman, laborer, consumer, banker, voter, or elected representative, is a lifelong reflection of this early experience." Different generations take on a more optimistic and aggressive or pessimistic and conservative approach to business depending upon their personal experience. For example, the Federal Reserve Board of the 1950s and 1960s was focused primarily on avoiding unemployment (to avoid another depression) and was willing to exponentially expand the money supply. Today's Fed is just the opposite—willing to accept some unemployment in order to prevent any recurrence of inflation. Thus, it takes about two generations (or so) to let the lessons from our elders become a little "old fashioned" and lead the new generation into repeating the cycle. Perhaps as people live longer, the cycle has lengthened out.

Interestingly, the 18.3-year real estate cycle that was so actively referred to in Rabinowitz (1980), and Roy Wenzlick's periodical of the 1950s–1970s, the *Real Estate Analyst*, may play a part in breaking the long cycle into three subcycles. In Exhibit 10 we reproduce Wenzlick's real estate "activity" chart (which plots the number of voluntary transfers and is primarily a chart of residential cycles) and superimposed on this is the idealized 18.3-year immediate cycle. Every third cycle would correspond to the long-cycle boom/bust of the 1870s, the 1920s and the 1980s.

This classic 18-year real estate cycle temporarily disappeared in the 1950s and 60's, probably due to the prolonged period of rebuilding necessary to overcome the effects of the Great Depression and World War II. It probably reappeared in the form of the mortgage REIT debacle of 1973–75 and in the general overbuilding boom/bust of the 1985–93 period. In Exhibit 11 we have listed all the real estate booms and busts we could glean from Hoyt (1933), McMahan (1976), Rabinowitz (1980), and Sakolski (1932), grouping them by the actual 18.3-year cycle dates from Wenzlick's work.

In Exhibit 11 we also have highlighted the Wenzlick cycle that contains the major cycle peak in bold. While the picture seems to hold up fairly well for the most recent three cycles, it certainly is muddy prior to 1825. Whether that is a function of the lack of data or of the pre-urban youth of the country (when different cities' early growth was a result more of population migration than of an over-riding economic cycle).

Finally, we have included Homer Hoyt's 1933 chart of the Chicago real estate cycle as Exhibit 12, perhaps the best graphical evidence of the long cycles that we have in the literature.

Current Position in the Long Cycle: Near the Beginning for Real Estate

The conclusion seems to be that we are probably fifty years away from experiencing the kind of boom/bust pain that real estate went through in the last ten years.[2]

- Although the causes remain unclear, inflationary forces have peaked every fifty–sixty years in the past. Given the continued fear of inflation by the capital markets and the Fed's steady hand on the money supply, we expect the next inflation peak to perhaps be that far away again.
- These inflationary forces boost real estate incomes and encourage excessive, destabilizing flows of capital into real estate development, resulting in a major boom/bust period for real estate. Investment opportunities are heightened in the years following such periods.
- Farmland prices, due to their sensitivity to commodity price levels, have historic-ally been the first property type to decline following the peak in inflation—

Exhibit 10
The Wenzlick 18.3-Year Cycle

REAL ESTATE ACTIVITY
1795–1973
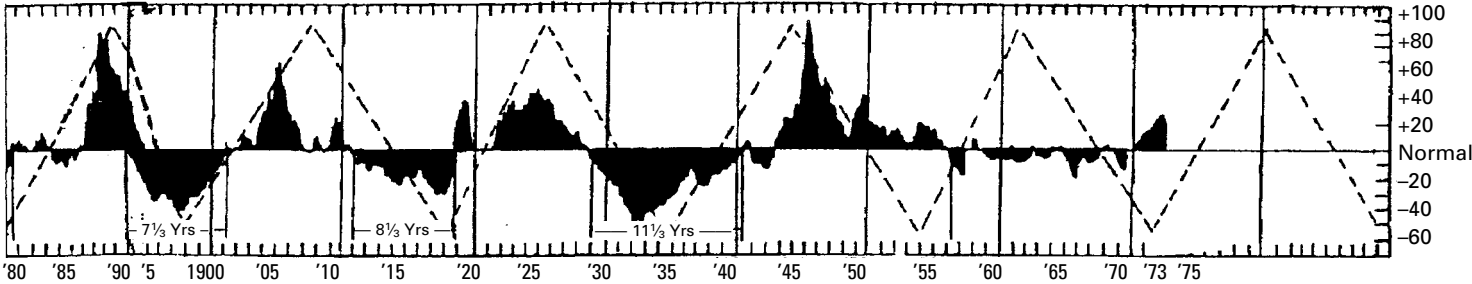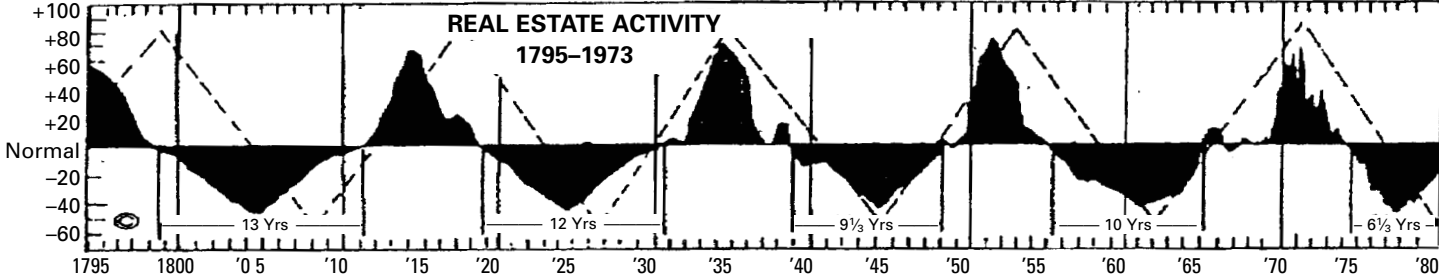
Source: Wenzlick (1973)

Exhibit 11
Real Estate Booms and Busts in U.S. History
18.3–Year Cycle

Trough	Peak	
1795		1760–95: Wild land manias (Ohio, New York, Georgia "Yazoo" Territory) 1795–1805: Connecticut Gore Land Company crash 1791–95: Washington D.C. land boom and 1796 bust
1805	**1814**	None found
1825	1835	1832–37: Chicago real estate boom and panic of 1837 1834: Speculation from Maine to the Red River 1837: Sales of public lands peaked at ten times the level of the previous ten years
1845	1851	1848–54: California Gold Rush land boom and 1854 crash
1861	**1872**	1869–72: Major peak and crash in Chicago land values 1862–73: Railroad land boom in the West, bankruptcy of Northern Pacific in 1973
1878	1888	So. California real estate boom and crash of 1887 (60% of newly created lots disappear) 1891–92: Peak and decline in Chicago land prices
1897	1904	None found
1918	**1925**	Florida land boom and 1926 crash 1925: Major peak in Chicago land prices 1927: Empire State Building begun, called "Empty State Building" in 1931
1933	1946	1933–35: Home Owners Loan Corp. (Federal agency) takes over 200,000+ mortgages, recovers 92% of original capital by 1951
1962?	1973?	1950s syndication boom and 1962 bust (along with most listed real estate stocks—Glickman Corp. down 54%) 1969–71: Rise of REITs (130 formed), followed by defaults of mortgage REITs and NAREIT 1973–74 decline of 83%
1975	**1989?**	1980s office building boom, single-family home speculation (especially in California) 1990–92: NCREIF wash-out

Exhibit 12
The Chicago Real Estate Cycle

Land Value:	1=$ 5,000,000	Transfers:	1=$ 1,000
New Buildings:	1=$ 200,000	Lots Subdivided:	1=$ 200
		Special Assessments:	1=$ 200
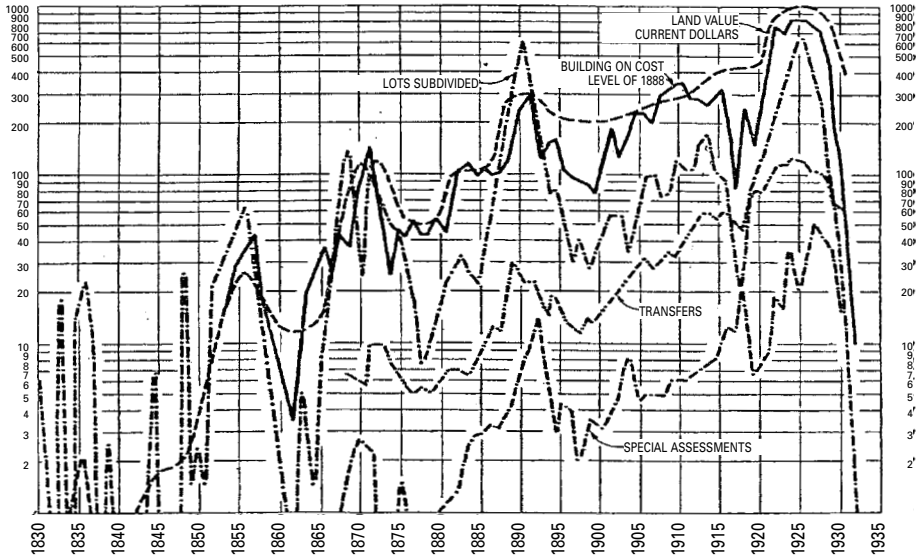
Source: Hoyt (1933)

immediately following the peak in inflation, and years ahead of the other property types. As such, farmland prices have served as an informal early warning signal of an impending boom/bust for the general property markets. Currently, farmland prices are again on the rise.

• Each long cycle appears to be composed of three eighteen-year Wenzlick cycles, each of which can end in a brief period of instability and reduced returns for real estate.

Assuming these cycle lengths repeat, with the last real estate boom/bust period peaking during the years 1985–90, we will not likely see the next eighteen-year cycle correction until after 2003–2008. Patient investors with capital to place in the middle of the next decade might prudently wait until the cycle correction presents a new wave of buying opportunities, *but for the next five to ten years, real estate should continue to offer outstanding return opportunities without fear of significant risks.* (Obviously, investors who are sensitive to the supply/demand variations by property type and by geography can improve on the general risk/return trends.)

This also means that the next major boom/bust period for real estate is probably not going to occur until 2040–50, when our grandchildren will have no personal experience of the 1980s, and will think of the older generations as excessively conservative, much as the players in the 1980s thought of the older generation's cautiousness stemming from their 1930s' experience as irrelevant for their lives. *If these major cycles persist for those of us in the real estate industry today, the environment for real estate investing will likely be more rewarding than risky for the balance of our careers.*

Some Possible Implications of a Long Cycle

There are a number of possible effects that could result from a long-cycle framework for the real estate investment profession.

A Recasting of Some of the Research Done to Date. If the data of the past twenty years represent the abnormal conditions of a boom/bust cycle peak, then the conclusions derived from this data are not likely to be applicable to the conditions we will experience in the next twenty or thirty years. Such studies may have to be recast as unrepresentative of more normal operating conditions. There is much to be learned about how long cycles are influenced by variations in the short cycles.

Reduced Volatility of Real Estate Returns in the Years Ahead. Real estate returns are generally more stable (non-negative) in the years between the booms and busts. Thus, asset allocation models based upon the boom/bust period will have to be adjusted to the calmer conditions in the more disciplined market environment in the immediate future, in order to make a more accurate allocation decision.

Major Asset Allocation Shifts. The data from Exhibit 1 appear to point to a long-term return trend of 10%–11% for real estate, very similar to what the domestic stock market has produced over the long term. If this is true, then institutional investors can achieve their return targets with either asset, so the trade-off becomes simply one of choosing between the illiquidity of real estate and the volatility of stocks. Depending on investor preferences, the current pension fund allocation of 40%–60% in domestic stocks and 3%–5% in real estate could become significantly more equal.

Ideas for Future Research. The work in this study represents only the beginnings of possible research into the long cycle. There are likely to be other data, from other metro areas, from other years, that can help fill in the picture, particularly the data gap in the 1950s. Work can also be done to discover the possibility of similar long cycles in other countries, since the inflation peaks in U.S. history are known to be closely correlated to similar peaks in Europe and elsewhere.

Effects on Professional Careers. The anticipation of long-cycle impacts requires almost super-human patience to live through. Our early work on the long cycle led us to conclude that the real estate market was showing signs of a boom/bust in 1978. As a result, we began cutting our allocation for global portfolios, winding down to only one-third of former levels by the mid-1980s, but the real estate bull market would not stop! It became increasingly difficult to keep calling for a bust that would not come.

   Some professional peers as well as some clients would not take us seriously. Some may not see much value in anticipating the boom/bust up to ten years ahead of the fact, but the magnitude of the event was so overwhelming, it was eventually quite gratifying to live through the crash with far less damage than would otherwise have been the case, and to have cash to re-enter the market in the early 1990s. Conversely, many institutional investors who did not anticipate the boom/bust were so scarred by the experience that they have still not mustered the commitment from their boards to begin investing again in the private property market. Even for those who come to believe there may again be a period of boom/bust for real estate (once another inflation spike occurs), industry peer pressure will be a difficult thing to act against. It is likely that most real estate professionals will find it too risky for their careers to be very far from the herd, and are

likely to periodically live through major eighteen-year, or fifty–sixty-year cycle impacts, secure in the knowledge that "at least everyone else got hurt, too."

Knowledge of the Cycle May Alter It. Should enough people accept the existence of major cycles, and attempt to anticipate them, their collective actions could severely alter the magnitude or duration of the cycles, thereby making us all look foolish, much as the stock market does to most of its participants.

A Simplified View of the Long-Cycle Return Trend

There is no NCREIF National Property Index (NPI) prior to 1978, yet we have strong evidence of a long-cycle trend to real estate investment returns though the studies are generally localized and highly variable. In an attempt to simplify the historic view, we have constructed a synthetic style band of real estate returns from the period since 1919 by simply estimating a narrow range from the return studies in Exhibit 1. It is our view of where national real estate returns were likely to have been, using a four-to-six-percentage-point bandwidth and should not be interpreted as necessarily reflecting a true national portfolio. In Exhibit 13, we show this simplified long-cycle view, with farmland values superimposed, showing the decline in farmland leading the real estate troughs by several years. In Exhibit 14, we show the same real estate return trend with annual stock market returns superimposed.

While stocks show a much more volatile return pattern, we know that the annual compounded return (IRR) over the whole period is about 10.5%. Out of curiosity, we calculated the IRR of the midpoint of the real estate band and found a result of 9.25% for the entire seventy-eight years. Since this included two long-cycle troughs, we also calculated the IRR for the past sixty years (1937–96), and found a result of 10.0%. While these are not scientific results, they do point to a conclusion that, over the long run, equity real estate returns are similar to the returns obtainable in the stock market. They are indeed both equity investments. Investors, then, must choose between the volatility risk in the stock market, and the illiquidity risk in real estate. Over the long run, the returns are not likely to be all that different.

Conclusion

Prior to the 1970s, when reasonably good quality data on private real estate markets began to be available, it is probably impossible to perform any cycle analyses with the kind of mathematical rigor that is now the hallmark of good financial research. Yet, there is some quantitative local-market evidence, as well as anecdotal evidence, to suggest that the nationwide spread of negative total returns of the 1990s was a phenomenon that had not occurred since the 1929–34 period, and before that, since the 1870s.

Further research into these boom/bust periods indicates some striking similarities.

- Prior to the boom, there is an unusually large spike in the general level of inflation.
- Inflation triggers an initially rapid rise in net operating income.
- Rising incomes and rising prices attract an unusually large amount of investment capital, resulting in a disastrously large overdevelopment boom.
- Resulting vacancy problems drive net operating incomes back down to levels approximating those prior to the boom.

Exhibit 13
Interpreted Trend of Real Estate Returns vs.
Farmland Values 1919–1996
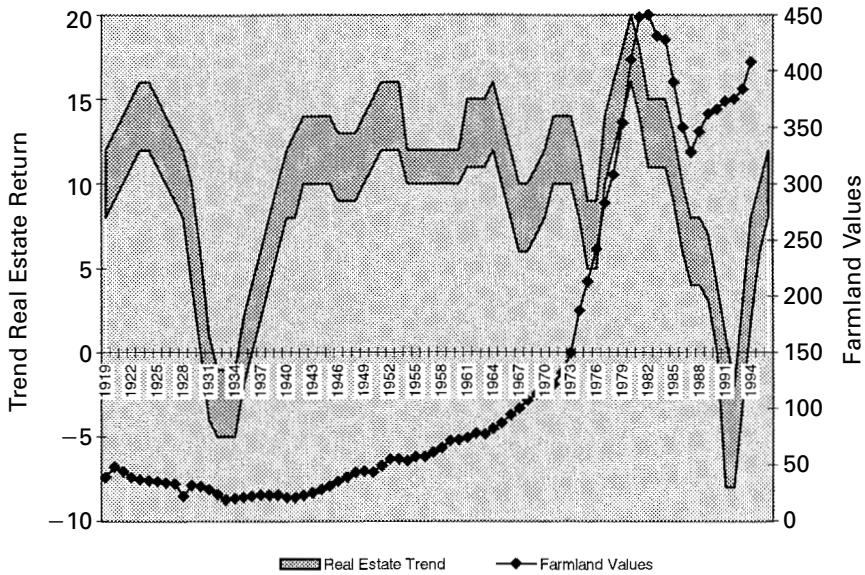
Exhibit 14
Interpreted Trend of Real Estate Returns vs.
S&P 500 Returns 1926–1996
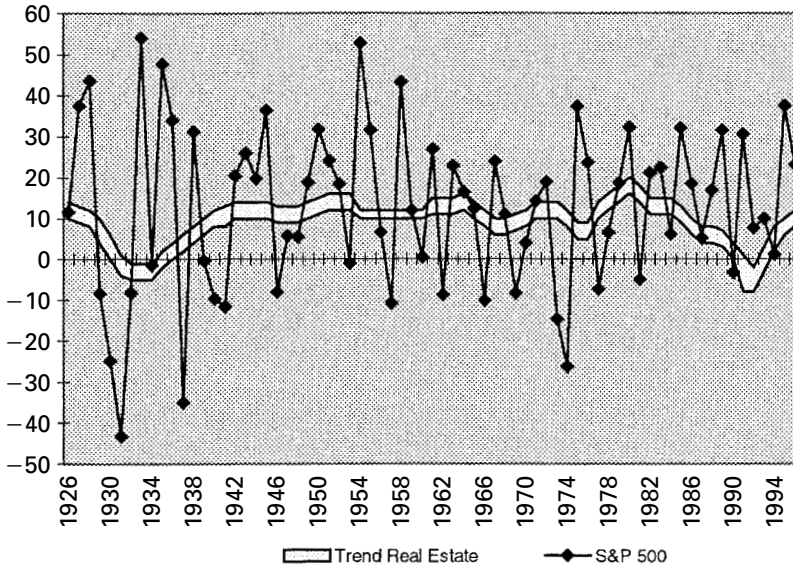
- The drop in prices necessitated by the lower incomes is so large that it overwhelms the positive income returns, resulting in negative total returns for a few years.

In between these boom/bust periods, there are cycles of lesser magnitude, where total returns to unlevered property portfolios remain positive.

The implications of such a long cycle (fifty to sixty years) in real estate are to profoundly question the immediate relevance of much of the research on NCREIF data to date, should the real estate cycles of the next few decades return to the less volatile patterns of the 1950s, '60s, and '70s. Also, asset allocation decisions by investors for, or against, real estate should perhaps be framed in this longer view, rather than being so dramatically impacted by the recent boom/bust, an experience that may not occur again in our lifetime.

Appendix A
Data Tables for Annual Returns Used in This Paper

This Appendix contains all of the annual return data used to compile the annual compound returns for the periods shown in Exhibit 1. Where figures are repeated for several years, this is the result of calculating internal rates of return for known beginning and ending points.

Exhibit A1
Real Estate

	Case: LA[3] (%)	Wendt: S[2] (%)	Grebler[1]				Stocks[a] (%)	Bonds[b] (%)
			NY Lofts (%)	NY Apts. (%)	NY Lofts (%)	NY Apts. (%)		
1919		11.7					-3.36	-0.78
1920		11.7					-7.91	8.81
1921		11.7					29.08	16.01
1922		11.7					7.70	5.08
1923		9.7	10.9	13.4			11.54	9.49
1924		9.7	10.9	13.4			29.07	8.29
1925		9.7	10.9	13.4			18.10	7.25
1926		9.7	10.9	13.4			11.61	7.77
1927		9.7	10.9	13.4			37.48	8.94
1928		-0.6	10.9	13.4	-2.2	-0.4	43.61	0.08
1929		-0.6	10.9	13.4	-2.2	-0.4	-8.41	3.42
1930		-0.6	10.9	13.4	-2.2	-0.4	-24.90	4.65
1931		-3.5			-2.2	-0.4	-43.35	-5.32
1932		-3.5			-2.2	-0.4	-8.20	16.84
1933		-3.5			-2.2	-0.4	53.97	-0.07
1934		-3.5			-2.2	-0.4	-1.42	10.02
1935		4.3			-2.2	-0.4	47.66	5.00
1936	12.4	4.3			-2.2	-0.4	33.92	7.50
1937	12.4	4.3			-2.2	-0.4	-35.02	0.22
1938	12.4	4.5			-2.2	-0.4	31.14	5.51
1939	12.4	4.5			-2.2	-0.4	-0.42	5.95
1940	12.4	4.5			-2.2	-0.4	-9.78	6.09

[1,2,3]Refer to the footnotes of the same numbers for Exhibit 1.
[a]Stock market returns are Ibbotson's large stock returns for 1926–95. For 1919–25, we used the Standard and Poor's Stock Index annual price change and added to this the Cowles dividend yield for each year to obtain a total annual return.
[b]Bond returns are Ibbotson's long-term Treasury returns for 1926–95. For 1919–25, we used the BEA statistics for long-term Treasury price change plus the annual interest yield for each year.

Exhibit A2

	Real Estate Case: LA[3] (%)	Real Estate Wendt: SF[2] (%)	Stocks[a] (%)	Bonds[b] (%)
1941	17.00	5.60	-11.58	0.93
1942	17.00	5.60	20.33	3.22
1943	17.00	5.60	25.91	2.07
1944	17.00	5.60	19.73	2.82
1945	17.00	5.60	36.41	10.73
1946	13.60	9.20	-8.07	-0.09
1947	13.60	9.20	5.70	-2.63
1948	13.60	9.20	5.51	3.39
1949	13.60	10.70	18.79	6.44
1950	17.40	10.70	31.74	0.05
1951	17.40	10.70	24.02	-3.94
1952	17.40		18.35	1.16
1953	17.40		-0.98	3.63
1954			52.62	7.18
1955			31.54	-1.28
1956			6.56	-5.58
1957			-10.79	7.47
1958			43.37	-6.11
1959			11.98	-2.28
1960			0.46	13.79

[2,3]Refer to the footnotes of the same numbers for Exhibit 1.
[a]Stock market returns are Ibbotson's large stock returns for 1926–95. For 1919–25, we used the Standard and Poor's Stock Index annual price change and added to this the Cowles dividend yield for each year to obtain a total annual return.
[b]Bond returns are Ibbotson's long-term Treasury returns for 1926–95. For 1919–25, we used the BEA statistics for long-term Treasury price change plus the annual interest yield for each year.

Exhibit A3
Real Estate

	PRISA[6] (%)	FNBC (CREF)[7] (%)	Off. (%)	Miles and McCue[8] Retail (%)	Miles and McCue[8] Res. (%)	Miles and McCue[8] Indus. (%)	Hodges Wash. DC[5] (%)	FRC 71–77[10] NCREIF 78[9] (%)	Kelleher[4] (%)	Stocks[a] (%)	Bonds[b] (%)
1961									19.4	26.89	0.96
1962									6.2	-8.73	6.88
1963									12.0	22.78	1.21
1964									22.3	16.51	3.51
1965									10.8	12.38	0.70
1966							9.0		10.7	-10.07	3.65
1967							9.0		8.5	23.98	-9.19
1968							9.0		7.7	11.03	-0.26
1969							9.0		10.4	-8.42	-5.07

Exhibit A3 (continued)

1970							9.0	7.8	3.98	14.00
1971							9.2	18.2	14.30	13.24
1972							7.5	22.8	18.95	5.67
1973	9.2						7.5	16.7	-14.78	0.88
1974	8.9		8.9	6.1	7.9	9.4	7.2		-26.45	3.36
1975	8.2	6.6	8.2	5.9	1.8	12.1	5.7		37.30	9.08
1976	8.5	8.6	10.4	1.2	4.5	7.9	9.3		23.70	17.44
1977	10.7	8.7	9.2	11.1	13.3	11.8	10.5		-7.26	1.30
1978	19.5	14.7	13.2	9.7	13.9	14.8	16.03		6.57	-1.11
1979	24.0	14.7	22.0	25.8	26.8	24.0	20.73		18.60	-0.87
1980	22.0	12.9	28.7	12.1	18.1	27.4	18.09		32.13	-2.96
1981	15.7	13.5	21.5	12.2	14.3	24.2	16.62		-4.91	0.48
1982	4.4	10.4					9.43		21.11	42.08
1983							13.33		22.37	2.23
1984							13.04		6.11	14.81
1985							10.11		32.03	31.53
1986							6.64		18.55	24.08
1987							5.48		5.22	-2.67
1988							7.04		16.82	9.23
1989							6.22		31.53	19.05
1990							1.46		-3.18	6.27
1991							-6.07		30.57	18.70
1992							-4.34		7.69	8.09
1993							0.57		9.99	17.44
1994							6.75		1.29	-7.73
1995							8.83		37.48	30.90

[4,5,6,7,8,9]Refers to the footnotes of the same numbers for Exhibit 1.
[10]FRC Data for Commingled Funds, JMB (1978)

Exhibit A4

	NCREIF	Office	Warehouse	Retail	Apartment
1980	18.09	25.99	16.15	12.78	
1981	16.62	20.23	15.18	11.03	
1982	9.43	9.86	9.00	7.02	
1983	13.33	12.28	10.80	15.09	
1984	13.04	12.07	12.38	16.23	
1985	10.11	8.93	12.54	11.90	
1986	6.64	4.35	8.67	11.50	
1987	5.48	0.93	11.43	11.56	
1988	7.04	3.05	10.05	13.39	7.37
1989	6.22	3.57	9.87	10.54	5.91
1990	1.46	-2.73	2.36	6.14	5.79
1991	-6.07	-11.68	-1.84	-2.31	-2.36
1992	-4.34	-9.27	-2.83	-2.55	3.41
1993	0.57	-2.48	-2.38	5.64	11.07
1994	6.75	4.26	8.95	5.29	13.18
1995	8.83	7.20	13.17	5.47	11.82

Notes

[1]The nearly perfect timing coincidence between the three cities in the 1920s may not be representative of normal experience. In the 1980–1993 boom/bust, the crash rolled from the Oil Belt (including Denver) in 1984–87, to Arizona in 1988–89, to New England, New York and the Mid-Atlantic in 1989–92, finally ending in California 1990–93.

[2]It is also possible that the cycle of "pain" timing will vary by property type. The boom/bust of the '90s was felt most heavily in the office sector. The retail sector, with its rapid build-up of big box retailing, outlet malls, etc., may only be just now having its boom/bust.

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