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# Real Estate Prices and Economic Cycles

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## Keywords

Real Estate Prices, Economic Cycles.

## Introduction

Studies of the linkages between real estate prices and general economic conditions have an extensive history, beginning with tabulations suggesting the ways in which long swings in construction and price development were synchronized with long swings in aggregate economic activity (Gottlieb, 1976). Recent studies have explored the implications of alternative representations of investor expectations upon real estate construction and the cyclical behavior of housing prices and the rents for non-residential properties. These models trace through the effects upon supplier and demander behavior of differing price expectations in the real estate market. The earliest models tease out the dynamic paths of housing prices and commercial rents which arise from exogenous expectations about the future course of prices. More sophisticated models assume that households and firms have adaptive expectations about the future, assuming, for example, myopic behavior on the part of economic actors (in which they forecast that current conditions or current rates of change will continue into the future). In the most modern formulation of market dynamics, actors are assumed to have rational expectations. That is, in response to unanticipated shocks in the

[*] A previous version of this paper was presented at the third annual meeting of the Asian Real Estate Society, Taipei, August 1998. I am grateful for the comments of Chin-Oh Chang and Robert Edelstein and the assistance of Christian Redfearn.

housing or property market, economic actors, on average, are able to predict the market response correctly and are able to act upon that knowledge.

Models such as these are able to generate patterns of price change over time in response to varying conditions in economic fundamentals and in economic shocks. (See, for example, DiPasquale and Wheaton, 1992, and Case and Shiller, 1988). There has, however, been little or no research on the opposite line of causation -- the effect of changes in property markets upon subsequent economic conditions.

The first part of this paper is focused on the former question –- the linkages between economic "fundamentals" and property prices. It reports on new research evaluating empirically the effect of economic conditions upon property prices. In particular, this research includes a detailed comparison of the importance of "fundamentals" upon housing prices relative to the importance of "history" in affecting outcomes.

The second part of the paper focuses on the latter question –- the potential for a causal role between outcomes in the property market and the subsequent health of the overall economy. This discussion is largely speculative and suggestive –- and not based upon any tight theoretical or empirical model.

The first part of the discussion is based upon a detailed body of data from the U.S. The second part of the discussion may be relevant to the economic conditions which have faced many Asian economies during the last three years. Specialists in Asian property markets will have far better access to data and hypotheses about these specific markets than I. However, I will raise a few questions that deserve more research in the analysis of the current fiscal crises in many Asian countries.

## Do Fundamentals Explain Property Price?

In a celebrated article written about a decade ago, Mankiw and Weil (1989) forecast that real house prices in the U.S. would drop by 47 percent by the year 2007. This forecast was based upon the changing demographics in the U.S. population (and little else). The model assumed the most myopic of expectations -- that market actors did not take into account *today* the inexorable effect that known changes in demographic conditions would have on housing prices *tomorrow*. The response to this article –- and the recent outpouring of research on the topic (see, for example, the special issue of *Regional Science and Urban Economics*, 1991) –- underscores the lack of consensus about the correct approach for forecasting housing price changes.

Previous studies vary in both their geographic scope and in their attention to the complexity of housing markets. These studies range from detailed analyses of economic fundamentals in the context of aggregate national housing price trends (DiPasquale and Wheaton, 1994) to exploratory research applied to specific regions (Case and Mayer, 1995; Clapp and Giaccotto, 1994; Dua and Miller, 1996; and Smith and Ho, 1995). Only a few models that use economic fundamentals to explain housing price movements have been generalized and applied to explain price movements across local metropolitan areas (See Poterba, 1991; Case and Shiller, 1990; and Potepan, 1996, for examples).

During the spring of 1997, Christian Redfearn and I assembled an extensive quantitative description of annual economic conditions for some 41 U.S. metropolitan areas over a fifteen-year period (Quigley and Redfearn, 1997). The measures we gathered include population, employment, income, housing starts and permits, vacancy rates, and mortgage activity. Our analysis represents one of the first detailed empirical studies of price determination undertaken systematically across major U.S. housing markets.

The data on local U.S. housing markets were gathered from numerous sources.[1] The variables include a local consumer price index, employment and income disaggregated by industry category, the number of households and total population, vacancy rates for owner occupied housing, commercial offices, and rental housing, unemployment rates, the volume of mortgage lending for purchase and for refinance, and the volume of housing sales.

Table 1 reports a summary of the course of prices for owner-occupied, single-detached housing in the 41 metropolitan areas during a recent nine-year period. As indicated in the table, U.S. housing markets vary enormously in the rate of price increase and in the volatility of housing prices. The rather stagnant markets of Providence and Pittsburgh stand in contrast with the volatile Los Angeles, Seattle and Portland housing markets. Table 2 reports the average characteristics of local economic “fundamentals” during the 1986-94 period for these metropolitan areas. As noted in the table, the average annual change in housing prices was 2.5 percent, but the variance was five times as large.

[1] These sources include official government sources, the U.S Bureau of Labor Statistics, the Department of Housing and Urban Development, the U.S. Bureau of the Census, the Bureau of Economic Analysis, as well as private sources, such as the National Association of Realtors, Fannie Mae and Freddie Mac. Most of the variables are reported by MSA, although several are only available at the state level.

**Table 1 Average Housing Prices and Price Volatility for U.S. Metroplitan Areas, 1986-1994 (1986 = 100 for each MSA)**

| Metropolitan Area | Mean | Standard Deviation |
|---|---|---|
| Atlanta | 108.44 | 5.57 |
| Baltimore | 127.90 | 12.98 |
| Boston | 106.61 | 6.03 |
| Charlotte | 119.19 | 16.87 |
| Chicago | 136.91 | 22.20 |
| Cincinnati | 132.44 | 18.74 |
| Cleveland | 124.99 | 16.74 |
| Denver | 108.27 | 16.97 |
| Detroit | 142.54 | 25.93 |
| Hartford | 104.79 | 7.82 |
| Honolulu | 126.76 | 12.62 |
| Indianapolis | 132.88 | 15.75 |
| Jacksonville | 106.52 | 3.72 |
| Kansas City | 128.74 | 14.18 |
| Los Angeles | 137.41 | 23.02 |
| Miami | 111.37 | 9.44 |
| Milwaukee | 130.65 | 19.99 |
| Minneapolis-St. Paul | 114.61 | 8.15 |
| Nashville | 111.34 | 10.90 |
| New Orleans | 99.87 | 8.23 |
| New York | 113.42 | 6.96 |
| Oakland | 140.42 | 19.98 |
| Orlando | 109.31 | 5.15 |
| Philadelphia | 134.30 | 13.57 |
| Phoenix | 101.16 | 5.70 |
| Pittsburgh | 104.73 | 5.19 |
| Portland | 150.23 | 44.32 |
| Providence | 94.65 | 3.98 |
| Provo | 132.11 | 27.41 |
| Riverside | 125.60 | 16.30 |
| Sacramento | 136.58 | 22.93 |
| St. Louis | 121.63 | 11.25 |
| Salt Lake City | 144.66 | 41.36 |
| San Diego | 132.25 | 17.15 |
| San Francisco | 148.51 | 22.65 |
| San Jose | 152.16 | 25.00 |
| Seattle | 148.25 | 32.34 |
| Springfield | 106.23 | 7.35 |
| Tampa | 106.70 | 4.15 |

| | | |
|---|---|---|
| Washington, DC | 130.69 | 13.75 |
| Wilmington | 128.80 | 12.49 |

**Table 2 Average Characteristics of Local Economic Variables and Housing Prices for 41 U.S. Metropolitan Areas, 1986-1994**

| Variable | Average | Standard Deviation | Minimum | Maximum |
|---|---|---|---|---|
| Residential Construction Permits (thousands per year) | 12.15 | 9.52 | 7.97 | 5.22 |
| Housing Starts (thousands per year) | 18.84 | 12.09 | 2.10 | 66.90 |
| Households (thousands) | 944.75 | 745.56 | 31.98 | 3298.72 |
| Total Population (thousands) | 2500.25 | 2067.79 | 264.61 | 9138.79 |
| Owner-Occupied Vacancy Rate (percent) | 1.58 | 0.81 | 0.10 | 4.60 |
| Pental Vacancy Rate (percent) | 7.32 | 2.74 | 2.00 | 16.50 |
| Income (millions of current dollars) | 41.86 | 36.98 | 10.48 | 187.01 |
| Employment (thousands) | 1238.58 | 913.21 | 414.66 | 4274.94 |
| Log Housing Price | 4.91 | 0.20 | 4.42 | 5.31 |
| Annual Change in Housing Price (percent) | 2.50 | 5.78 | -11.93 | 27.37 |

The basic notion that prices in competitive markets are determined by the intersection of supply and demand can be represented by

$$P_{it} = f(Q_{it}^{d}, Q_{it}^{s}), \quad (1)$$

Where $P_{it}$ represents housing prices in MSA i at time t, and $Q_{it}^{d}$ and $Q_{it}^{s}$ are the quantities of housing that are demanded and supplied, respectively, in MSA i at time t. The supply and demand for housing are characterized by

$$Q_{it}^{d} = d(P_{it}, INC_{it}, X_{it}) \text{ , and} \quad (2)$$

$$Q_{it}^{s} = s(P_{it}, VACANCY_{it}, Y_{it}) \quad (3)$$

Housing demand at time t in any market i is a function of housing prices and income (INC) and a vector of exogenous variables X. Demand is an increasing function of income and a decreasing function of price. Similarly, housing supply is a function of prices and vacancies (VACANCY) as well as a set of exogenous variables Y. Presumably, housing supply is an increasing function of prices and a decreasing function of vacancies; demand increases with income and declines with price.

Theory provides less guidance about the exogenous variables, X and Y, in equations (1) and (2). Clearly, aggregate demand also depends upon the size of the market, which we characterize by the number of households or the total population (referred to below as POP) and by aggregate employment (EMP). Presumably, housing supply in any period depends upon construction activity, which we measure as the number of residential construction permits or by the number of housing starts (CONST). Finally, we expect adjustment to changes in prices to be slow, given the lead times in construction and conversion and the delayed mobility response to price changes. Together, these factors suggest that supply and demand may be represented by

$$Q_{it}^{d} = d(L[P_{it}], INC_{it}, POP_{it}, EMP_{it}) \text{ , and} \qquad (4)$$

$$Q_{it}^{s} = s(L[P_{it}], VACANCY_{it}, CONST_{it}) \qquad (5)$$

Where L[ ] is the lag operator.

Substituting (4) and (5) into (1) and solving for $P_{it}$ yields

$$P_{it} = P(POP_{it}, INC_{it}, EMP_{it}, CONST_{it}, VACANCY_{it}, L[P_{it}]) \quad (6)$$

For those 41 U.S. housing markets we estimated equation (6) in a variety of specifications and forms, including logarithmic models and percentage change models. In the former specification, all variables are expressed as natural logarithms, while in the latter specification, all variables are expressed as percentage changes. In logarithmic form the dependent variable is interpreted as the instantaneous percentage change (dP/P), while in the latter form, the dependent variable is the one-period percentage change (ΔP/P). For each specification, we investigated a variety of models without lagged adjustment and also models with one- and two-period lags.[2]

Table 3 reports several basic regression models relating changes in economic fundamentals to log housing prices. Model I includes only household income; the results suggest that a ten percent increase in household income is associated with a two percent increase in the price of owner-occupied housing. When construction permits are added, the results indicate that

[2] In the text, we report only the results of the logarithmic models. The percentage change models, summarized in Figure 2, are consistent with the results obtained from the logarithmic models.

construction activity is higher in metropolitan areas with higher housing prices. As expected, prices are lower in regions with higher vacancy rates. They are also higher in larger metropolitan areas, as measured by the number of households. The most complete specification explains about 29 percent of the variation in log housing prices. The coefficients appear to be reasonable.

Overall, the results are supportive of the importance of local economic conditions in affecting housing prices.

**Table 3 Models of Housing price Development Based on Economic Fundamentals All Variables in Logarithms (t ratios in parentheses)**

| | Model | | | | |
|---|---|---|---|---|---|
| Variable | I | II | III | IV | V |
| Income/Household | 0.129 | 0.257 | 0.197 | 0.256 | 0.248 |
| | (5.15) | (5.98) | (4.75) | (6.50) | (6.19) |
| Construction Permits | | 0.064 | | | 0.011 |
| | | (3.43) | | | (0.56) |
| Owner-Occupied Vacancy Rate | | | -0.093 | | -0.098 |
| | | | (4.06) | | (4.54) |
| Number of Households | | | | 0.101 | 0.100 |
| | | | | (5.50) | (4.95) |
| Intercept | 4.110 | 3.379 | 4.225 | 3.262 | 3.270 |
| | (26.05) | (12.85) | (27.24) | (15.26) | (12.95) |
| $R^2$ | 0.108 | 0.154 | 0.171 | 0.217 | 0.289 |

Note : Regressions are based upon 259 observations on housing prices, 1986-1994, in 41 U.S. metropolitan areas.

Table 4 presents an alternative perspective. It indicates the results of models which predict housing prices solely on the basis of past prices. Prices today are closely related to prices last year. The strong autocorrelation in prices and price changes is consistent with prior research (e.g. Case and Shiller, 1989). Most of the variation in log prices can be predicted by previous price movements. A one- and two-period lag explains more than 96 percent of the variation.

Tables 5 combines this autoregressive structure with economic fundamentals. It reports five regression models which explain log housing prices in the 41 metropolitan areas in the sample. Each model includes a one- and two-period lag in price changes. The one- and two-period lags are significant in all formulations. However, local economic conditions –- as measured by changes in employment, income, in the number of households, and in the number of construction permits –– are important determinants of the course of housing prices.

**Table 4 Models of Housing Price Development Based on Lagged Dependent Variables**
**All Variables in Logarithms (t-ratios in parentheses)**

| | Model | | |
|---|---|---|---|
| Variable | VI | VII | VII |
| P(t-1) | 0.973 | | 1.596 |
| | (58.34) | | (37.39) |
| P(t-2) | | 0.893 | -0.659 |
| | | (28.68) | (15.22) |
| Intercept | 0.153 | 0.570 | 0.312 |
| | (1.87) | (3.75) | (5.17) |
| $R^2$ | 0.930 | 0.761 | 0.963 |

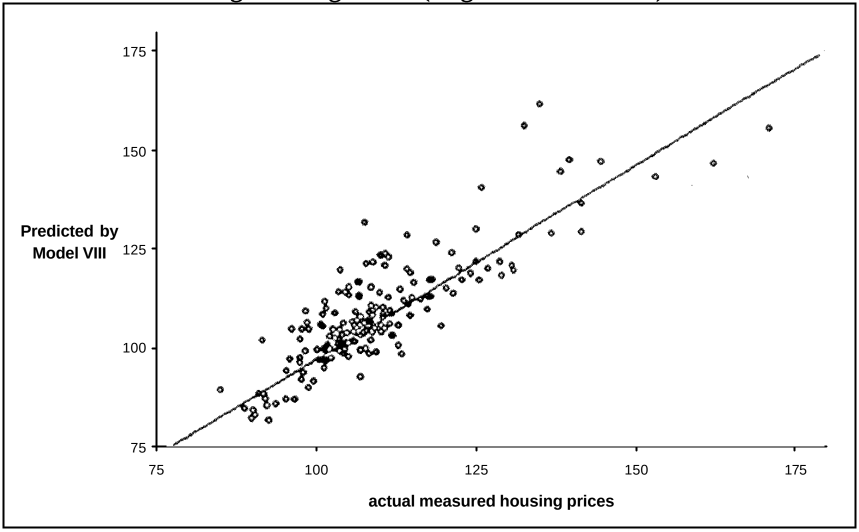
**Table 5 Combined Models of Housing Price Development**
**All Variables in Logarithms (t-ratios in parentheses)**

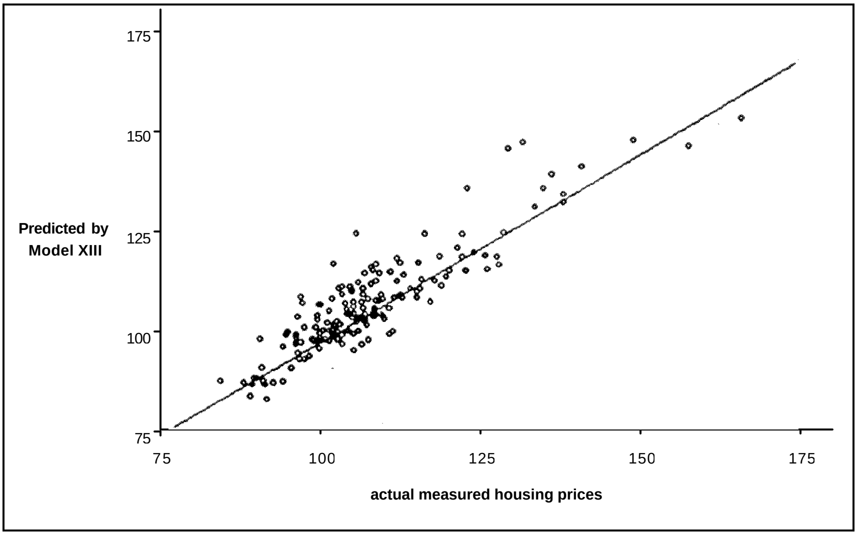
| | | | Model | | |
|---|---|---|---|---|---|
| Variable | IX | X | XI | XII | XIII |
| P(t-1) | 1.585 | 1.547 | 1.513 | 1.585 | 1.470 |
| | (33.44) | (32.51) | (33.28) | (33.37) | (32.34) |
| P(t-2) | -0.656 | -0.623 | -0.592 | -0.655 | -0.543 |
| | (13.46) | (12.84) | (12.78) | (13.29) | (11.54) |
| Income/Household | 0.008 | 0.017 | 0.002 | 0.007 | 0.007 |
| | (0.78) | (1.67) | (0.20) | (0.68) | (0.69) |
| Construction Permits | | 0.014 | | | 0.017 |
| | | (3.38) | | | (3.89) |
| Owner-Occupied | | | -0.030 | | -0.029 |
| Vacancy Rate | | | (6.08) | | (5.97) |
| Number of households | | | | -0.001 | -0.008 |
| | | | | (0.14) | (1.62) |

| | | | | | |
|---|---|---|---|---|---|
| Intercept | 0.322 | 0.186 | 0.397 | 0.324 | 0.245 |
| | (4.65) | (2.36) | (6.07) | (4.60) | (3.30) |
| $R^2$ | 0.959 | 0.962 | 0.965 | 0.959 | 0.968 |

Figures 1 and 2 illustrate the implications of these models. Figure 1 is based upon the logarithmic models reported in Tables 4 and 5.

**Figure 1 Implications of "History" And "Economic Fundamentals" in Forecasting Housing Prices (Logarithmic Models)**



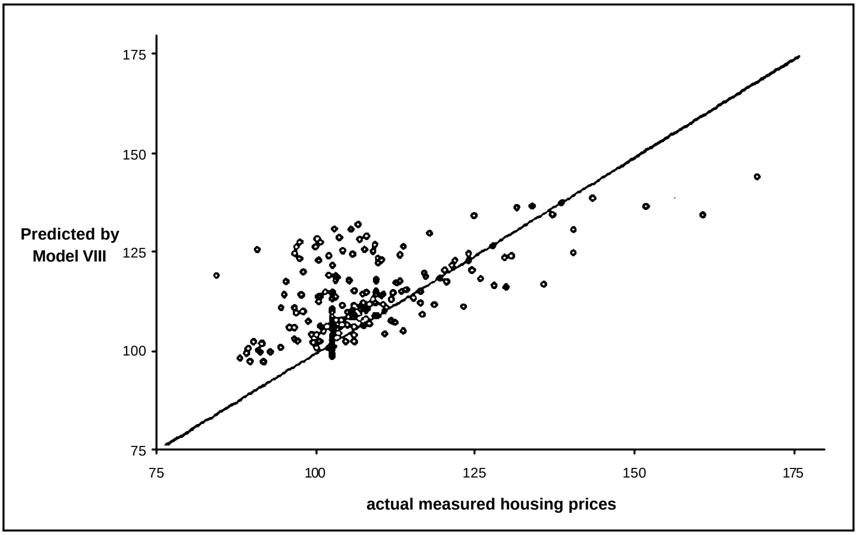



upon analogous linear models not reported in the tables. Each figure presents the observed course of housing prices and the prices predicted by one of the statistical models. The top panel of Figure 1 compares the actual course of housing prices with those predicted by Model VIII which is based only upon the previous course of housing prices. The bottom panel is based upon Model XIII which includes economic fundamentals as well as lagged values of housing prices. The figure illustrates the improvement in forecasting when fundamentals are also used to predict housing prices.

This improvement is even more apparent in Figure 2 based upon the linear models. This difference arises because, in the linear form, history by itself explains less of the variation in current housing prices (in linear form, the explained variance comparable to that reported in Table 4 ranges from 9 to 34 percent instead of 76 to 96 percent).

Of particular concern is the ability of a model to predict turning points, the specific periods in which price declines reverse and when "bubbles" burst. Table 6 summarizes the accuracy of the various models in predicting turning points. 43 turning points were observed in the sample data. For both the price change models and the logarithmic models reported in Tables 3, 4, and 5, lagged prices form credible predictors of turning points. However, the number of correctly and incorrectly predicted turning points is improved by combining data on local conditions with housing price histories. This statistical analysis suggests quite clearly that economic fundamentals are important determinants of the course of housing prices, and they are important in predicting the turning points in housing price trends. However, the data also show –- quite emphatically -- that fundamentals alone leave a lot unexplained. A simple model of economic fundamentals explains between 10 and 40 percent of the changes in housing prices. When fundamentals are augmented by lags in housing prices, the explained variance increases. But the augmented models still do not explain the bursting of asset "bubbles" very well. About half of the sign reversals in price trends are predicted by the economic models.

**Figure 2 Implications of "History" And "Economic Fundamentals" in Forecasting Housing Prices (Linear Models)**



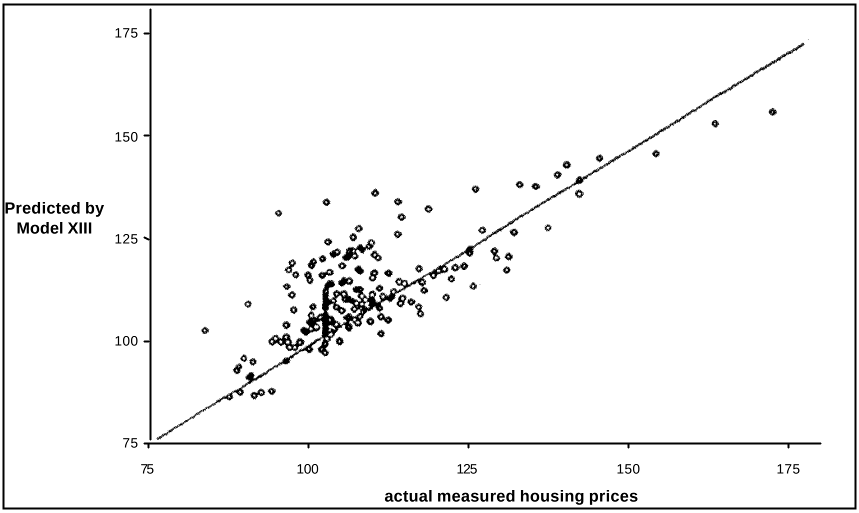

Predicted by Model XIII
175
150
125
100
75
75
100
125
150
175
actual measured housing prices

**Table 6 The Prediction of Turning Points***

| Model | Number Predicted | Predicted Correctly | Predicted Incorrectly |
|---|---|---|---|
| A. Models Based on the Log of Housing Prices | | | |
| V | 52 | 13 | 39 |
| VII | 63 | 27 | 36 |
| VIII | 55 | 26 | 29 |
| B. Models Based on the Percent Change in Housing Prices | | | |
| V | 43 | 19 | 24 |
| VII | 42 | 16 | 26 |
| VIII | 47 | 21 | 26 |

* Note : A turning point is defined as a reversal of sign in house price changes in adjacent years. There are 43 turning points in the raw data.

## Do Property Price Trends Explain Fundamentals?

Bubbles in financial markets and in real asset markets are not new –- as historians of Holland in the 17th century and as real estate developers in Texas in the 1980's can attest. Garber (1990) reviews a diverse set of historically interesting speculations –- runups and subsequent crashes in prices –- suggesting five ways in which investor behavior can lead to a bubble in asset prices which subsequently bursts. The first and most straightforward of his examples is that of a single investor who incorrectly (or falsely) claims that a venture will pay great future dividends. Subsequent investors base their decisions upon their perceptions of market fundamentals. A situation of asymmetric information in which one player has an incentive to dissemble may yield a runup in asset prices if this player is successful.

The incentives and opportunities to engage in this behavior in real capital markets may have been unusually strong in Asia in the mid-1990's. First, with robust export demand, firms had incentives to increase leverage and borrow against assets for expansion. Second, existing real capital assets are notoriously hard to value. Markets are thin, and the problems of appraisal and valuation are great. Markets are unusually thin, perhaps, in Asian real estate since many countries (for example, Korea), made it quite difficult for foreign entities to invest in real capital. Indeed, it was not until the middle of

1998 that Thai citizens married to foreigners could own real property. Third, it is alleged that patterns of asset ownership and routine business transactions among élites (aka "crony capitalists") made it easy to increase property assessments and thus to gain greater leverage by mortgaging properties at higher prices. The proceeds of these transactions could be invested in new business as well as expansions in the current line of business.

Developers, anxious to fuel the general expansion of the economy, applied for construction loans, bridge loans, takeout financing. If the lending institutions operated under an implicit guarantee –- the way lending institutions in Texas were allowed to operate in the 1980's –- then it follows that investment in real property was excessive and the potential for default on loans was increased. Rational lending institutions had every incentive to undertake excessively risky real capital investments.

Under these conditions the diagnosis of a "currency crisis" could arise without any of the macroeconomic conditions that normally lead to such crises. The inevitable "bad luck" that follows from the moral hazard facing lending institutions could place them in a position of defaulting on the loans they obtained from world capital markets. The financial consequences of these defaults would have to be made up by central government, but foreign capital would also be withdrawn. Existing firms with excessive loans on their plant and equipment would be squeezed, and the bubble could simply burst. Contagion could quickly lead the economy from one equilibrium to another disastrous equilibrium.

There seems to be no formal model of this alternative to a "currency crisis" model of the Asian financial crisis (although Paul Krugman [1998] has sketched out a couple of these issues on his website).[3] I have not conducted any empirical analyses of this issue. However, there are four facts which may make the explanation more plausible.

First, the ratio of new office supply to historical supply and to historical vacancy rates was astonishingly high in Asia by the mid-1990's. Figures 3 and 4 show this imbalance quite dramatically, reporting the supply in Kuala Lumpur and the Klang Valley in Malaysia.

Figure 3 presents condominium demand, supplies and vacancy rates in the Klang Valley. As reported in the figure, vacancy rates were already forecast to quadruple between 1996 and 1999, a period in which supply was also

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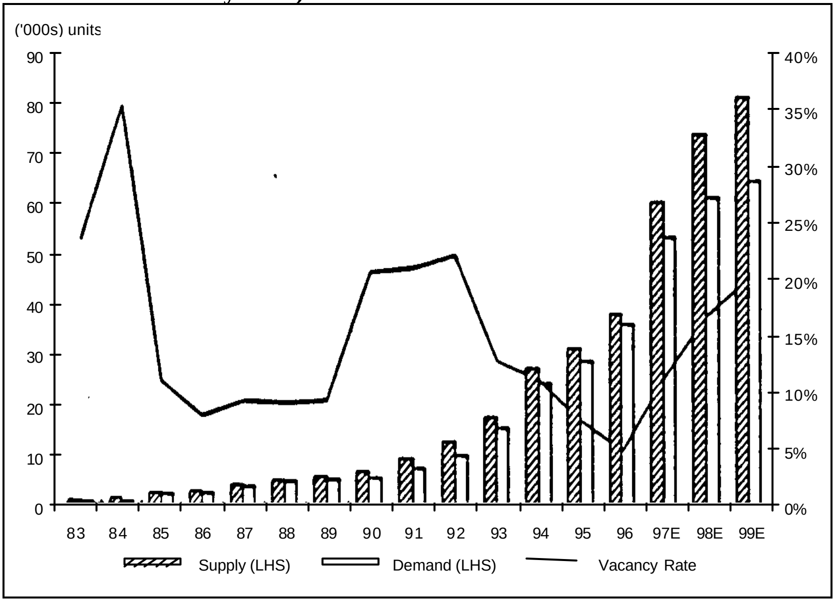
[3] More recently, Edison, et al. (1998) have presented a model containing elements of this line of reasoning.

forecast to increase substantially. As shown in Figure 4, available space in office buildings in Kuala Lumpur was forecast to increase by more than 5 million square feet in 1997, more than twice the growth in any other year in the preceding decade.

**Figure 3 Supply, Demand, and Vacancy Rates in Klang Valley Condomimium Market (estimates by Morgan Stanley Dean Witter in January 1997)**

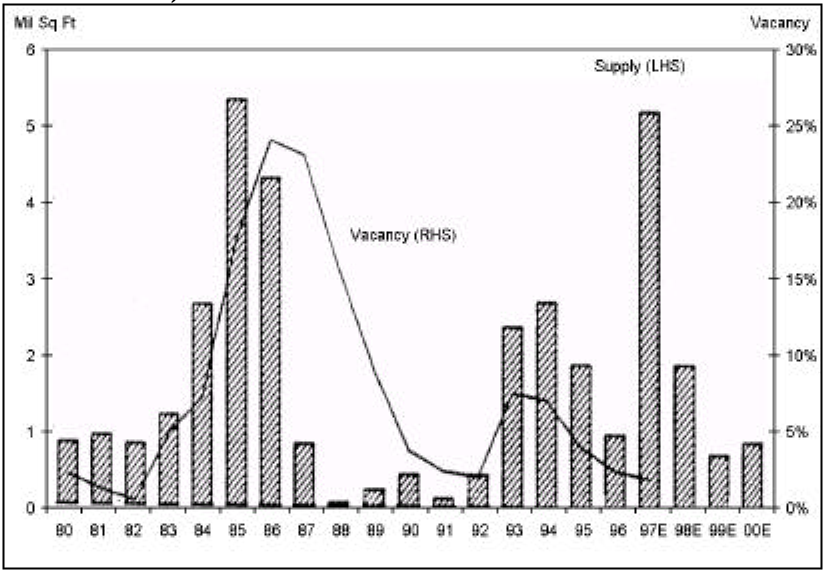



Source: Jones Lang Wootton
*E* = Morgan Stanley Dean Witter Research Estimates

Figures 5 and 6 present more detail on this imbalance in two other Asian markets. In Jakarta, office vacancies were about 14 percent in 1996, yet 13 million square feet of additional construction was forecast for 1997-1999. In the Bangkok CBD, office vacancy rates were about 15 percent while the largest increment ever in new office supply was forecast for 1998. Note that all this information was available to investors in early 1997.

Second, the ratio of sale prices to market rents for commercial and for residential real estate was at historic highs well before the Asian crash of 1997. Figure 7 reports these trends for Hong Kong retail properties while Figure 8 reports trends for Hong Kong office rents. In both markets, prices diverged from rents – in an upward direction in 1996 and were forecast to

**Figure 4 Supply, Demand, and Vacancy Rates in Kuala Lumpur Office Market (estimates by Morgan Stanley Dean Witter in January 1997)**



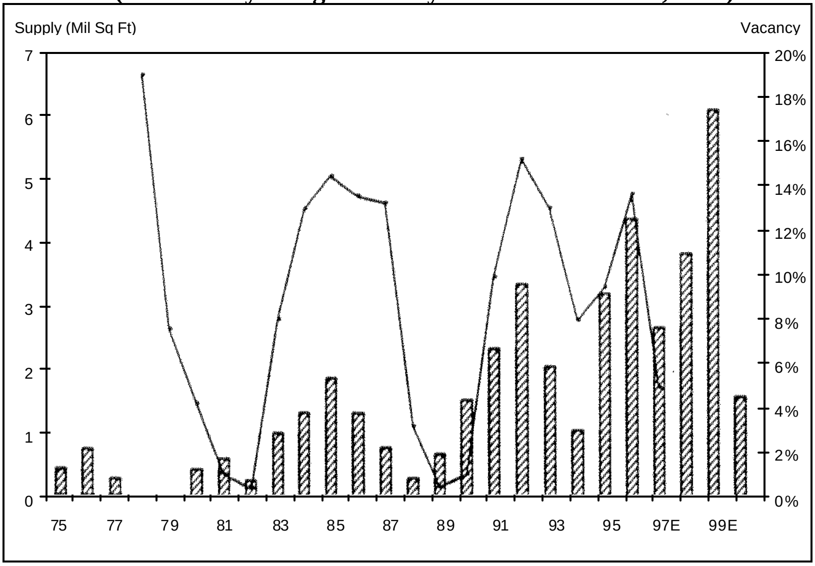

Source: Derived from Janes Land Wootton E = Estimates

Increase even more in 1997. Office rents in Singapore, shown in Figure 9 exhibited a similar trend. Rents for prime condominiums in Jakarta were quite flat from 1995 onwards as indicated in Figure 10. Yet sale prices were forecast to increase by forty percent between 1995 and 1997. Again, this information was known to property investors in early 1997.

Third, apparently the depositors in the financial institutions which behaved recklessly were, *ex post*, protected from loss in Thailand, Korea and Malaysia –– suggesting that they may have acted on this belief *ex ante*.

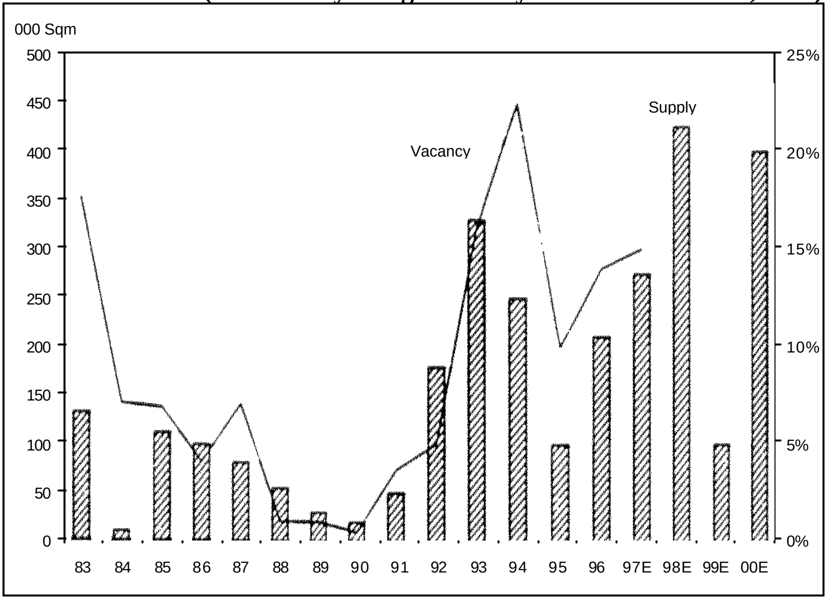
Fourth, the bubble in property markets burst well before the rest of the dominoes fell –- and before the apparent "currency crisis" developed. For example, Samprasong Land missed payments on scheduled foreign debt in February 1997, five months before the subsequent devaluation of the bhat. During the intervening period, the Thai government ploughed some $8B U.S. in propping up distressed financial intermediaries.

**Figure 5: Supply, Demand, and Vacancy Rates in Jakarta Office Market (estimates by Morgan Stanley Dean Witter in Jan., 1997)**



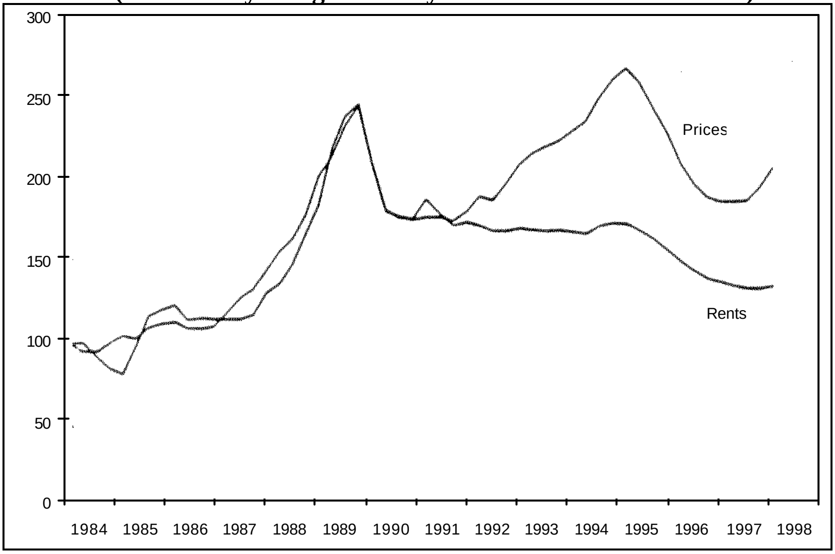

Source: Derived from Jones Land Wootton E = Estimates

**Figure 6: Supply, Demand, and Vacancy Rates in Bangkok CDB Office Market (estimates by Morgan Stanley Dean Witter in Jan., 1997)**



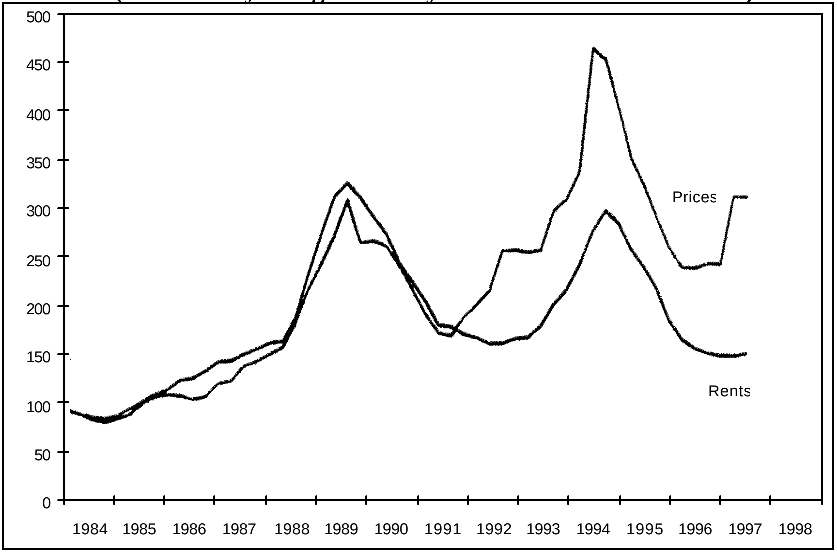

Source: Derived from Jones Land Wootton E = Estimates

**Figure 7 Course of Rents and Selling Prices in Hong Kong Retail Market (estimates by Morgan Stanley Dean Witter in March 1997)**



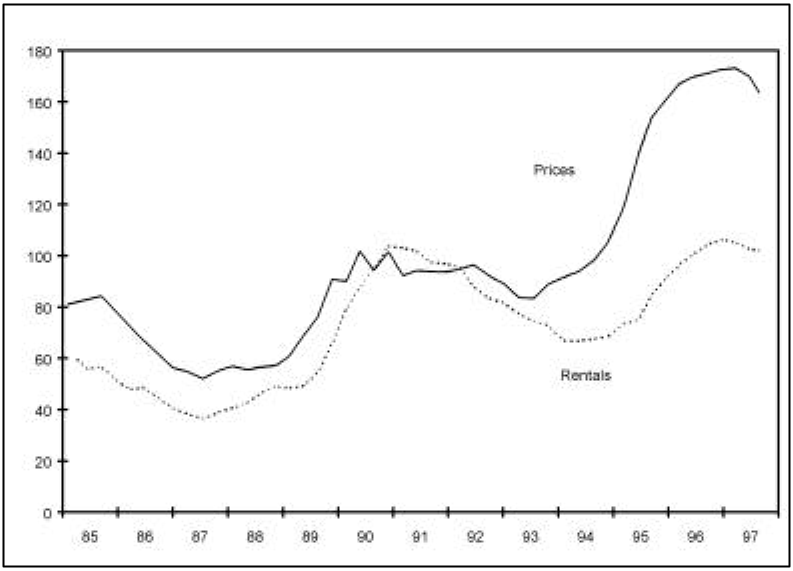

Source: Jones Land Wootton, Morgan Stanley Dean Witter Research

**Figure 8 Course of Rents and Selling Prices in Hong Kong Office Market (estimates by Morgan Stanley Dean Witter in March 1997)**



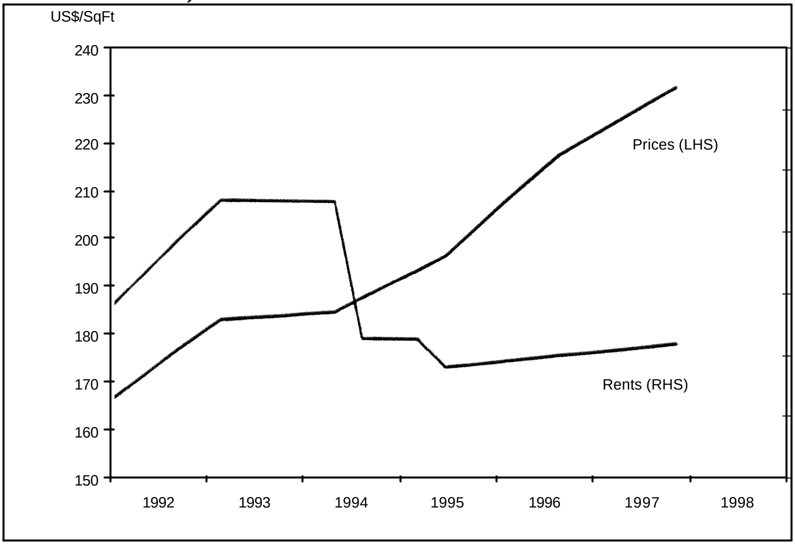

Source: Jones Land Wootton, Morgan Stanley Dean Witter Research

**Figure 9 Course of Rents and Selling Prices in Singapore Office Market (estimates by Morgan Stanley Dean Witter in March, 1997)**




Source: Urban Redevelopment Authority

**Figure 10: Course of Rents and Selling Prices in Jakarta Condominium Market (estimates by Morgan Stanley Dean Witter in March, 1997)**




Source: Jones Land Wootton, Morgan Stanley Dean Witter Research

## Conclusion

In this paper I have concentrated on two aspects of real estate and the course of the real economy. Are real estate trends predictable by fundamental factors in the economy? Can exogenous trends in real estate prices –- really bubbles in this market — affect economic fundamentals?

I hope I have convinced you of the first — although it seems clear economic fundamentals do not explain most of the variation in the property prices in the short run.

With regard to the second, I hope to have provoked additional thought and controversy. It seems likely that bubbles in Asian property markets had real consequences for the course of national and regional economic conditions during the late 1990's.

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