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# Long-Term Perspectives on the Current Boom in Home Prices

ROBERT J. SHILLER

**H**omeowners want to know: Is the current boom in home prices temporary? Is a crash possible? And if prices do fall, will they come back up fairly soon, or will they stay down for many years?

Some have written reassuringly, downplaying concerns about possible price falls: Examples are Cynthia Angell and Norman Williams; Ben Bernanke; Charles Himmelberg, Christopher Mayer and Todd Sinai; the Joint Center for Urban Studies; David Lereah; Frank Nothaft; and Jonathan McCarthy and Richard Peach.

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The general tone of reassurance in many of these articles appears unwarranted.

Angell and Williams, for example, concluded that "In over 80 percent of the metro-area price booms we examined between 1978 and 1998 the boom ended in a period of stagnation... the expectation would be that metro-area home price busts will continue to be relatively rare." But they reach their conclusion based only on a twenty-year period of United States data.

Indeed, all these studies confined themselves to no more than a few decades' recent data. Such data simply cannot provide useful insights to homeowners planning to occupy homes for thirty or forty years, and wondering whether

a general uptrend in home prices will inevitably carry them over any possible price declines.

To answer the important questions, we first need to find out if there have been other booms similar to this one, and what happened after such booms ended. Until now long-term price indexes have not been generally available to allow us to do this. I have constructed one, based in part on the repeat-sales indexes that Karl Case and I constructed, and also, for earlier years, on other indexes as well.

The news is not good for homeowners. According to our data, homeowners face substantial risk of much lower prices that could stay low for a long time after. Luckily, though, derivatives products, notably a

futures market, are being developed that they will soon be able to use to insure against this risk.

### THE DATA SHOW NO LONG-TERM UPTREND IN REAL HOME PRICES

Figure 1 shows three long-term series of real home prices. All attempt to control for changing size and quality of homes; all are corrected for inflation in consumer prices.

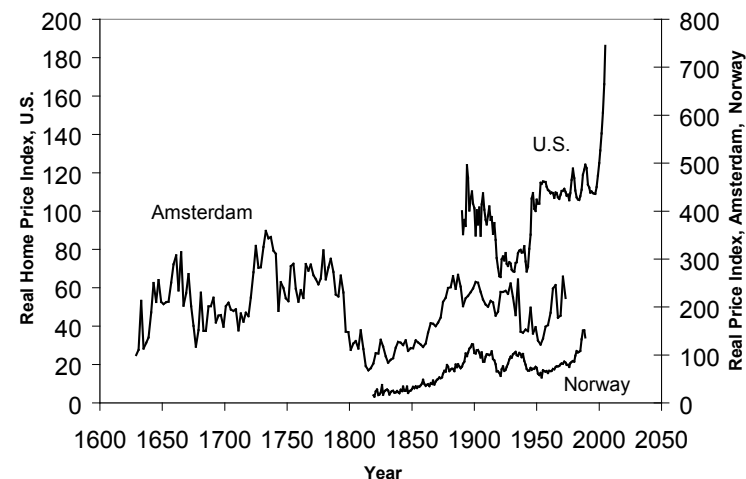
I constructed the United States series 1890-2005 by linking together the Grebler Blank and Winnick index for twenty-two U.S. cities 1890-1934; a median asking price of homes advertised in newspapers for Boston, Washington DC, Chicago, New Orleans and Los Angeles 1934-1953; the U.S. Bureau of Labor Statistics January Consumer Price Index home purchase component 1953-1975; the U.S. Home Price Index from the U.S. Office of Housing Enterprise Oversight 1975-1987 for the first quarter of each year; and the Fiserv Case-Shiller Index (CSI) for the U.S. 1987-2005, for the first quarter of each year.

Piet Eichholtz constructed the Amsterdam series 1628-1973, a repeat-sales price index

based on selling prices of homes along the Herengracht canal, a small region of Amsterdam which was originally zoned for large lots and expensive homes and for which data have been carefully maintained. Homes are thought to have remained relatively unchanged there for centuries.

Øyvind Eitrheim and Solveig Erlandsen constructed the Norway series 1819-1989, another repeat-sales price index, this time based on individual home sales data for Bergen from 1819-1989, Oslo from 1841-1989, Kristiansand from 1867-1989, and Trondheim from 1897-1989.

Note the enormous current boom in home prices in the United States since 1997. The magnitude of the current boom is practically unique in history, making it difficult to predict what comes next based on historical examples. Amsterdam and Norway have also seen sharp upswings since 1997, but these price indexes terminate before 1997, and so are not visible on Figure 1.



**Figure 1. Real home price indexes for the United States 1890-2005 (Shiller 2005), Amsterdam 1628-1973 (Eichholtz 1997) and Norway 1819-1989 (Eitrheim and Erlandsen 2004)**

Do real home prices have a substantial long-term uptrend? The chart suggests not.

First, what about the United States? It's notable that until the recent explosion in home prices, real home prices in the United States were virtually unchanged from 1890 to the late 1990s.

The Amsterdam data show lots of ups and downs, but only the slightest hint of an uptrend. Prices approximately doubled, but it took nearly 350 years to do so, implying an annual average price increase of only 0.2% a year.

The Norway data do suggest such an uptrend, but viewed from the longer perspective of the Amsterdam data, that uptrend seems to be merely part of a long cycle from the early 19th century to the late 19th century. And even leaving the context added by Amsterdam aside, Norway's real price growth is, on average, negligible: only 1.3% a year.

#### ACCOUNTING FOR THE CURRENT BOOM: AN HISTORICAL COMPARISON

If the current boom doesn't reflect a long-term uptrend in real home prices, when will the market correct for this short-term discrepancy? And will the correction be smooth or drastic?

The only other time the United States has experienced a large home price boom was around the end of World War II. According to these data, real home prices went up 60% from 1942 to 1947, and then leveled off into a "soft landing," merely restoring real prices to levels seen before World War I.

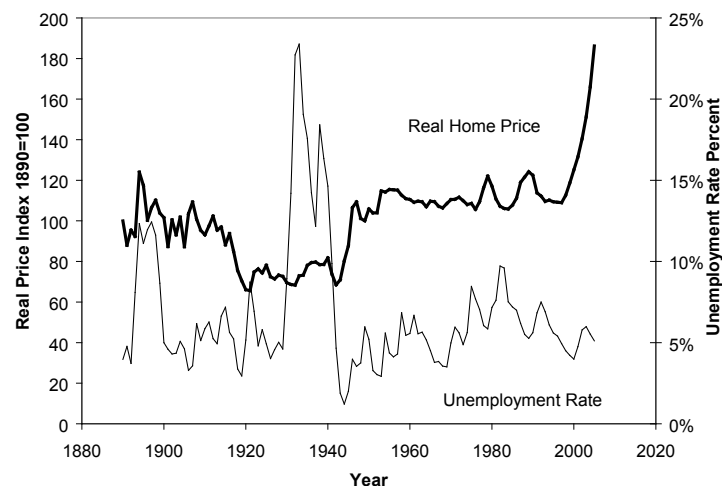
The current boom is of a similar and even greater magnitude. From the first quarter of 1997 to the first quarter of 2005, real home prices went up 71% according to the Case-Shiller index, and by 52% according to the OFHEO repeat sales index.

Will this boom end in a soft landing as the prior boom did? Possibly, but just as that boom had a different history—it followed the tumult of the interwar period of low construction and declining prices—today's boom may well have a different result.

#### RECESSION: THE ONLY WAY THE CURRENT BOOM CAN END? NOT NECESSARILY.

Many think that only a recession can end a home price boom, and no recession is on the horizon: therefore, a soft landing is most likely. But this comforting syllogism is an over-extrapolation from the last two real estate cycles. The magnitude of the current boom is much greater than past booms, and so the way the boom ends, may be more unpredictable and dramatic.

Figure 2 shows a longer view, giving unemployment rates and home prices since 1890. Two things stand out: first, the current boom is far more dramatic than its predecessors, and second, even prior booms do not necessarily track the unemployment rate such that their ends are signaled by recessions.



**Figure 2. U. S. real home price index 1890-2005 (Shiller, 2005, updated) and U.S. unemployment rate 1890-1930, source: Bureau of Labor Statistics, Current Population Survey, and, before 1930, Romer (1986).**

Granted, the real estate boom-bust in the late 1970s and early 1980s does match up roughly with fluctuations in the unemployment rate. And so does the boom-bust of the late 1980s and early 1990s. But that is not true if we look at a longer time span.

The huge depressions of the 1890s and the 1930s had no discernable effect on home prices. The recession of 1950-51, had no effect on the then-current boom in home prices, and the recessions of 1953-4, 1957-8, 1960-61, 1967-8 and 1974-5 had no important effect on home prices. Similarly, the recession of 2001 had no obvious effect on the boom in home prices then underway.

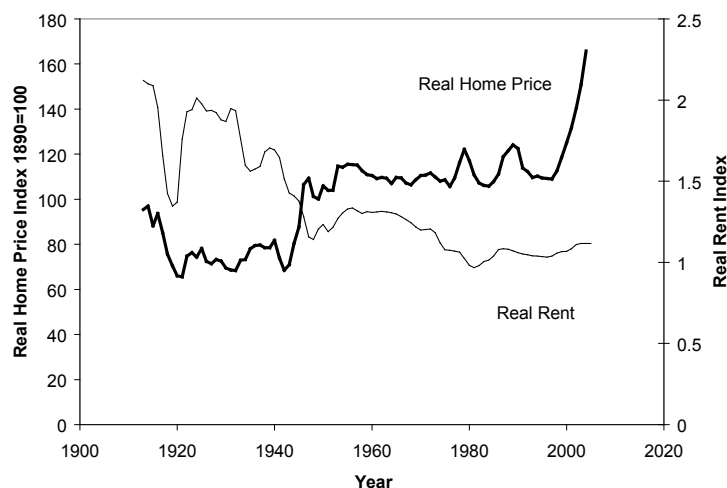
Although the last two real estate boom cycles did end in recession, that is not the rule historically.

#### REAL RENTS, THE RENT-PRICE RATIO, AND REAL INTEREST RATES

It is striking that, while there does not seem to be a genuine long-term uptrend in real house prices, there does seem to be a genuine long-term downtrend in real rents.

Indeed, according to BLS data, real housing

rents have been in decline—falling about 50% in total—ever since the Consumer Price Index was created in 1913. See Figure 3. (The CPI rent series is quality-controlled, that is, adjusted for changes in the number of bedrooms, bathrooms, utilities and facilities provided, or changes in services expected of the renter.)



**Figure 3. U.S. real rent of primary residence, January, 1913-2005 (Bureau of Labor Statistics) and real home price, 1913-2005, Shiller 2005.**

It is thus surprising that the real price of American housing, also shown in Figure 3, has had an uptrend since 1913—although, as noted above, there is no long-term uptrend if pre-1913 years are taken into account. It is perhaps more accurate to say the real price of housing has been flat since 1913 except for two episodes: the home price boom that followed World War II (which essentially restored home prices to their 1913 level) and the current home price boom.

#### IN THEORY, REAL RENTS AND REAL HOME PRICES MIGHT BE EXPECTED TO TRACK EACH OTHER

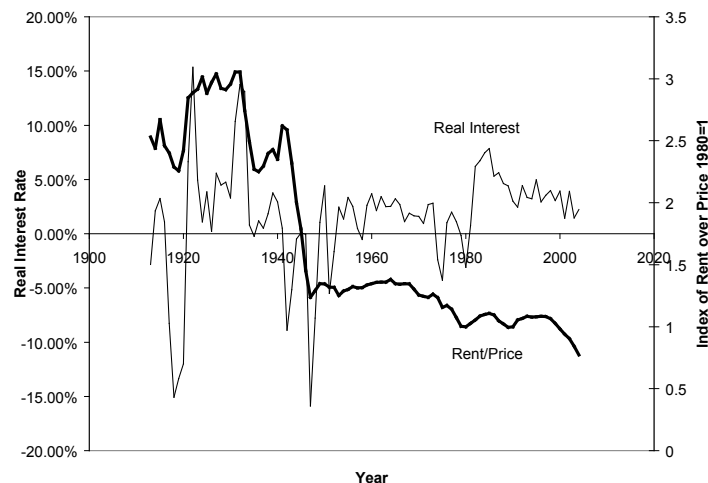
In theory, one might expect real home prices to represent the present discounted value of future rents. After all, people can move from renting to owning with relative ease. And while there's an obvious tax advantage to owning—including to owning a second

home—in the form of the home mortgage deduction, that advantage could be easily valued and taken into account in the calcula-

tions. If we accept the approximation that rents are a random walk, then prices should closely track rents. If rents are close to a random walk but mean reverting, we might expect price to track rents but to be less volatile than rents.

In practice, however, the situation is very different: Not only do real home and rent prices fail to track each other, but the rent-price ratio has shown a remarkable downtrend since 1913. (See Figure 4). But why?

Interest rates are not the explanation, as some have suggested (notably Himmelberg, Mayer and Sinai 2005). The rent-to-price ratio downtrend is not matched by a downtrend in real long-term interest rates, here measured as a long-term U.S. government bond yield minus the previous year's CPI inflation rate (see Shiller 2005). Also, real rates today, while much lower than in 1980, do not appear low by historical standards.



**Figure 4. Real interest rate is defined as long-term government bond yield described in (Shiller 2005), minus the rate of change of the consumer price index for the preceding year. The index of the rent/price ratio is defined as the U.S. consumer price index for rent of primary residence, 1982-4=100, divided by the Shiller [2005] U.S. home price index, and the result rescaled to 1980=1.**

The recent divergence between real interest rates and real rental-price ratios suggests the possibility of an irrational overpricing today and a huge fall in home prices in coming years. However, more study of these series

in association with present value models and other data would be warranted before drawing strong conclusions just from this comparison.

### THE CHARACTER OF THE CURRENT BOOM: A GLAMOUR CITY BOOM MORE THAN A LAND BOOM

Nationwide, there is something of a land price boom going on too. Using data from the United States Department of Agriculture, the U.S. real (CPI inflation-corrected) estimated market value of cropland per acre rose a total of 29% between 1997 and 2005. Over the same period, real average cash rents per acre for cropland were virtually constant, so the agricultural land boom shows up in the price-rent ratio as well.

But, the 29% increase in real agricultural land prices is a lot less than the 71% increase we saw in Figure 1 in real home prices. Moreover, some of this land price boom is from acreage that is in the immediate vicinity of urban areas, and so some of this boom is just the same urban real estate boom that we have already seen.

The cause of the home price boom does not seem to be an unsatisfied hunger for land services or housing services, above other goods and services: We saw in the preceding section that rents have not been increasing as much as consumer prices. Expenditure on housing services in the United States as a share of GDP has been relatively constant at about 15% since 1929. Expenditures have kept up with rising incomes not because rents or prices have been increasing but because we have increased the amount of real housing services that we buy. U.S.. Census data reveal that the average size of new houses increased from 1100 square feet in the 1940s to 2150 square feet in 1997 as the number of people per household dropped from 3.67 in 1940 to 2.64 in 1997. There were about 800 square feet per family member in 1997, compared with 300 square feet per family member in the 1940s.

We appear to be seeing growth in a different kind of hunger: a hunger for investments in real estate that can be expected to do extremely well. The home price boom is in large measure a boom in investments in glamorous urban areas and vacation spots that appear to investors to

have sharp appreciation potential.

According to the National Association of Realtors, 36% of all homes purchased in 2004 were second homes: investment properties or vacation homes. Mortgage data from Freddie Mac from Frank Nothaft suggest that since 1999, in the United States, mortgages for purchases of second homes have doubled as a percent of all mortgages. (Data are limited to the market conforming to Freddie Mac's mortgage securitization requirements.)

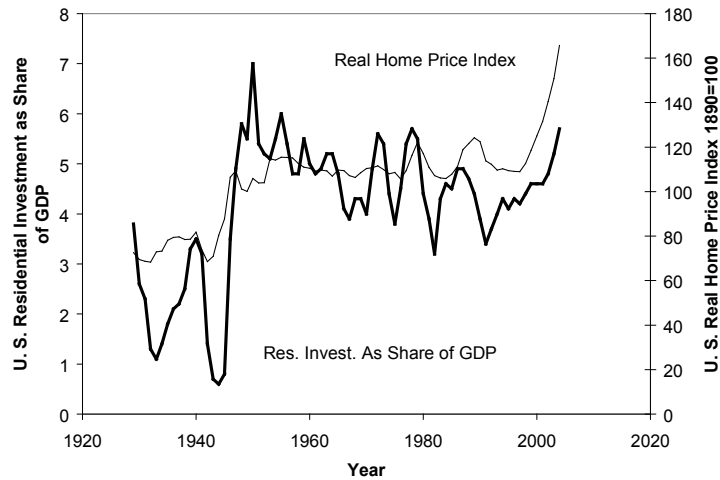
Particular examples bear out the general thesis that the boom is very strong in desirable cities and vacation spots. Consider that the Case-Shiller Indexes show that from the first quarter of 1997 to the first quarter of 2005, when nationwide real home prices went up 71%, real home prices rose 93% in Boston, the home of universities and intellectuals, and 151% in Los Angeles, the home of movie stars. Over this same interval, real home prices went up 137% in Barnstable County, Massachusetts—the elite area of Cape Cod summer homes, and 114% in Collier County, Florida, one of the most exquisite vacation areas in the United States, and with the beautiful Ten Thousand Islands.

## A “SOFT LANDING” AFTER ALL? THE SAFETY-VALVE HYPOTHESIS

The variance across regions of home prices, relative to construction costs, has increased over this interval in the United States, and is very high by world standards.

Goldman-Sachs chief economist Jan Hatzius believes this variance creates a greater safety valve in the United States: homeowners can move to lower-priced land to build their houses. Congested centers still command high prices, but the equilibrium prices in these centers tend to be lower because there is the possibility of moving elsewhere. The process takes time: businesses have to move with people, and new urban areas have to be planned and built. If he is right, then the housing boom, if it cools, may have a “slow crash,” instead of a “soft landing.”

Figure 5 shows that residential investment has tended to be high when the home price index that I constructed for 1890-2005 has been high. That conclusion makes sense: When houses seem to be a good investment, more is spent on them. This investment is essential to the process that brings home prices back down when they are high.



**Figure 5: Residential investment as a share of GDP 1929-2004 from National Income and Product Accounts, Table 1.1.10, and real home price index for the United States, Shiller [2005].**

High prices in some cities appear to be related to local zoning restrictions that inhibit construction in those cities. Glaeser and Gyourko (2002) found that in 1990 there was virtually no correlation across metropolitan areas in land

area per household and the percent of homes selling above construction costs. If deviations of home prices from construction costs across cities were due simply to scarcity of land, then cities with high deviations would economize on land, build taller buildings, and use smaller lots.

Zoning changes can be intentionally used by local governments to slow a potential bust in the housing market. On the other hand, zoning changes could inadvertently accelerate the bust: If such changes make big cities less desirable, owing, for instance, to more of the type of high-rise apartment buildings disliked by wealthy residents – then we may see price declines in the boom cities.

It seems likely that some neighborhoods of unique value will see their value protected by zoning laws, even into the distant future. The neighborhoods of Georgetown, in Washington DC, of Beacon Hill, in Boston, or of Beverly Hills in Los Angeles have great historic value,

proximity to important economic centers, and absence of vacant land. The beautiful cities of Aspen Colorado or Santa Fe New Mexico have unique ambience that would be disrupted by high-density housing or high rises, and voters there know that. It appears unlikely that significant numbers of homes in these choice regions will be demolished to make way for higher density housing for the foreseeable future, and perhaps not for centuries (as indeed, some centuries-old choice neighborhoods can still be found today).

But, these are rare places. Most neighborhoods are not so unique or special that they will necessarily encounter resistance from residents if an economically advantageous offer is made. Studies of zoning laws, such as that by Fischel (2004), show that we have only imperfect understanding of the political forces that shape zoning laws, and we cannot make a case that there is any fundamental force that will keep zoning very tight in the future.

Zoning laws do appear to have become gradually more effective over the course of the twentieth century, according to the research of Edward Glaeser and Joseph Gyourko 2005. But



still they are local, and still there is an incentive for communities somewhere to welcome economic development. Even if the rare places can't be built up more, upward pressure on their prices can be relieved by new construction elsewhere, even far away.

When Walt Disney felt hemmed in by expensive land around his 170 acres of Disneyland in Anaheim California, he announced in 1965 that he would build a new Disney World complex of entertainment, hotels, industrial parks, research centers and residential communities on 27,000 acres on the other side of the country, in Orlando, Florida. The land was cheap then in this mosquito-ridden town of cowboys and citrus farmers, and it was far away from either the Atlantic Ocean or the Gulf of Mexico where tourists then flocked. Today, the glamorous Orlando area is dotted with expensive homes and commercial buildings. Luxury hotels and communities have created their own glamour and their own artificial bodies of water for swimmers and sunbathers. For the future, Florida awaits countless more development projects: in Florida there are still vast tracts of land in agricultural or other low-

intensity use or just lying vacant.

When the Yale & Towne lock company decided in 1959 to shut down forever its manufacturing operations in Stamford Connecticut (an already-declining industrial town then called "lock city" 35 miles from New York city) the Stamford city planners, fearing the consequences of the loss of jobs, made an effort to redesign and rezone the city to attract businesses. Their success was phenomenal, and starting in 1973 with GTE, many corporate headquarters have moved to Stamford. The exodus from New York helped take the pressure off New York real estate prices. Today, Stamford's concerns have been transformed totally: the city leaders are worried that real estate prices have risen so high that the traditional inhabitants of that city can no longer afford to live there. The next step will likely be urban renewals in cities yet further out from New York, and business parks and planned communities in what are today either declining cities or quaint New England countryside, taking the pressure off of Stamford real estate prices, and further taking pressure off of New York real estate prices.

The history of world real estate has been

like this for centuries. Zoning laws have not stopped new construction and newly-valuable urban areas keep appearing. We still see the glamour areas persist indefinitely (just as the Herengracht in Amsterdam remains a glamour area today) but we will see more and more of such places appearing (just as the Herengracht is now among a multitude of new glamour places of similar value). The glamour areas are likely to be like ever expanding and replicating mesas of value rather than ever-rising mountains of value as the conventional urban land model is often taken to suggest.

At some point, with prices high relative to construction costs in big cites, and construction proceeding quickly outside the cities, a decline seems likely to follow. Whether the landing will be hard or soft, remains to be seen.

#### FADS CAN FADE FAST

The preceding discussion did not touch upon behavioral economics. I argued in *Irrational Exuberance* that there is substantial evidence that there is a strong psychological element to the current housing boom. While the boom may continue for some time, the psycho-

logical element is likely to die away as thinking changes and current folk expectations for further price increases are lost. I argued that the current home price boom is best thought of as a social epidemic: a fad of sorts. And yet social epidemics are not even mentioned by most of those who say reassuringly that there is no reason to worry about home prices. Social epidemics can unwind sharply as psychology changes, suggesting the worrisome possibility of a rather hard landing.

#### WITH THE HOUSING MARKET RISKIER THAN IT SEEMS, HEDGING INSTRUMENTS ARE INVALUABLE

The outlook for home prices is not so certain as many of those reassuring economists cited at the beginning of this paper would imply. The “fundamentals” that they cite in support of their confident assessments are surprisingly weak at explaining historical prices. The market for homes is a very risky place.

The recent tremendous boom in home prices shows that there are risks on the upside: people who are underexposed to real estate may miss out on a rising market. And, the historical tendency for booms to be reversed eventually

shows that there are risks on the downside: people who are overexposed to real estate may suffer when prices collapse.

It is vitally important that vehicles be created to hedge these risks and to allow people to manage their exposure to the real estate market. Creating hedging vehicles that will protect agents from such major risks will enable them to act without the hindrance of idiosyncratic risk, and creating liquid international markets for real estate price risk will achieve price discovery that will allow economic decisions to be made much better.

There have been a number of efforts over the years to create hedging instruments for real estate price risk, but none of these has really caught on to date. Notably, the London Futures and Options Exchange in 1991 created UK property futures markets that were cash settled based on the Halifax hedonic home price index. There was very little trade in the market when it was created, and unfortunately exchange members reacted by fraudulently padding the volume of trade numbers to create the appearance of success. The market was shut down in scandal in a matter of months, before it had a chance to

develop, and this debacle has tainted the idea of real estate futures ever since.

But one failure, and other failures or half successes, do not disprove the concept of real estate risk management. The Chicago Mercantile Exchange, under the guidance of Felix Carabello, John Labuszewski and Sayee Srinivasan and in collaboration with the firm that Allan Weiss, Samuel Masucci and I founded, MacroMarkets LLC, has announced plans to create futures markets for home prices in ten U. S. metropolitan areas. The price indexes will be the Case-Shiller Indexes that Karl Case and I originally developed, now produced by a team headed by David Stiff and Linda Ladner at Fiserv, Inc. The contracts will be launched spring, 2006 and will be traded on the Globex electronic market. Futures markets have come a long way since 1991, and although past experience suggests that trading may get off to a slow start, there is a real expectation that the CME can make these markets work.

This paper has argued that price declines are more likely than most people seem to think, but has not pinned down exactly how likely such declines are, when such declines might

occur, or how far prices might fall. A futures market will generate price discovery for this: market expectations. If the futures market in effect concludes that real estate price declines are likely, then we might see backwardation in the futures market: futures prices lower than today's cash market prices and futures prices declining with horizon. In this case, speculators who expect prices to fall less than the market expects will tend to be long the futures market. Speculators who expect prices to fall more than the market expects will tend to be short the futures market. Hedgers will take sides depending on their preexisting exposure to the real estate market. The big unknown today is just where these futures prices will be to clear the market. We will learn a lot when we see these futures-market-clearing expectations at an array of horizons, and that knowledge ought to have fundamental effects, helping to rationalize the real estate markets and the economy at large.

Expanded risk markets may lead the way to other innovations in real estate risk management. Investment banks may offer real-estate index-linked notes and hedge

the risk that they incur in offering them by taking a position in the futures markets. Insurance companies may expand their homeowners insurance offerings into home equity insurance, which will insure the values of homes, and then hedge the risks they incur by writing such policies using the futures market. Mortgage lenders may create new mortgage products that will protect the borrower against the possible effects of a decline in home values, and they can hedge their resulting risks using the futures market.

The presence of a futures market may further facilitate increasing the supply of homes by reducing their risk. It may weaken the impact of zoning laws, for, as Fischel (2004) argues, the ability to hedge the value of homes will reduce the incentive for urban dwellers to vote for strict zoning to reduce risks to the value of their homes.

There is a basic principle here: there really are substantial risks to the market value of homes, and so major risk management tools will be central mechanisms of our future economy. When home value risk management

is finally made possible, we will see some fundamental economic transformations as a result.

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