Real Estate Bubbles and the Economic Crises: The Role of Credit Standards and the Impact of Tax Policy

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House price bubbles have been cited as the trigger for the various national banking crises and an important element leading to the general global economic crisis. Why did these bubbles start and when will their impact end? How do countries avoid new bubbles in the future?

The Organisation for Economic Co-operation and Development (OECD) and the International Monetary Fund (IMF) have done extensive research about the economic crisis and the reasons for it. First, this article presents the house price indexes compiled by OECD. Then, it details the main conclusions about the factors which encouraged the formation of the real estate price bubbles. It explores the consequences of tax policy choices and discusses the role and implementation of the different types of property taxation in various countries.

Next, the article compares the real estate markets in three countries: Denmark, Germany, and the United States. Denmark had one of the earliest and most acute real estate bubbles. The bubble in the United States is credited

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with triggering the global financial crisis in 2008. Germany had no bubble at all.

What accounts for this difference? This article examines the factors that contributed to the real estate market results in each country. It also looks at the role of government policy in the formation—or prevention—of house price bubbles. Finally, the article presents the problems real estate bubbles can create for local governments, particularly those that rely heavily on property tax revenues.

Issues

The current economic crisis has called for the examination of three important questions: (1) What started the economic crisis? (2) How long will it continue? (3) What should be done to stop it or to minimize the damage? This article examines these questions from the perspective of the real estate market and the total tax treatment of real estate.

An important trigger for the start of the crisis was the bursting of the house price bubble in the United States. The severity of this bubble was magnified by aggressive mortgage lending practices. In many other countries, however, there also were rapid increases in house prices and these increases lasted an unusually long time. Then these markets collapsed. Some countries have had worse bubbles than the United States. Interestingly though, some countries have not experienced a house price bubble in recent years.

Housing Markets

The real estate market consists of a number of separate markets: (1) owner-occupied housing, (2) rental housing, (3) urban business properties (factories, offices, and shops), (4) agricultural land, and (5) recreational properties.

The OECD and the IMF have extensively studied national housing prices and inflation in recent years. Their findings have been published in reports such as "House Prices and Inflation in the Euro Area" (Cournède 2005), "Recent House Price Developments: The Role of Fundamentals" (Girouard et al. 2006), "Real Estate Price Indexes: Conclusions and Future Directions" (Diewert 2006), and "World Economic Outlook: Housing and the Business Cycle" (IMF 2008).

OECD has in the recent years compiled a national house price index for 18 of its 30 member countries. The indexes have been published in *OECD Economic Outlook* (OECD 2009a). OECD obtains each national index from the country's national statistical office, central bank, or other agency. Each index goes back to 1970. There is an index figure for each quarter of a year.

The middle of the year 2000 is equal to 100. The indexes since mid-year 2000 are provided in table 1. The table shows the house price peaks since the year 2000. The peak of the house price development in each country is indicated in bold type.

The first peak in housing prices occurred in Ireland in the third quarter of 2006. At that time, the house price index was 207—more than double that of six years earlier in the 2000 base year. Since the peak, the index has fallen to 170—a decrease of 18 percent.

The national index for the United States indicates that the peak there was in the second quarter of 2007. The index had risen to 165 and has since fallen to 157. In Denmark, the peak was reached in the third quarter of 2007. The index rose to 185 and has since decreased 6 percent to 174. In the United Kingdom, house prices peaked in the fourth quarter of 2007 with an index of 208—subsequently decreasing 9 percent to 190.

Germany, on the other hand, did not experience housing price increases and consequently there was no house price bubble. In fact, from 2000 to 2008, the German house price index decreased from 100 to 93.

Why did house price bubbles occur in some countries and not in others? An analysis of the conditions in Germany

Table 1. OECD House Price Index since 200

	IRE	**USA**	**DNK**	NZL	**GBR**	SPA	FRA	CAN	SWE	NOR	AUS	ITA	FIN	NLD	CHE	KOR	**GER**	JPN
2000:3	104	101	101	100	100	100	101	100	102	100	100	101	100	102	101	100	100	99
2001:3	107	109	106	102	110	110	109	105	108	109	114	109	99	112	102	106	100	95
2002:3	121	116	110	113	129	130	119	116	116	112	136	120	111	119	107	124	97	91
2003:3	141	122	114	136	146	157	132	128	123	115	161	133	117	122	110	134	96	86
2004:3	156	136	125	160	166	185	153	138	135	127	165	145	123	128	113	134	94	81
2005:3	174	152	148	182	172	211	177	153	147	137	168	156	131	133	114	136	92	77
2006:1	188	158	167	192	176	222	188	163	159	145	175	161	139	137	116	138	92	75
2006:2	195	159	176	196	180	227	192	168	162	151	181	163	141	138	117	141	92	75
2006:3	**207**	161	180	200	184	231	197	171	165	157	185	166	144	139	116	143	93	75
2006:4	196	163	182	206	189	237	200	173	168	164	187	168	148	141	117	150	93	74
2007:1	204	164	184	213	196	238	203	179	172	169	191	170	150	142	119	155	93	74
2007:2	199	**165**	184	222	200	240	206	186	179	173	199	172	152	144	118	155	94	74
2007:3	199	164	**185**	**223**	205	243	208	189	184	175	206	174	154	145	119	156	94	74
2007:4	191	164	184	222	208	246	212	195	188	176	214	176	156	147	119	158	94	74
2008:1	193	164	182	219	208	246	212	193	187	174	**217**	**177**	157	148	119	159	94	74
2008:2	184	161	180	212	205	244	212	190	187	174	214	177	**158**	148	122	162	94	73
2008:3	178	158	176	208	197	242	210	182	188	171	210	176	156	**150**	123	164	93	73
2008:4	170	157	174	202	190	237	206	175	184	163	207		150	149	124	164	93	
Percent increase from 2000:3 to peak	100	**63**	**83**	123	**108**	146	109	94	85	75	117	75	58	47				
Percent decrease from peak to 2008:4	**18**	**5**	**6**	9	**9**	4	3	10	2	7	5	1	5	0				

Source: OECD (2009a, Annex table 59)

Notes: Countries (left to right): Ireland, United States, Denmark, New Zealand, United Kingdom, Spain, France, Canada, Sweden, Norway. Boldface type denotes house price peak.

as well as those in Denmark and the United States, two of the countries that experienced house price bubbles, will be presented later in the article.

Reasons behind sustained, sharp house price increases

OECD has also researched the factors that caused and sustained the sharp escalation in house prices. In "Recent House Price Developments: The Role of Fundamentals" (Girouard 2006), the authors identify five main reasons for the house price bubbles: (1) Low interest rates, (2) Development of new and innovative financial products—often as a result of deregulation—in which enabled an expansion of available credit, (3) Extremely favorable tax treatment of debt-financed, owner-occupied housing, (4) Short supply of urban land in attractive areas, and (5) More purchases of houses and condominiums for speculative purposes or as rental properties.

The Total Tax Treatment of Real Estate

OECD has taken a close look at which tax policy is most suitable in general and especially during the present crisis. The findings were published in the OECD working paper, "Tax and Economic Growth," by Johannson, Hardy, Brys, and Vartia (2008). This paper is included in the OECD publication, *Economic Policy Reforms: Going for Growth 2009*, which was published in March (OECD 2009b).

The paper provides a "tax and growth ranking" of taxes. The rankings were based on economic analysis of the relationship between increases or decreases in the various types of taxes and the possibility of economic growth for the country. Corporate taxes were found to be the most harmful for growth, followed by personal income taxes, and then consumption taxes. Recurrent taxes on immovable property, commonly referred to as property taxes, appeared to have the least harmful effect. Therefore, the OECD paper recommended that strictly from the standpoint of a country's economic growth, part of the tax revenue base should be shifted from income taxes to recurrent taxes on immovable property or taxes on consumption.

This recommendation was made fully recognizing the role of globalization and international "tax competition". For example, if some countries reduce their corporate tax rate to attract business to incorporate in their country, then other countries may follow suit. Eventually, corporate income can no longer be taxed. In Denmark, the high personal income taxes make it more difficult to attract foreign experts to work there. By the same token, many graduates from Danish universities (which are funded by the government) decide to make their careers in countries with lower personal income tax rates.

For these reasons, recurrent taxes on immovable property appear to be a very attractive tax. It therefore might be expected that many countries would make more use of this tax base—especially as globalization and international tax competition become increasingly important.

This shift, however, has only occurred to a small degree. Recurrent taxes on immovable property were 0.8 percent of gross domestic product (GDP) in the 1970s and have risen to a little less than 1.0 percent in 2005 (Johannson et al. 2008).

Spain, Portugal, Italy, Finland, and France have dramatically increased the use of recurrent property taxes during the past 20 years. Sweden started to use it as a tax to central government in the mid-1980s, but reportedly has stopped or decreased its use.

Table 2 shows sizeable differences in how much the member countries of OECD use recurrent property tax. The countries in which property taxes constitute the highest percentage of total tax revenue are listed first in the table.

In the U.S., the revenue from the recurrent property tax is equal to 10.2 percent of the total tax revenue of the country. In the UK, the figure is 8.9

percent; in Denmark, 2.5 percent; and in Germany, 1.3 percent. The table also presents the recurrent property tax revenue as a percentage of GDP.

The table's last column indicates how important the recurrent property tax is for local and regional government. In the UK and Ireland, the property tax is the only local tax. By contrast in Denmark, only 7 percent of the local taxes collected are property taxes. The main local tax in Denmark is the local income tax.

Table 2. Recurrent property tax revenue—OECD countries 2006

	% of total taxes1	% of GDP	% of local taxes
United States	10.2	2.9	30
United Kingdom	8.9	3.3	100
Canada	8.2	2.7	17
Japan	6.8	1.9	27
New Zealand	5.0	1.8	90
France	4.9	2.1	42
Australia	4.6	1.4	15
Poland	3.6	1.2	30
Iceland	3.5	1.4	14
Korea	3.1	0.8	13
Denmark	2.5	1.1	7
Ireland	2.1	0.7	100
Spain	1.9	0.7	6
Italy	1.9	0.8	13
Sweden	1.8	0.9	0
Netherlands	1.7	0.7	50
Portugal	1.7	0.6	27
Slovak Republic	1.5	0.4	13
Germany	1.3	0.5	4
Finland	1.1	0.5	5
Mexico	1.0	0.2	5
Belgium	0.9	0.4	3
Norway	0.8	0.3	4
Turkey	0.8	0.2	9
Hungary	0.7	0.3	11
Austria	0.6	0.2	3
Switzerland	0.6	0.2	2
Greece	0.6	0.2	52
Czech Republic	0.4	0.2	3
Luxembourg	0.2	0.1	5
Average	2.5	1.0	23

Source: Calculations made by Anders Muller based on OECD. Center for Tax Policy and Administration (2008).

1Total taxes include central, regional, and local taxes and social security contributions.

Recurrent taxes on immovable property are only one of the taxes on real estate. Taxes on financial and capital transactions and net wealth taxes are other important taxes that are related in part to real estate. Table 3 shows the taxes that are reported as "Taxes on Property" in the tax revenue statistics from OECD (OECD. Center for Tax Policy and Administration 2008).

Table 3. Taxes on property—OECD countries 1997

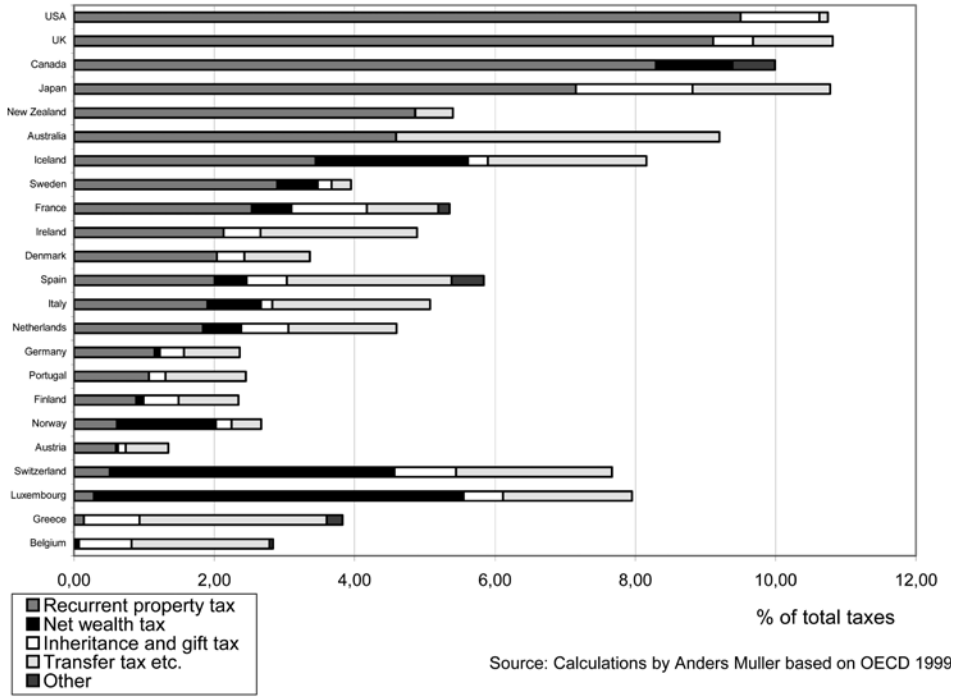
	Revenue as percentage of			Number of countries
	Total Taxes	GDP	Local Taxes	
Recurrent taxes on immovable property	2.9	1.1	34	23
Recurrent taxes on net wealth	0.8	0.3	1.0	14
Estate, inheritance, and gift taxes	0.5	0.2	0.2	22
Taxes on financial and capital transactions	1.5	0.5	2.0	22
Other	0.1	0.0	–	5
Total	5.7	2.1	38	23

Source: Muller (2003)

Figure 1 shows to what extent different OECD countries make use of each type of property-related tax. Those countries that make less use of the recurrent property tax tend to have higher utilization of the net wealth tax and transfer tax on financial and capital transactions.

Table 3 and figure 1 are from "Importance of the Recurrent Property Tax in Public Finance, Tax Policy, and Fiscal Decentralization." (Muller 2003) This paper cautions that the percentage figure reported in the broader category, Taxes on Property, in OECD and IMF

Figure 1. Taxes on property—OECD countries, 1997



reports is very often used in papers about property tax to describe the importance of the recurrent tax on immovable property. One reason is that OECD and IMF revenue statistics only calculate a percentage for all taxes on property and not for the recurrent tax on immovable property. Another reason is that English-speaking countries make very little use of the other taxes on property.

As the previously discussed study by Johannson et al. (2008) points out, the use of taxes on financial and capital transactions can be quite harmful for the economy if the rates are too high. Mobility will be reduced. In addition, declaration of sales prices for real estate transactions is difficult to control, so a higher transfer tax rate will often not increase the revenue in the same proportion.

Johannson et al. (2008) also point out that owner-occupied housing has a favorable tax treatment relative to other investments in many OECD countries. Table 4 shows that mortgage interest payments on the principal owner-occupied dwelling are deductible for income tax purposes in many countries. Only a few countries have an imputed rental income as part of the income tax to counterbalance the interest deduction (and usually the imputed rent is too low). Table 4 further shows that none of the countries in the table tax the full capital gain from the sale of a principal residence. These tax benefits could divert capital into housing instead of other investments leading to an overinvestment in housing, as was seen during the house price bubbles.

Johannson et al. (2008) also argue that it is better for the economy if a bigger portion of the property tax revenue comes from individuals than from businesses. This makes the property taxes more transparent—especially if the property tax is a local tax.

From an economics and tax policy standpoint, the use of property taxes should be increased. However, they are difficult to enact because they are so politically unpopular. One reason is that these taxes are very visible to the voters. Another reason is that homeowners have become a very influential political group.

Table 4. Taxation of principal owner-occupied dwelling

	Income tax		Capital gains tax on sale
	Mortgage interest deductible	Imputed rental Income taxed	
Ireland	Y		N
USA	Yes, up to ceiling		No, if held > 2 years
Denmark	Y	1	N
UK	N		N
Spain	Y	Y	No, if reinvested
France	N		N
Canada	N		N
Sweden	Y	Y	No, if reinvested
Norway	N	Y	N
Italy	Y		50%
Finland	Yes, up to ceiling		N
Netherlands	Y	Y	N
Germany	N		N

Source: Original data from Johannson et al. (2008). Simplified by Anders Muller.

[1]Denmark has replaced imputed rental income with a property value tax.

The recent political populism and has made it impossible to increase the taxation of homeowners in any way—at least in Denmark.

Denmark

The Danish real estate market experienced a severe price bubble especially in the Copenhagen area. Many factors contributed to the rapid escalation in prices. Two changes of note are the deregulation of longstanding mortgage lending practices and the adoption of more favorable tax treatments for owner-occupied homes. This section examines in particular how these policies and others led to the development of the house price bubble in Denmark.

Real Estate Prices

House prices in Denmark have been increasing since 1993. During the 14 years prior to the peak in 2007, prices increased 350 percent or 25 percent a year.

The real estate price indexes for various parts of Denmark and for different property types are published by Statistics Denmark. The source of the figures is the sales statistics gathered by the valuation department of the national tax administration (SKAT). The same organization estimates market values every second year for all properties in Denmark. These estimated values are used to assess property taxes and for other tax purposes.

Table 5 shows the real estate price index for different types of property in Denmark. The semi-annual index figures shown for single-family homes are the same as those in the OECD House Price Index in table 1. These figures are compiled by Statistics Denmark and reported to OECD.

The bold number in each column indicates when the peak was reached for that property type. Single-family home prices reached their peak nationally in Denmark in the third quarter of 2007 with an index of 184. Table 5 shows that the peak for condominiums (owner-occupied flats) occurred in the first quarter of 2006 with an index of 218.

The house price bubble was the worst in the Copenhagen area. It was especially acute for condominiums in that area. The index at the peak reached 250. By 2008, prices for condominiums in the Greater Copenhagen area had fallen 30 percent from the peak—and the prices continue to fall.

For rental apartment buildings, the national price index reached 269 in the second half of 2007. Prices in the Copenhagen area have since decreased by 26 percent.

Offices and shops reached an index of 203 and manufacturing facilities and warehouses had an index of 205. Falling prices have not been recorded yet for manufacturing and warehouses. However, the number of sales has fallen, and lower sales prices are expected.

Table 5. Real estate price indexes for Denmark

Half year	Single family	Condominiums	Rental apartments	Offices, shops	Industrial facilities	Agriculture	Summer houses
2000-2	100	100	100	100	100	100	100
2001-1	103	108	106	94	92	108	111
2001-2	104	115	122	116	119	111	111
2002-1	107	119	100	116	90	114	121
2002-2	109	123	133	120	106	120	130
2003-1	112	127	137	97	126	123	143
2003-2	114	129	143	123	113	124	149
2004-1	120	137	167	136	142	132	170
2004-2	126	147	182	142	145	141	183
2005-1	135	161	196	156	161	141	213
2005-2	149	189	224	172	156	158	234
2006-1	165	218	251	184	169	175	264
2006-2	170	218	250	198	182	187	272
2007-1	181	211	251	208	173	201	287
2007-2	184	202	269	223	198	211	287
2008-1	182	192	254	220	198	230	279
2008-2	175	176	198	203	205	230	270

Source: Calculations by Anders Muller based on data from SKAT (2008)

Note: Boldface type denotes price peak.

Causes of the house price bubble

As in other countries, falling and low interest rates were an important contributor to the prolonged and sharp increase in house prices. Another important factor was the deregulation of mortgage finance and the more aggressive lending behavior of mortgage institutions and the banks. A more favorable tax treatment of debt-financed owner-occupied housing played a role as well. Finally, buyers of owner-occupied houses and second homes had become more speculative in their purchases.

A low supply of urban land in attractive areas has played only a minor role in driving up prices. In fact, there has been an oversupply of attractive land for condominium and office developments in Copenhagen. In addition, increasing prices have resulted in a considerable oversupply of condominiums. At the beginning of 2009, approximately 5,000 newly constructed condominiums on the Copenhagen waterfront were empty.

Speculative fever, favorable tax treatment, and easy mortgage and bank loans have resulted in overinvestment in housing and recreational properties. There are many empty condominiums in the capital and some empty rental apartments in the provincial cities. Now that the bubble has burst, many think that they have expanded their residential real estate holdings too much. They have bought homes too big for their needs and have added too many additional rooms and features to their existing homes. Also, some regret buying second homes or third homes—many of them abroad.

In addition, many who purchased new homes are now unable to sell their old homes. Some have given up on selling the old one and are trying to rent it. This may not be a very attractive solution for several reasons. The rental market is getting close to saturation. There is rent control in the larger cities for dwellings constructed before 1992. Furthermore, housing legislation only permits a one-year period for a temporary rental.

After that year, the renter cannot be evicted—even if the owner wants to live in the dwelling. As a result, the market value of a rented condominium is approximately half that of an unrented condominium.

Mortgage lending

Mortgage credit is primarily provided by semi-public mortgage credit institutes that are regulated by legislation. These institutes are funded by the sale of mortgage bonds. These are the most common type of bond in Denmark.

Statutes permit 30-year mortgages for up to 80 percent of the sale price (or actual market value). Traditionally, the interest rate was determined when the bonds were sold, and it was fixed for the duration of the mortgage. In the past, the maximum mortgage term was 20 years.

Recent deregulation has allowed other types of home loans. These include:

- Equity withdrawal through mortgage loans
- Adjustable interest mortgages in which interest rates are set at regular intervals from the sale of bonds or based on CIBOR—the Copenhagen Interbank Offered Rate which is the interest rate at which a bank will lend Danish kroner (DKK) to a prime bank on an uncollateralized basis for a specified maturity
- Capped-rate loans
- Interest-only mortgages that require only interest payments for the first 10 years.

As reported by Lunde (2008), in June 2008, 46 percent of the outstanding mortgage debt was held in interest-only loans, and 46 percent of those interest-only mortgages carried annually adjusted interest rates.

Banks also were much more willing to give mortgage loans for the 20 percent of the purchase price not covered by the mortgage credit institutes. It was no longer necessary for home buyers to have saved that amount. This situation has understandably changed since the economic crises have started.

The Role of Taxation

In Denmark, a land tax is charged on all types of properties. In addition, a service tax is levied on the value of buildings used for urban business. The revenue from these two recurrent property taxes accounts for 2.5 percent of total tax revenue, as shown in table 2.

Previously, imputed rental income from owner-occupied dwellings was taxed as a part of the income tax. In 2000, it was changed to a property value tax. This tax is paid by the owner-occupiers of dwellings and summer houses. The tax rate is 1 percent of the property value. If the value exceeds 3 million DKK (EUR 400,000/US$ 558,000), then the rate is 3 percent of the value over that amount. The revenue from the property value tax is equal to 1.4 percent of the total tax revenue. Local governments receive the revenue from the property value tax.

Owner-occupiers can deduct 55 percent of mortgage interest expenses from their personal income tax. There is no capital gains tax on the sale of owner-occupied dwellings or summer houses.

In 2001, a tax freeze was implemented in Denmark. It froze all tax rates on personal income tax, value-added tax (VAT), corporate income tax, and other taxes. For the property value tax, the base of the tax—the property value—also was frozen at the 2001 amount. Although new values are estimated every two years, the 2001 value is still used as the base for calculating the property value tax. In addition, the tax freeze limited the annual increase in a land-tax payment to 6 percent.

The tax freeze's favorable treatment of owner-occupiers certainly contributed to the house price bubble in Denmark. Without the tax freeze, the payment

amount of property value tax and land tax would have increased with rising house prices. This no doubt would have had a dampening effect on house price increases and the house price bubble.

Germany

While house price bubbles were forming in other countries, prices in Germany remained relatively stable. Why was Germany different? This section examines the unique characteristics of the German real estate market that enabled the country to avoid the overheated demand for housing experienced elsewhere. It also looks at how the German government's approach to tax policy and housing subsidies impacted house price development.

Development in House Prices

The real estate price index published by the Bundesbank (the German central bank) shows that real estate prices in Germany have declined in most years since 1995. Although small price increases were observed in 2006 and 2007 for newly constructed houses and apartments, prices for existing properties has remained unchanged in recent years. This trend is uniform throughout the country, with only marginal regional differences.

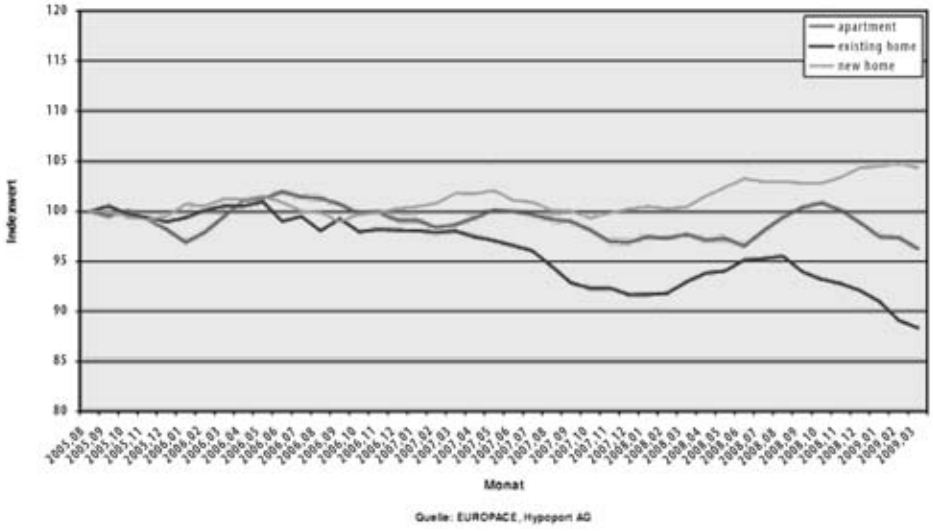
Figure 2 displays price indexes for new homes, existing homes, and apartments. The index shows little variation in the price for newly constructed houses, while prices for resales of buildings have declined considerably. Analysis shows that for most of the period from 2005 to 2008, there was a slight decline in the price of apartments and of resales of existing properties, while prices of newly constructed properties increased slightly (although by less than 5 percent in the period reviewed).

Table 6. Real estate price index (2005 value = 100)

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Newly constructed properties	104	102	100	99	99	100	101	102	100	100	100	101	102
Resale prices of existing properties	111	110	108	106	108	108	108	106	104	101	100	100	100

Source: Bundesbank (2008)

Figure 2. Housing price indexes for Germany



Source: Hypoport AG. EUROPACE. (2009)

Factors behind housing price stability

The German real estate market differs substantially in several respects from real estate markets in other European countries.

First, there is high supply and low demand. Compared to other countries, Germany has a relatively low percentage of real estate ownership (see table 7). In 2009, only 42 percent of German households are owners of houses or apartments, compared to more than 80 percent in Ireland, Spain, and Greece. As a result, the share of rental dwellings in the housing stock is high in Germany and has stayed well above 50 percent, while it has dropped considerably in most of the other European countries in recent years. Moreover, large government subsidies that were offered for many years for the construction of rental apartments have resulted in a substantial increase in the stock of apartments, which as a consequence reduced rental prices and thus the profitability of investment in real estate. In fact, rental prices for newly constructed apartments have been decreasing since 1996 in most parts of Germany, which also decreases the pressure on tenants to move from rented to owned property.

Second, negative population growth and slow growth of effective per capita income in recent years have further reduced the dynamism of the housing market. The statistics in table 8 show that the moderate increase in per capita income in Germany in recent years could not provide the substantial resources needed for additional investments in housing.

Third, interest rates on mortgages were relatively high. Substantial drops in mortgage rates can give rise to higher house prices. In Germany, with the exception of a sizeable decrease for a short period in 2004–2005, average mortgage rates were above the 5 percent level. They continued to increase steadily again in 2006–2008 (see figure 3).

The Role of Taxation and Government Subsidies

The impact of tax policy on the development of real estate prices in Germany has not been analyzed thus far. It is therefore not certain what role taxation may have played in avoiding a house price bubble. However, certain features of the German tax and subsidy system appear to have had at least some impact on the development of house prices. Three are discussed here.

High real estate transaction costs

When a house or apartment is purchased, a real estate transfer tax in the amount of 3.5 percent of the sale price is

Table 7. Share of rented dwellings in total housing stock (year 2000 data)

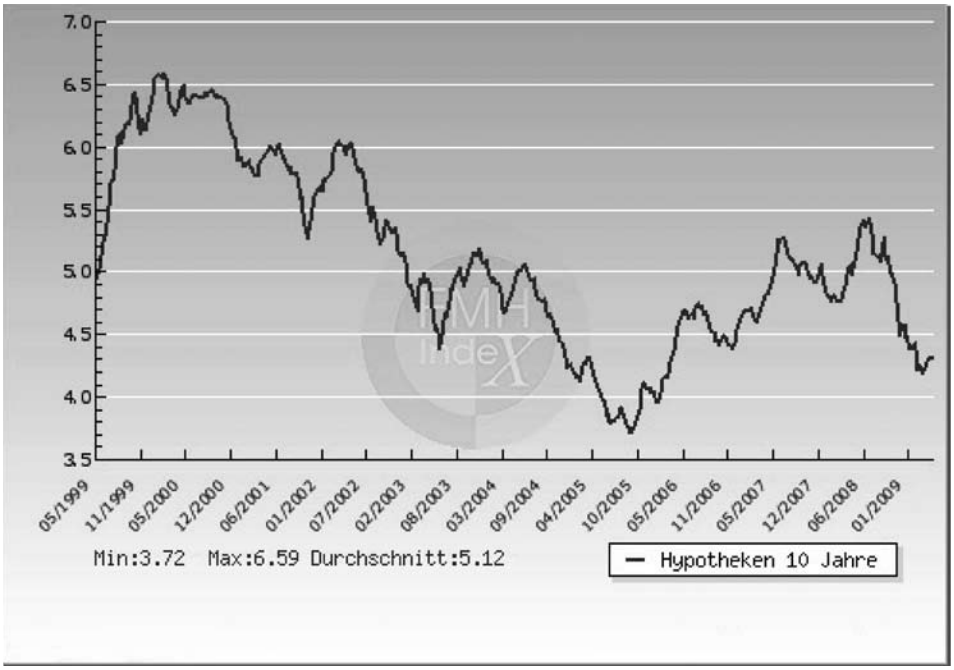
Germany	Denmark	France	UK	Greece	Ireland	Spain
60%	40%	42%	32%	20%	16%	10%

Source: European Central Bank (2003)

Table 8. Gross per capita income comparison EU and select EU countries 2003 to 2008

Country	Gross per capita income (2003) in Euro	Gross per capita income (2008) in Euro	Growth (percent)
Germany	26,000	30,800	18.5
Denmark	34,800	43,300	24.4
France	25,900	30,700	18.5
Spain	18,400	23,400	27.2
United Kingdom	28,000	30,300	8.2
EURO zone	23,900	28,300	18.4
EU 27	20,700	25,000	20.8

Figure 3. Mortgage interest rates in Germany 1999–2008



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charged by the government. In addition, the fees to register the transfer of ownership and for the required notary services are high. These expenses contribute to the substantial financial cost of selling or buying a house or apartment.

Taxation of speculative real estate gains

The German tax system favors long-term investment in real estate. Income from the non-commercial resale of a house or apartment that has been owned by the seller for a minimum of 10 years is tax free. However, income realized from a property resale within the first 10 years of ownership is subject to full progressive income taxation with a maximum tax rate of 42 percent.

Removal of incentives for home acquisition

To stimulate the construction and acquisition of family homes, the Income Tax Act for many years offered accelerated depreciation of acquisition costs for one- and two-family homes and apartments. In the first eight years after construction or acquisition of an owner-occupied home, the owner could deduct 5 percent of the construction or acquisition costs annually from his or her taxable income up to a maximum of EUR 7,000 (US$ 9,717) per year. From year nine, the annual depreciation rate was reduced to 2.5 percent.

This tax benefit was abolished in 1996 and replaced by a government subsidy: the so-called "home-buyer allowance" (Eigenheimzulage). The home-buyer allowance was one of the major subsidy programs used to support owner-occupied housing in Germany. A purchaser of an owner-occupied house or apartment could obtain a subsidy of up to 5 percent of the construction or acquisition costs per year, if the buyer's income was below certain ceilings. The maximum subsidy was EUR 2,556 per year.

The subsidy was abolished in January 2006. It was highly controversial whether the subsidy benefited homebuyers, or whether it, in fact, raised the risk of increasing house prices.

Summary

The following factors have been key determinants of the development of

real estate prices in Germany: the modest growth in per capita income, the relatively high effective interest rate on mortgages, a negative population growth, and an oversupply of available housing units compared to the demand for home ownership. In addition, a number of institutional factors have influenced real estate prices, such as access to financing and provisions of the tax system that discourage real estate speculation. Taxation, however, has not been a key factor in the avoidance of a bubble in Germany.

United States

As noted, the bursting of the house price bubble in the United States in 2007 is widely acknowledged as the catalyst of the global finance crisis of 2008. Despite intense interest in the causes and consequences of these two phenomena, they are imperfectly understood. This section looks at what is known or believed, and it speculates about the consequences for local government finance in the U.S.

Background

The United States is a difficult subject because of its size and regional differences. Furthermore, its decentralized political structure hampers the assembly of timely, consistent, and relevant statistics from states and localities. The main publisher of such statistics is the Census Bureau in the Department of Commerce. It relies heavily on surveys to generate national statistics (including governmental and tax statistics), and its limited funding affects its ability to produce its statistical series on a regular and timely schedule. Other agencies, such as the Federal Reserve (the central bank) and the Bureau of Economic Analysis (also in the Commerce Department), publish financial and other relevant statistics.

Table 9 provides a profile of the United States and its property tax systems. Land and buildings are taxable in every state. In about 43 states, some movable (personal) property also is taxable (usually business machinery and equipment). Throughout the country, property taxes

Table 9. Facts about the United States and its property tax systems

Indicator	Measure
Population (2007)	302 million
Number of states with property tax systems	50. In addition, the District of Columbia, in which the national capital, Washington, is located, territories like Guam and Puerto Rico, and a number of Native American tribal areas have property tax system.
Number of local governments (counties, townships, municipalities, school districts, and other special districts) (2002)	87,500
Number of governments with the power to tax property (2002)	68,000
Number of local property tax assessment and tax collection authorities (2007)	12,800
Total state and local recurrent property taxes (2008)	$419,470,000,000
Local percentage (2006)	97%
Property taxes as a percent of own source revenue[1]	45%
Property taxes as a percent of local taxes[1]	72%
Typical effective tax rate (taxes as a percent of property value)	0.9% (median area, 2005 Tax Foundation study)[2]; 1.0% (2001 study)

Source: All data from United States. Bureau of the Census. Statistics Abstract. except as noted.

[1]United States. Bureau of the Census (2008)

[2]Tax Foundation (2006)

are at least nominally based on market values. However, the link between current market value and the assessed value can be quite tenuous as a result of property tax relief policies and administrative practices. In general, property tax rates are budget-driven and are determined annually. Because of overlapping tax districts, the total tax rate for a property is based on the sum of the rates for the various tax districts in which it is situated. These rates can be subject to limits.

There are no official, authoritative statistics on numbers and trends in the composition of the real estate stock in the U.S. Formerly, the Census Bureau conducted studies of property tax assessments, but now it publishes only data on property tax collections. The Federal Reserve, in its reports on its flow of funds accounts, provides estimates of the value of real estate owned by (1) households and nonprofit organizations (with breakdowns for each), (2) nonfarm, nonfinancial corporate business, and (3) nonfarm, noncorporate business. These estimates are used in this report.

The number of parcels of land currently is on the order of 150 million (Committee on Land Parcel Databases: A National Vision 2007, 118). The number of single-family housing units, including condominium units in multifamily structures, has reached approximately 107 million (Zillow 2009). The U.S. Census Bureau periodically produces statistics on the estimated number of housing units (including apartments). In 2001, there were about 119 million housing units in the U.S. (Williams 2004, 2). Of these, 73 million were detached one-family structures, 8 million were attached one-family structures (often called "townhouses"), 9 million were mobile homes or manufactured houses, and the remainder were in multifamily structures.

In the first quarter of 1995, 64.2 percent of American householders owned their homes, compared with 68.3 percent in the fourth quarter of 2002 (Savage 2007, 3). Yet the percentage of families that could afford to buy a modestly priced house financed with a conventional fixed-rate 30-year mortgage with a 5 percent down payment declined from 60.4 percent in 1984 to 56.4 percent in 2002. A modestly priced house is defined as one which would be priced at the 25th percentile of housing prices in the area—that is, 25 percent of houses would have lower prices, and 75 percent would have higher prices (Savage 2007, 2).

House Prices

Home Sales Indexes

Several organizations in the U.S. produce statistics on house prices. The statistical series include:

House Price Index (HPI) of the Office of Federal Housing Enterprise Oversight (OFHEO). The OFHEO index uses a weighted repeat-sales methodology. It is computed for properties with *conforming loans,* that is, conventional mortgages up to a set dollar limit. In 2009, the maximum was approximately $400,000 or as much as $729,750 in certain high-cost areas. The OFHEO index is computed for the nation as a whole, for states, and for regions when sufficient data are available. Potentially, indexes could be produced for all 355 Metropolitan Statistical Areas (MSAs) and 29 Metropolitan Divisions (MSAs that are subdivided). HPI has been compiled since 1975; the first quarter of 1980 equals 100. The index peaked at 386.14 in the second quarter of 2007. It declined 5 percent to 368.28 by the fourth quarter of 2008.

Case-Shiller Home Price Index from Standard and Poor's (S&P). This index also uses a weighted repeat-sales methodology. Only the 20 largest metropolitan areas are covered. Because it includes all types of sales transactions, the Case-Shiller Index is most-watched by the real estate press. It has been compiled since 1987; the first quarter of 2000 equals 100. The index peaked at 189.93 in the second quarter of 2006; it declined 27 percent to 139.14 by the fourth quarter

of 2008. It continues to decline according to recent news reports.

Zillow Home Value Index published on Zillow.com. The Zillow index has been compiled since 1996. Rather than providing a dimensionless index number, it is expressed as a price, which represents the median of Zillow's estimated market values of the properties in a given geographic area on a given day. The index tracks single-family dwellings, including condominiums and cooperatives. The estimates are the result of applying proprietary automated valuation models (AVMs) using data obtained from property tax records and other public sources. The Zillow database contains data and value estimates on more than 80 million houses (said to be roughly 75 percent of the total housing stock) in 161 metropolitan areas. The coverage may be limited by the availability of data, as some major urban areas are not included. The national index peaked in the second quarter of 2006 at $233,008, up from $101,412 in 1996. It declined 18 percent to $192,110 by the fourth quarter of 2008. At the end of the first quarter of 2009, the index stood at $182,378.

Zillow also publishes data on distressed transfers. These include sales of foreclosed properties (which often sell for steeply discounted prices), sales of property with negative equity, and short sales (in which the lender agrees to accept sale proceeds that are less than the outstanding mortgage in exchange for releasing the mortgagor from the lien).

Index of New One-Family Houses Sold of the U.S. Census Bureau. This index is based on the median sale price of newly constructed houses sold in a period. It is computed quarterly for the nation as a whole and for four regions. The Census Bureau also tracks the number of new houses sold, which is another measure of the health of the property market. The Bureau's new-home index peaked in 2007 at 104.9 (2005 equals 100). It stood at 99.6 in 2008, a decline of 5 percent.

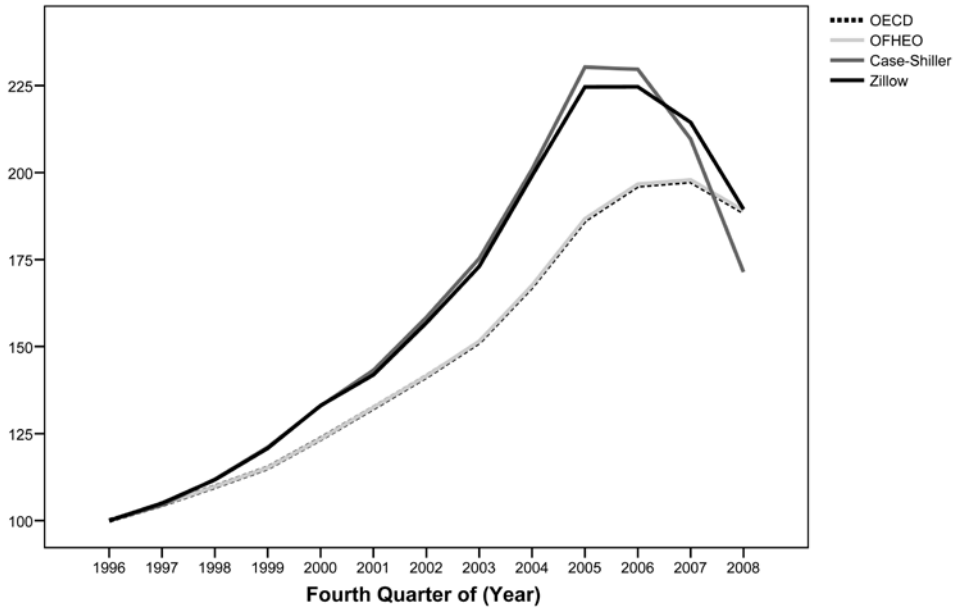
Existing Home Sales of the National Association of Realtors® (NAR). The NAR publishes monthly the median sale prices of existing homes (not new construction) for the nation as a whole and for four regions. NAR also provides statistics on the number of properties sold and on the inventory of properties for sale. State and metropolitan-area data are published quarterly. The median price of houses sold in 2006 was $221,900. In 2008, the median was $198,100, a decline of 11 percent.

National Price Trends to the Bubble and Beyond

The recent housing price bubble is reckoned to have begun in 1996. Figure 4 compares the OFHEO, OECD, Case-Shiller, and Zillow indexes since 1996. As can be seen, the OECD and OFHEO indexes are nearly identical, suggesting that OECD uses the OFHEO index. The Case-Shiller and Zillow indexes showed higher price appreciation than the OFHEO index until the bubble burst, probably because they are based on broader sets of sales. The Case-Shiller and Zillow indexes tracked each other closely until 2005, when the Zillow index began to lag.

National trends, however, do not give a complete picture. The Zillow areas though can be used to provide a sense of the variation in residential price trends across the U.S. Of the 161 areas covered by Zillow (in 35 states, plus the District of Columbia), the New York City area experienced the median decline. It declined 15.2 percent from its peak in the second quarter of 2006 to the fourth quarter of 2008. Chicago (the third largest region) declined 16 percent, while Washington, D.C., declined 25 percent. Areas of California and Florida experienced the worst declines (on the order of 40–50 percent, although Los Angeles declined *only* 32 percent). Other hard-hit states included Arizona, Nevada, and Oregon. The least-effected areas were concentrated mostly in the southeast (but north of Florida). Of the larger cities, Dallas-Fort Worth,

Figure 4. Comparison of common U.S. housing price indexes (4th Quarter 1996 = 100)



Texas, and Pittsburgh, Pennsylvania, experienced declines of only 5 percent; Philadelphia, Pennsylvania, and New Orleans, Louisiana, experienced declines of less than 10 percent.

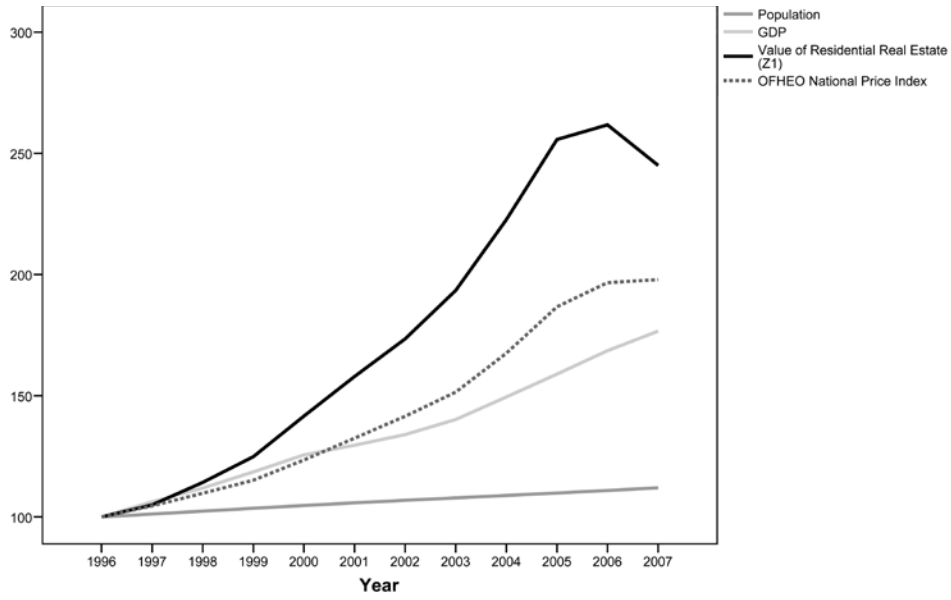
As would be expected, sharp drops in house prices contribute to problems in the real estate market. Although it is difficult to get a picture of these problems nationally, the Zillow data help. They contain statistics on such things as the percentages of properties sold in the past twelve months with negative equity. They also list homes sold in foreclosure. Because foreclosure laws are set by states, the incidence of short sales and foreclosures differs among the states. However, sales in 2008 of properties that were in foreclosure were concentrated in California, Nevada, and Arizona.

Causes of house price bubble

Many factors can affect housing prices including changes in demand, caused by growth in the number of households nationally and by shifts in population regionally, and changes in supply, brought about by new construction and demolition. As background, figure 5 illustrates trends in population, GDP, and the value of household real estate as estimated by the Federal Reserve in comparison with the trend in the OFHEO national house price index. As can be seen, the value of residential real estate increased at a much greater rate than the other factors, suggesting that factors other than price-level trends need to be considered.

According to Shiller (2007, 4–5), changes in fundamentals, such as residential construction costs and rent, were not primary contributors to housing price increases. Changes in preferences regarding the size and other features of houses did affect prices. For example, the median size of houses built before 1920 was 1,862 square feet (173 square meters), while the median size of houses built in 1990 or later was 2,161 square feet (201 square meters) (Williams 2004, 6). Newer houses also have more bathrooms and other amenities. Changes in purchasing power impacted demand as well, and the U.S. government developed programs designed to increase purchasing power through tax breaks and affordable credit. In the final analysis, psychological factors coupled

Figure 5. Trends in selected indicators vs. trend in house prices (1996 = 100)



Source: Richard Almy based on Board of Governors of the Federal Reserve System (2009); Johnston and Williamson (2008); Office of Federal Housing Enterprise Oversight (2009)

with the easy availability of credit appear to have had the greatest effect (Shiller 2007, 5).

The Role of Easy Credit

Normally, to obtain a mortgage loan, a house buyer has to demonstrate to the satisfaction of a lending institution both creditworthiness and sufficient income to make repayment of a mortgage likely. According to conventional mortgage underwriting guidelines, the maximum a household can afford to spend on housing loan payments is 36 percent of income (Savage 2007, 4). The loan-to-value ratio also is important. The higher the ratio is (say, 97 percent), the smaller the down payment that must be made. A loan-to-value ratio of 80 percent is considered the benchmark of a very well secured mortgage loan. Traditionally, mortgage loans were made at fixed interest rates for terms that did not exceed 30 years. Interestingly, during the period of the bubble and its aftermath, mortgage interest rates were unusually low—in the vicinity of 5 percent.

Although the U.S. has had policies and programs encouraging home ownership since the Great Depression of the 1930s, developments in the 1990s spurred the housing price bubble and led to its bursting. Key were policy changes by two longstanding government-sponsored (but owned by private shareholders) enterprises (GSEs) known as Fannie Mae (formally, the Federal National Mortgage Association) and Freddie Mac (formally, the Federal Home Loan Mortgage Corporation). These organizations sought ways to make borrowing money to buy a house more affordable than the then-existing government-sponsored mortgage programs allowed. They introduced new, more relaxed collateral and creditworthiness requirements. Other mortgage lenders followed their lead. In the most extreme cases, borrowers were not required to make a down payment or demonstrate their source of income. (See DeMichelis [2009], Annex A1, for descriptions of the types of mortgage loans available in the U.S.)

In addition, adjustable rate mortgages (ARMs) with low initial ("teaser") rates gained popularity. ARMs were initially developed in the 1980s to protect lenders from interest rate risk in periods of high

inflation. In an ARM, the initial rate applies only for about two years, after which the interest rate resets generally to a rate higher than would be charged under a conventional mortgage. Some of these mortgage loans required very low down payments and even no repayment of principal, only interest. Such mortgages as well as some fixed-rate mortgages, underwritten on looser terms, came to be known as "subprime" mortgages, even though the term, subprime, technically applies only to creditworthiness, not the other features of a loan that may make it risky.

The development of new ways to market mortgages of all sorts in the secondary mortgage market effectively increased the money available to lend to mortgagors. The GSEs, along with the mortgage banking industry, accomplished this by repackaging mortgage loans for resale as so-called mortgage-backed securities (MBS). These instruments were popular with investors because of their high yields and presumed low risk. When housing prices collapsed and foreclosures increased, the value of many of these securities became uncertain. As a result, holders of these securities sometimes were reluctant to put them on the market, because under fair value accounting rules, lower prices would cause balance sheet losses. For banks, this would create the added difficulty of requiring hard-to-obtain new capital. Hence, these instruments came to be known as "toxic assets."

When a mortgage is sold in the secondary mortgage market, an independent firm is engaged to "service" the mortgage. That is, the firm collects mortgage payments and makes disbursements to the mortgage holders (which can be one or any number of separate entities when the mortgage has been securitized). The servicing firm also makes property tax and mortgage insurance payments.

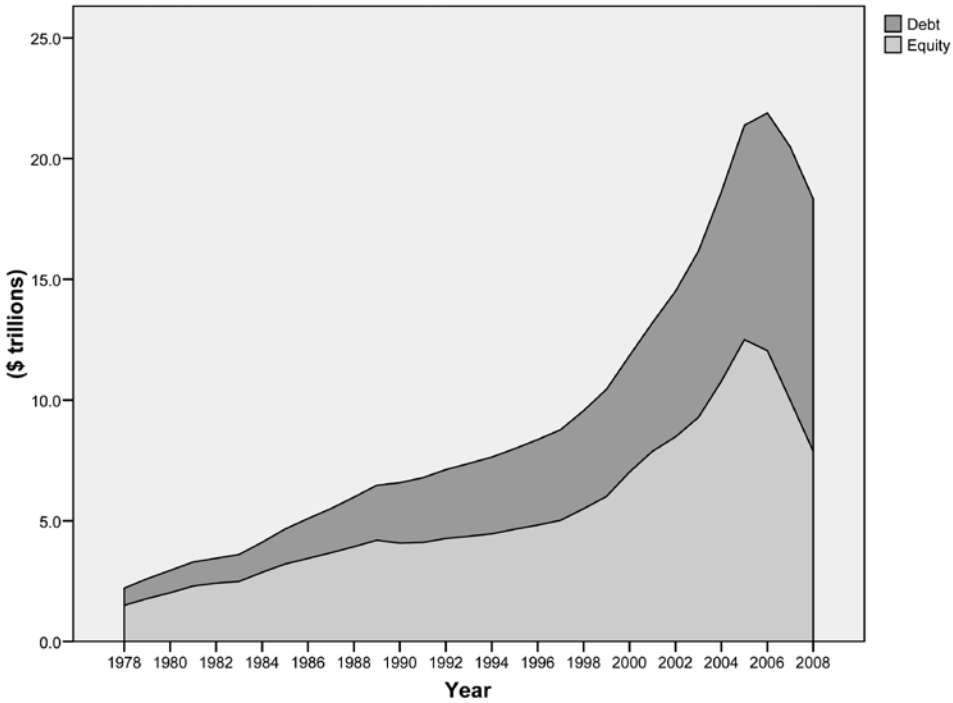
While it lasted, many profited from this situation. People were able to buy houses for the first time or buy a higher-priced house. Real estate owners felt wealthier. The aura of prosperity led to overdevelopment of condominiums and timeshare resorts in Florida, the Southwest, and other resort areas. Some gained from "flipping"—buying a house for a low price, making minor improvements, and selling it soon after for a higher price. Lenders, servicers, and real estate professionals profited from fees and commissions. Relaxed regulation created opportunities for moral hazard if not fraud.

Despite the general atmosphere of hubris and greed, some observers viewed the expansion of credit and housing prices with alarm. Nevertheless, government sponsorship effectively allowed the GSEs to borrow at lower interest rates than purely private corporations, because the market assumed the government would bail them out if they failed. This essentially happened in 2008 when Fannie Mae and Freddie Mac were placed in "conservatorship" by the Federal Housing Finance Agency (FHFA). OFHEO, which weakly regulated Fannie Mae and Freddie Mac, also was brought under the FHFA umbrella, under changes mandated by the *Housing and Economic Recovery Act of 2008*.

Arguably, there was a credit bubble as much as there was a housing price bubble. However, Kiff and Klyuev argue that the collapse of prices and credit were mutually reinforcing (2009, 4). Figure 6, which is based on the Federal Reserve Z1 data, lends credence to this belief. The fact that values appreciated faster than equity implies that credit expanded even faster, at least until the price bubble burst. Debt increased from $3.5 trillion in 1996 to $10.5 trillion in 2007. Equity grew from $4.8 trillion in 1996 to $12.8 trillion in 2005, after which it began to decline. It stood at $7.9 trillion in 2008, according to the Federal Reserve estimates (Board of Governors of the Federal Reserve System 2009).

The Role of Tax Policy

Figure 6. Estimated value of residential real estate and owners' equity



Source: Richard Almy based on Board of Governors of the Federal Reserve System (2009)

Tax breaks for housing also may have contributed to the bubble. The main federal income tax break is the deductibility of mortgage interest. The taxes foregone as a result of this deduction were estimated to total $85.9 billion in 2009, up from $55.1 billion in 2001 (United States. Congress. Staff of the Joint Committee on Taxation 2006, 33). Property tax payments also are deductible (as are state and local income taxes). This deduction was estimated to cost $13.4 billion in taxes in 2009, down from $19.5 billion in 2001 (United States. Congress. Staff of the Joint Committee on Taxation 2006, 33). This decline may be a result of residential property tax relief measures. Other real-estate-related tax breaks include the deduction of depreciation of business property, sometimes at accelerated rates. The capital gain on the sale of a house is not taxable if the seller buys another house within a stipulated time. The rate of taxation on capital gains was reduced as well. Businesses also may be eligible for a number of investment tax credits.

As with the inflation of the property price bubble, its deflation has had a number of inter-related snowball effects (see Kiff and Klyuev 2009). The one explored here is the impact on local government finance.

Implications for local government finance

As table 9 indicates, U.S. local governments rely heavily on recurrent property taxes. Because of variations between states in property tax system features, in the importance of property taxes as a source of revenue, and in real estate price trends, it is difficult to generalize. However, the following factors are seen to have important consequences for property tax revenues.

- **The magnitude of the price decline in a state or area.** In a market-value-based immovable property tax, a decline in prop-

erty prices implies a potential loss of tax base.

- **The frequency with which real estate tax values are updated.** Any loss of tax base will not be recognized if property is not revalued.
- **The presence of limits on annual changes in assessed values, tax rates, property taxes, or local government spending.** Several states have limits on the percentage by which taxable values can change annually regardless of how market value has changed. Some of these measures address only *increases* in value as long as taxable value is less than market value. In short, decreases in market value may not result in a decrease in taxable value.
- **The importance of property taxes to a local government.** Limits on the level of taxation or changes in taxes aside, the more important the property tax is to a local government, the more the government will attempt to maintain its level of property tax revenue.
- **Taxpayers' perceptions about the level of taxes they must pay.** Arguably, but not necessarily correctly, the higher the effective tax rates are, the more taxpayers will either argue for tax cuts or resist tax increases.
- **Other factors.** One is the time lag between when a property is revalued and when taxes based on the new values are assessed (generally a period of one or two years). Another is the mechanics of any state-level programs that measure local government assessment performance against standards of performance and the actions they take to bring assessed values into line with legal requirements.

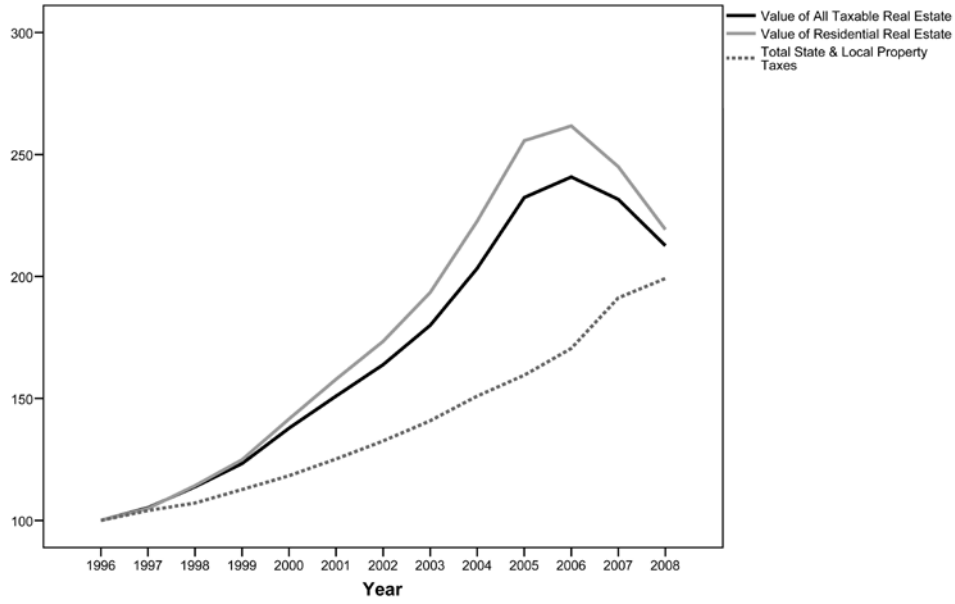
Before further illustrating the fiscal stresses produced by these factors, figures 7 and 8 provide an overview of several related issues. Figure 7 demonstrates that property tax increases (the dotted line) have not kept pace with increases in property values (due to programs to limit increases in taxes and to lags in revaluations). A comparison of the top two lines suggests that residential values (the top line) increased—and decreased—more rapidly than nonresidential values. The lower line tracks total real estate values, both residential and nonresidential. Thus the difference suggests that nonresidential values change more slowly. This phenomenon has been of considerable political concern in the United States and has been the impetus for a number of residential property tax relief measures.

Figure 8 illustrates this trend in monetary terms rather than percentage terms. A general complication is that the Federal Reserve Z1 data report the value of nonfarm, nonfinancial corporate business real estate assets on the basis of historical cost, not on either current market or depreciated replacement cost. This likely understates the current value of nonresidential real estate.

Taking the Federal Reserve data that underlie figure 8 at face value, the nonresidential component has not yet declined, and it stands at $5.6 trillion. On the other hand, the residential component has declined from $21.9 trillion to $18.3 trillion. If the loss were taxed at 1 percent of market value, the tax loss would be $36 billion or about 8.6 percent of total property taxes nationally.

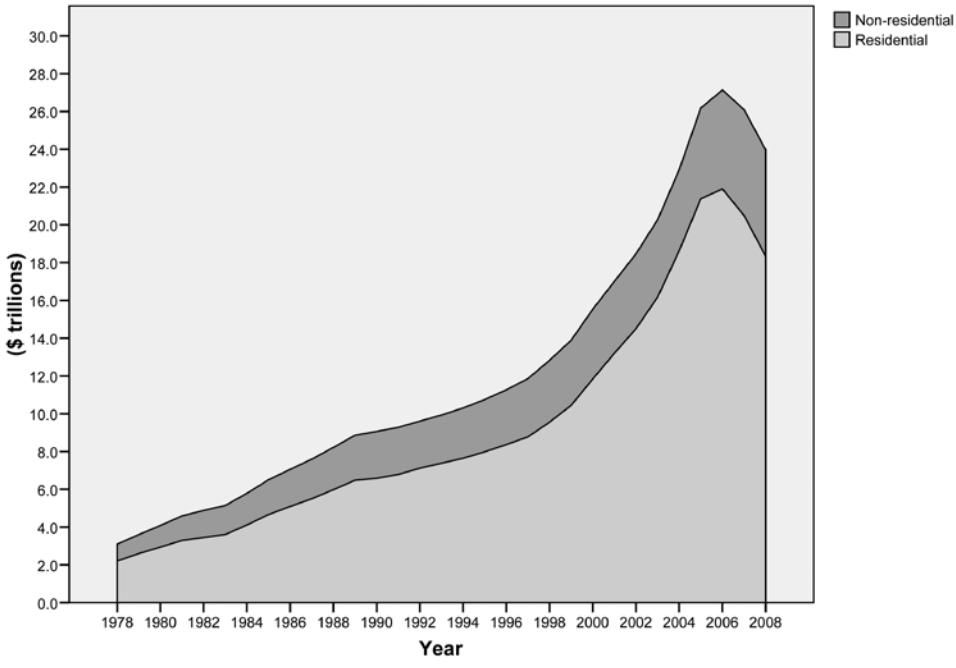
Returning to the property tax system features that may provoke fiscal stress (while perhaps alleviating taxpayer stress), table 10 presents information on these stress factors in the eight states whose median area decline in prices was at least 20 percent. Speculation on the effects of these factors follow.

Figure 7. Trends in real estate values and property tax revenues (1996 = 100)



Source: Richard Almy based on Board of Governors of the Federal Reserve System (2009); Bureau of the Census (2008)

Figure 8. Trend in residential and non-residential real estate value



Source: Richard Almy based on Board of Governors of the Federal Reserve System (2009)

California has an acquisition-value system, which limits changes in annual assessments to a set percentage until the property is sold or physically changed. In California's system, which began in 1978 as a result of the famous Proposition 13 voter referendum, decreases in market value would not cause a decrease in assessed value—an oversight that was subsequently corrected. Thus, it can be assumed that foreclosures and decreases in market value will cause a large number of reassessments. Fiscally, the property tax does not seem particularly important from the figures presented here; however, Proposition 13 has severely constrained taxes and spending generally. Thus, it would seem that the current downturn in property prices will have significant fiscal consequences. In Florida, a California-style acquisition-value assessment system applies only to primary residences; other properties are revalued annually. Thus, the downturn should have painful consequences for local governments.

Arizona also could soon experience fiscal stress. In that state, property is revalued annually, but for residential properties, the annual increase in taxable value cannot exceed 10 percent or 25 percent of the difference between the previous taxable value and the current market value. Because properties are revalued only every five years in Nevada, the full impact of the downturn may not be felt there immediately.

The four northeastern states in the table all rely heavily on property taxes and localities generally have greater fiscal autonomy than is common in the rest of the country. In Rhode Island, the interval between revaluations is long, which could enable a town to weather the fiscal crisis absent a taxpayer outcry. However, property values are indexed to market performance every three years, so much will depend on each town's revaluation cycle. New Jersey law does not mandate reappraisals. Instead, values are supposed to adhere to uniformity standards, so the immediate effect is hard to evaluate. Massachusetts and New Hampshire will likely soon feel fiscal stress. There is no income tax in New Hampshire, so the property tax is particularly important.

Conclusion

The absence of any centralized—or well coordinated regional—attempt in the United States to monitor asset prices, analyze the consequences of trends, and disseminate information about those analyses arguably lulled individual property owners into a sense of complacency during the period of rapid price inflation. Regulators, if not investors, were slow to react to the dangers of the price and credit bubble. It would seem that state and local government officials have not yet focused on the fiscal implications of the current situation.

The press dutifully publishes the latest price index news releases. However, the information is sterile without an attempt

Table 10. Factors affecting fiscal stress in selected states

State	Property Value Change (%)	Valuation cycle	Change limit	Importance as Revenue Source	Effective Tax Rate
California	−36.0	None	Yes (2%)	17.6	1.07
Florida	−36.0	None	Yes (3%)	29.5	2.00
Nevada	−35.5	5	No	20.0	1.07
Arizona	−27.0	1	Yes (10%)	23.4	1.07
New Hampshire	−23.0	1	No	54.0	3.12
Rhode Island	−23.0	9	No	54.1	4.00
New Jersey	−22.0	None	No	51.3	3.59
Massachusetts	−21.0	3	No	43.8	1.44

to gauge the consequences. Assessors—at least those with modern mass valuation systems—do not have to be passive observers of real estate market trends. As a few do, they could issue reports on the state of various segments of the real estate market, help with revenue forecasts, and warn of risks, such a large increase in the number of successful appeals. There certainly is a need for cross-jurisdictional studies, but organizations that could make such studies are few in number in the U.S.

References

Board of Governors of the Federal Reserve System. 2009. *Flow of funds accounts of the United States: Flows and outstandings, fourth quarter 2008*. Federal Reserve Statistical Release Z1. Washington, DC: Federal Reserve System. http://www.federalreserve.gov/releases/Z1/Current/data.htm (accessed March 12, 2009).

Bundesbank. 2008. Monthly Report, February. Frankfurt, Germany: Deutsche Bundesbank. http://www.bundesbank.de/index.en.php (accessed March 25, 2008).

Committee on Land Parcel Databases: A National Vision. 2007. *National land parcel data: A vision for the future*. Washington, DC: National Academies Press.

Cournède, B. 2005. House prices and inflation in the Euro Area. Working paper no. 450. Economics Department, OECD. http://www.oecd.org/eco/workingpapers.

DeMichelis, A. 2009. Overcoming the financial crisis in the United States. Working paper No. 669. Economics Department, OECD. http://www.oecd.org/eco/workingpapers.

Diewert, E. 2006. Conclusions and future directions. Paper presented at OECD-IMF Workshop on Real Estate Price Indexes, Paris, November 6–7. http://www.oecd.org/dataoecd/32/21/37848333.pdf.

European Central Bank. 2003. *Structural factors in the EU housing markets*. Frankfurt, Germany: European Central Bank. http://www.ecb.int/pub/pdf/other/euhousingmarketsen.pdf.

FMH Finanzberatung. 2008.FMH-Index. http://www.fmh-index.de/ (accessed May 10, 2009).

Girouard, N., M. Kennedy, P. van der Noord, and C. André. 2006. Recent house price developments: The role of fundamentals. Working paper no. 475. Economics Department, OECD.http://www.oecd.org/eco/workingpapers.

Housing and Economic Recovery Act. 2008. U.S. Public Law 110–289. July 30.

Hypoport AG. 2009. Europace, Housing price indexes for Germany. http://www.hypoport.com/hpx_hedonic_en.html (accessed May 10, 2009).

IMF. 2008. *World economic outlook: housing and the business cycle*. April. Washington, DC: International Monetary Fund. http://www.imf.org/external/pubs/ft/weo/2008/01/pdf/text.pdf.

Johannson, A., C. Heady, B. Brys, and L. Vartia. 2008. Tax and economic growth. Working paper no. 620. Economics Department, OECD. http://www.olis.oecd.org/olis/2008doc.nsf/linkto/eco-wkp(2008)28.

Johnston, L.D., and S.H. Williamson. 2008. What was the U.S. GDP then? MeasuringWorth. http://www.measuringworth.org/usgdp/.

Kiff, J., and V. Klyuev. 2009. Foreclosure mitigation efforts in the United States: Approaches and challenges. IMF Staff Position Note, SPN/09/02.

Lunde, J. 2008. The housing price downturn and its effects—A discussion. *Clm. economia* 12:83–146.

Muller, A. 2003. Importance of the recurrent property tax in public finance, tax policy, and fiscal decentralization. Presentation at the Institute of Revenues, Rating, and Valuation Conference on Property

Tax and Land Reform, June, Tallinn, Estonia. http://www.proptax.eu.

OECD. 2009a. *OECD economic outlook*. No. 86. November. Paris: OECD. http://www.oecd.org/OECDEconomicOutlook (accessed March 2, 2010).

OECD. 2009b. *Economic policy reforms: Going for growth 2009*.

Paris: OECD. http://www.oecd.org.

OECD. Center for Tax Policy and Administration. 1999. *Revenue statistics 1965–1997*. Paris: OECD. http://www.oecd.org.

OECD. Center for Tax Policy and Administration. 2008. *Revenue statistics 1965–2007*. Paris: OECD. http://www.oecd.org.

Savage, H.A. 2007. Who could afford to buy a home in 2002? *Current Housing Reports*, H121/07-1. Washington, DC: U.S. Bureau of the Census. http://www.census.gov/prod/2007pubs/h121-07-1.pdf.

Shiller, R.J. 2007. Understanding recent trends in house prices and home ownership. Cowles Foundation discussion paper no. 1630. Economics Department, Yale University. http://cowles.econ.yale.edu/P/cd/d16a/d1630.pdf.

SKAT. 2008. Ejendomssalg 1. halvår 2008. Statistics about sales of real estate. 1st half 2008. Ejendomsvurdering [Danish only]. http://www.skat.dk.

Tax Foundation. 2006. Property taxes on owner-occupied housing, by county, 2005. http://www.taxfoundation.org/.

United States. Bureau of the Census. Various years. *Statistics abstract*. Washington, DC: Bureau of the Census.

United States. Bureau of the Census. 2008. Table 1. State and local government finances by level of government and by state: 2005–06. http://www.census.gov/govs/www/qtax.html.

United States. Congress. Staff of the Joint Committee on Taxation. 2006. Estimates of federal tax expenditures for fiscal years 2006–2010. Washington, DC: U.S. Government Printing Office. http://www.house.gov/jct/s-2-06.pdf.

United States. Office of Federal Housing Enterprise Oversight. 2009. House price index. http://www.ofheo.gov/ (accessed April 22, 2009).

Williams, B.T. 2004. These old houses: 2001. *Current Housing Reports*, H121/04-1. Washington, DC: U.S. Bureau of the Census. http://www.census.gov/prod/2004pubs/h121-04-1.pdf.

Zillow. 2009. Real estate market report. http://www.zillow.com/reports/RealEstateMarketReports.htm.

Additional Sources

Davis, M.A., and J. Heathcote. 2006. The price and quantity of residential land in the United States. Unpublished paper, University of Wisconsin, Madison.

Rae, D., and P. van den Noord. 2006. Ireland's housing boom: What has driven it and have the process overshot?" Working paper no. 492. Economics Department, OECD. http://www.oecd.org/eco/workingpapers.

United States. Office of Federal Housing Enterprise Oversight. 2009. House Price Index frequently asked questions. http://www.ofheo.gov/ (accessed April 22, 2009).