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... Inflation has helped to make home-ownership an attractive investment; a cooling down of inflation could make it less attractive.

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REVIEW**

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The Federal Reserve Bank of Philadelphia is part of the Federal Reserve System—a

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Foiling the Bank Robber: What Makes a Difference?

By Timothy Hannan*

Any casual reader of a major metropolitan newspaper probably knows that his town has experienced a lot of bank robberies lately. New York banks had an especially rough time of it last year, with a one-day high of thirteen robberies. A newspaper called it "the day the hoods ran the city." Bank robbers in other cities also have been pretty active. Los Angeles, Minneapolis, and Atlanta have been major trouble spots. And here in Philadelphia, bank robberies totaled 77 in 1979 compared to 49 in 1978.

There are many different ways to go about battling the bank robber. And in an attempt to shed more light on the comparative effectiveness of the various approaches, the Research Department of the Federal Reserve Bank of Philadelphia has studied a sample of 219 banking offices in the Third Federal

Reserve District. In this project, the number of attempted robberies during a 12-month period is used as a measure of each banking office's robbery experience. Then the impact of several banking office characteristics (including security precautions) on the number of attempted robberies at each office is examined. Thus the project focuses on what *deters* robbers rather than on what may help to apprehend or convict them after the fact.

The major finding is that both the presence of bank guards in the office and the location of the office have an appreciable effect on the number of attempted robberies. But many of the other things that one might think important in deterring the bank robber don't show up as having much of an impact.¹

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¹A more technical version of this paper is available in Timothy Hannan, "Bank Robberies and Bank Security Precautions: An Examination of Criminal Behavior with Victim-Specific Data," Research Paper No. 48, Federal Reserve Bank of Philadelphia, June 1980.

DETERRENCE

Security measures and conditions such as office location may influence different aspects of a bank's robbery experience. They may reduce the number of robberies attempted against the bank, for example. They also may cut down the size of the take if in fact a robbery occurs and make it easier to track down and convict a bank robber after his crime. But because of the trauma and loss of life that can result from an attempted robbery, avoiding robbery attempts altogether probably should be viewed as the primary goal of bank security policy.

But what will deter? The answer to this question depends in large part on what kind of person the typical bank robber really is. Some say he tends to be mostly a spur-of-the-moment, irrational character who doesn't spend all that much time deliberating before he acts. If this is true, then it may well be that only the most obvious countermeasures will make much of a difference, since the subtler security efforts must be recognized and appreciated to be effective. Others picture the bank robber as a more calculating fellow, analyzing all the angles and painstakingly weighing all the options. With this kind of an adversary, banks are likely to find that there's a great deal they can do to reduce the number of times they are victimized. In all probability, each of these psychological types is represented among the community of bank robbers, though it is difficult to know in what proportion.

The findings which follow should not be regarded as the answer to the question of what deters. Although the data are extensive and the analysis is careful, the findings are drawn from the experience of only a sample of banking offices during a fairly short period beginning in 1975 (see THE SAMPLE AND STATISTICAL METHOD). Replication is always difficult in social science investigation, and if an identically constructed study were done with another sample of banking offices for another year, the results

would not be identical. Overall, however, these findings are firm enough to warrant a good degree of confidence.

THE LOCATION EFFECT

The area in which a banking office is located may be presumed to have a lot to do with its robbery history. If a banking office is located in a poor, high-crime area, it may fall victim to robberies more often just as every

THE SAMPLE AND STATISTICAL METHOD

The study described in this article is based on a sample of 219 banking offices in the Third Federal Reserve District. Detailed information was gathered on the area in which each banking office was located, the security precautions each office maintained as of a certain date in 1975, and the number of times each banking office fell victim to a robbery attempt in the 12-month period following that date.

The banking offices in the sample differed considerably from one another in their robbery experience. Thirty-two of the offices were robbed at least once during the year. Most of these were attacked only once, but a few were hit twice, and one of them suffered three attempts. They also differed considerably in the security precautions they employed. About 82 percent of the offices had surveillance cameras and 11 percent employed guards during daytime hours; less than four percent had bullet-resistant barriers around the teller stations—a relatively new precaution in 1975. The banking offices in the sample differed quite a bit also in the kinds of areas in which they were located.

The approach used in this study was to estimate equations in which the number of bank robberies at each banking office was explained by a set of factors describing the office's location, the type of office it was, and its security precautions. The statistical procedure used was Tobit maximum-likelihood estimation, which made it possible to sort out the effects of each factor by controlling for the other factors.

other business in the neighborhood presumably does. Also, locations near major highways or far from police stations may be more attractive to the would-be robber, making banks in such areas more robbery prone. There's also the possibility that banking offices will be safer if they're located in areas where there are a lot of other banking offices around to draw off some of the crime. Or so it would seem. But the numbers confirm only one of these plausible assumptions.

Ambient Crime. The geographic areas used in the analysis (chosen partly on the basis of data availability) consist of the nine different police divisions of Philadelphia, the entire city of Camden in New Jersey, the suburban remainder of Camden County, and the various remaining counties in the Third Federal Reserve District.

The amount of crime per capita varies enormously from one of these areas to another. Controlling for other influences, the study finds that location in high-crime areas can increase robbery considerably. One might not expect to find such a result if would-be bank robbers roamed far and wide in search of the most attractive target. The most likely reason for this finding is that a lot of bank robbers ply their trade fairly close to where they live. Therefore, areas that produce a lot of would-be bank robbers also produce more than their share of bank robberies.

Getaway by Highway. Some people maintain that proximity to a major highway ought to increase the risk of robbery because it affords an attractive getaway for the would-be robber. They attribute the sharp rise in the number of bank robberies over the last few years to the rapid increase in the number of suburban branches located near major highways. But the Fed study finds no evidence that locating near a major highway has any effect one way or the other on an office's robbery experience.² In congested urban areas, such as Center City Philadelphia, getaways typically are made on foot rather than by car, so one might not expect that

proximity to major highways would matter there. But even among offices outside Center City, the study finds no strong evidence that location near a highway makes much of a difference.

It's worth noting, though, that definitions of 'proximity' can be pretty arbitrary. In this study, a banking office was considered to be in proximity to a major highway if a major highway ran through any part of the census tract in which the banking office was located.³ The reality of the situation probably is more complicated. So the results, although indicative, cannot be taken as the final word on the subject.

Police Presence. Another characteristic that might seem important is police coverage of the area. Two measures of police coverage were used in the study. One is the distance from the banking office location to the nearest police station. The other is the amount of time it takes police to respond to a robbery call, as estimated by the banks themselves in a questionnaire.

Estimated distance from the banking offices in the sample to the nearest police stations ranged from less than a tenth of a mile (almost next door) to over ten miles. Estimates of police response times ranged from a half a minute to nearly fifteen minutes. Surprisingly, neither of these measures turned out to be important in explaining a bank's robbery experience. There's always the chance that these measures don't gauge what they're supposed to very well. But barring some such measurement difficulty, it would appear that potential bank robbers don't pay too

²Or, in precise statistical terms, the possibility that such a location has no effect on an office's robbery experience cannot be rejected. Failure to find evidence of an effect, wherever noted in the text, should be interpreted in these more precise terms.

³Census tracts are small areas into which large cities and adjacent areas have been divided for statistical purposes. In 1970, the average tract had about 4,000 residents. See U.S. Bureau of the Census, *1970 Census of Population and Housing, Series PHC (1)-159*.

much attention to differences in police coverage when they pick their victims.

Other Banking Targets. The greater the number of banking offices in an area, the less likely is any given one to be robbed. At least that's what one might think, all else being equal. The reasoning is that other offices in the neighborhood may draw off robbery attempts by presenting robbers with alternative targets. But that thinking isn't borne out by the Fed study.

Banking offices in the sample differed considerably in terms of the number of banking offices operating nearby. This difference, however, was found to have no appreciable impact on a banking office's robbery experience. Apparently, having a lot of alternative banking targets around doesn't buy much in the battle to deter the bank robber.

In short, the location of a banking office does have some relation to the number of times the office is likely to be hit by bank robbers. The overall level of crime in the area of the banking office certainly seems to affect its chances, and other area characteristics not examined in this study may do the same. But proximity to major highways and police stations, police response times, and the number of alternative banking offices in the area don't seem to make much of a difference. Further, whatever the locational characteristics that influence a bank's robbery experience, their net effect differs greatly in different parts of the Third District (see **WHERE BANK ROBBERIES OCCUR...**).

THE SIZE OF THE TAKE

Irrespective of location, there may be certain things about the banking offices themselves that affect their chances of being robbed. Some offices may be more attractive than others because they keep more cash on hand; it seems only reasonable that robbers would choose the more lucrative target. When Willie Sutton was asked why he robbed banks, he responded with a now classic

answer: "Banks is where the money is." Banking offices differ considerably in size and probably in the amount of money they have on hand at any given time. It's at least possible that the size of a banking office and the type of business it does have something to do with the robbery profile it develops.

To find out, Fed researchers looked at the number of teller stations and the amount of

WHERE BANK ROBBERIES OCCUR IN AND AROUND PHILADELPHIA

To see how the risk of bank robbery differs across geographic areas in the Third District, the 219 banking offices in the sample were divided by location into four groups: Center City Philadelphia, other parts of the city, Philadelphia suburbs, and beyond. Center City Philadelphia was defined as the area between the Schuylkill and Delaware Rivers and between Poplar Street and South Street. Other city was assigned to include all of the remainder of Philadelphia plus the city of Camden, New Jersey. Suburban took in all locations in Camden County outside of the city of Camden, the counties of Burlington and Gloucester in New Jersey, and the counties of Bucks, Chester, Delaware, and Montgomery in Pennsylvania. The remaining offices in the sample area were assigned to the fourth group.

All things considered, banking offices located in Center City Philadelphia ran the greatest risk of robbery. Thirty-seven percent of the Center City offices were robbed at least once during the twelve months compared with 20 percent in the rest of Philadelphia. Suburban offices in the sample experienced a 12-percent robbery rate, while only three percent of the banks in the fourth group suffered a robbery attempt.

Clearly, the robbery experience of individual banks can vary considerably within these groups. But taken as a whole, the banker's life tends to be a bit quieter the further his office is from Center City.

different kinds of deposits in each banking office in the study sample. Neither was found to make much of a difference in a banking office's robbery experience. Some have observed that bank robbers typically are note passers who key on a single teller window rather than a whole bank. If so, the size of the office and the total amount of money on hand may not be particularly relevant to the bank robber. Whatever the reason, the amount and type of business done in a banking office don't appear to matter much. Sutton's dictum may single out banks as prominent robbery targets relative to other kinds of businesses, but it doesn't give much of a clue about which banking office is more likely to receive a visit.

SECURITY MEASURES

Most bank's can't do very much about the neighborhoods where they operate or the kinds of business they do—short, that is, of relocating. But they can do something about security precautions: they can hire guards and install security devices ranging from cameras to bandit barriers.

Guards. One step that banks can take to deter robbery attempts on their premises is to post guards in the lobby during banking hours. About 12 percent of all the offices in the sample in fact had taken this step. Did posting guards help to deter bank robberies? The findings of the study point to a Yes answer. Banking offices that employed guards fared better on the whole than they would have otherwise. For those banks that had a severe robbery history, the presence of guards made a difference of about one attempt a year.

Finding that guards make a difference, however, does not mean that all banks should have them. Many banking offices run only a small risk of being robbed, and hence a guard probably would not buy them much. Even in banks that face a more serious robbery threat, there are costs to be considered. The average amount stolen from banking offices

in the sample was \$3,200 per robbery. So even if a guard means one less robbery per year, the dollar losses saved on average fall far short of the annual cost of putting a guard on the payroll.

When a robbery is deterred, of course, much more may be saved than actual dollars. Robberies may involve trauma, bodily injury, and even loss of life. Avoiding these effects of bank robberies may be worth much more than the actual dollars involved. But determining whether the savings offset the cost of hiring guards, or of taking any other security measure, for that matter, is not an easy task.

Bandit Barriers. Bandit barriers are glass or plastic barriers placed around teller stations. The idea is to separate tellers from the public physically, though not visually or audibly, with a material able to stop bullets from most handguns. Bandit barriers have become somewhat more popular in recent years, though most banking offices still don't have them.

The findings of the study shed little light on the value of bandit barriers as a deterrent to bank robbery. Banking offices that installed them fared a bit better than other banking offices with similar characteristics and similar locations, but the difference was not large enough to rule out the prospect that the observed result stemmed merely from chance—not to rule it out with much confidence, at least. One reason for this ambiguous result may be that, by 1975, only eight banking offices in the sample had installed this security innovation, so there were very few cases to look at. Getting a better statistical picture of what bandit barriers can do will require observations of more banking offices where they are installed.

Cameras. The use of cameras in bank lobbies to photograph robbers in the act is a much more common security measure. A majority of banking offices in the sample made use of this device, although a good number of them did not. Surprisingly, the study finds no evidence that the camera has

any value as a deterrent to bank robbery. After account is taken of all the other things that might matter, the presence of cameras in the lobby of a banking office makes no difference in explaining the number of robbery attempts.

Deterrence, however, is not the sole rationale for installing lobby cameras. Using cameras to identify criminals after a robbery has occurred, for example, makes it easier to recover property and put criminals behind bars where they can't practice their trade again. Thus although bank cameras don't appear to deter robbery attempts in the short run, they may be worth installing if they are sufficiently beneficial in these other ways.⁴

Evidence from a Sociologist. Of the three security measures examined in this study of Third District banks, it appears that as far as deterrence is concerned, guards make a difference, cameras don't, and the effect of bandit barriers is uncertain. As it turns out, this finding fits pretty well with the results of another study conducted a few years ago by George M. Camp.⁵

Camp's strategy was to go straight to the source in determining what matters to bank robbers—he asked them. The results of the 157 interviews he conducted in several different prisons shed a lot of light on the nature of the bank robber and suggest some reasons for the results found here in the Third District.

Camp found that a majority of the robbers he questioned had never even been inside the bank they robbed prior to their crime. He also noted that:

⁴There are, of course, other steps that banks can and do take to deal with the robbery threat. The use of marked money and the installation of alarm systems are common examples. Unfortunately, the effectiveness of these steps could not be examined in this study either because information was not available or because there was no control group of banks that had failed to adopt these precautions, so that comparison was impossible.

⁵George M. Camp, "Nothing to Lose: A Study of Bank Robbery in America." Unpublished Ph.D. dissertation, Yale University, 1968.

In 55 percent of the robberies the bank robber did not know prior to the robbery if the bank had an alarm, in 59 percent of the robberies if the bank had a camera, and in 82 percent of the robberies if the bank used marked money. Although the bank robber places very little emphasis on learning if the bank uses these measures, he does take the time to determine whether or not the office has a guard, because in only 23 percent of the robberies did he not know if the bank had a guard.

If this is the nature of the typical bank robber, then it's not surprising to find that guards deter and that measures such as the installation of surveillance cameras don't.

WHAT MATTERS AND WHAT DOESN'T

On the basis of this study of deterring bank robberies, then, it looks as if a few things matter and a lot of things don't. Location in a high-crime area means that a bank will suffer more robbery attempts, all else being equal, and employing a guard will help alleviate that difficulty to some degree. But many other things that one might think important turn out not to make much of a difference. Perhaps the most surprising example is the lobby camera, which, though it may be quite useful for other purposes, does not appear to serve as a deterrent to bank robbery. Proximity to a major highway for a getaway, coverage by police, and the size of the banking office also seem to have little effect on the incidence of robbery attempts. And the effectiveness of bandit barriers must remain an open question so far as this study is concerned since there were too few banks with barriers in the sample to warrant any strong conclusions. In short, some measures do seem to be effective in the battle to deter the bank robber. But other things that might seem important don't weigh very heavily in the would-be robber's view of the world.

What's Ahead for Housing Prices?

By Anthony M. Rufolo*

Everyone knows that housing prices are high—but are they really all that high in relation to past experience? And is it likely that housing prices will continue to rise more rapidly than prices in general *ad infinitum*?

ESCALATING PRICES DID NOT DAMPEN HOUSING SALES

It doesn't take much arguing to convince people that housing prices have been going up even faster than most other prices lately

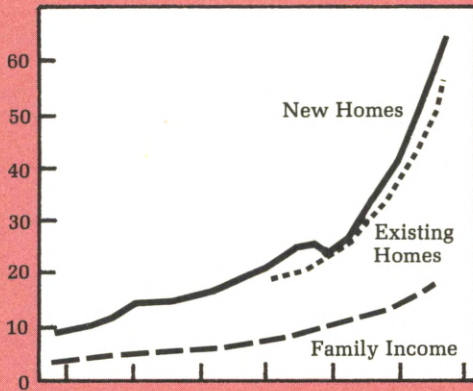
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and faster than incomes as well. Housing prices exploded during the 1970s: while prices overall were doubling, the median housing price approximately trebled. Many observers consider this price rise socially undesirable because they believe that it places homeownership beyond the reach of many families. But a more careful analysis doesn't seem to support this position.

Housing prices certainly have risen much faster than income since 1970, but much of this relative increase merely offsets a large relative decline in 1969 and 1970—a decline attributable in part to Federal subsidies for new low-income housing in the late 1960s and early 1970s. One author estimates that Federal programs reduced the median cost of

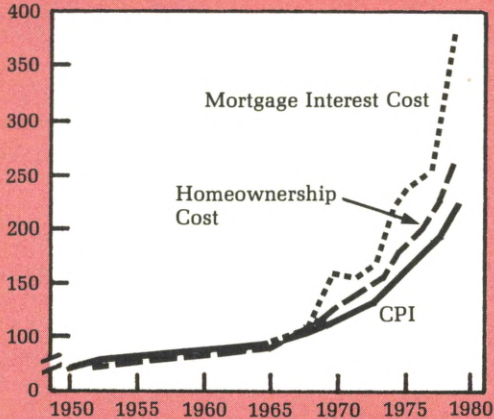
HOUSING PRICES HAVE BEEN RISING FASTER THAN FAMILY INCOME

Thousands of dollars



AND OWNERSHIP COSTS ARE RISING RELATIVE TO THE CPI

Index (1967 = 100)



SOURCES: New homes data (median sale price) calculated from various sources at the Federal Reserve Bank of Philadelphia. Existing homes data (median sale price for existing single-family homes) provided by the National Association of Real Estate Boards. Family income data (median family income) and CPI derived from *Economic Report of the President 1980*. Homeownership data 1952-77 compiled from U.S. Department of Housing and Urban Development, *1977 Statistical Yearbook* and previous issues. Remaining data provided by U.S. Department of Labor, Bureau of Labor Statistics.

new housing by \$2,000 in 1970. But this reduction reflects the construction of many small, low-grade units, not an actual decline in housing costs. As Federal subsidies were phased out, the observed median price jumped back up. Current housing-price-to-family-income ratios clearly are above normal, but the difference is not nearly as great as one would believe from looking only at the last ten years.

The jump in housing prices appears even less troublesome when looked at in relation to per capita income rather than family income. The number of households has been increasing faster than the population as more individuals have chosen to live alone. The increase in the number of single-person households may have reduced median family income without affecting the ability of traditional home buyers to afford a house. Housing prices were rising relative to per capita income throughout the 1970s, but only now are they reaching the average level relative to income which they maintained through the late 1950s and most of the 1960s.

Finally, looking straightforwardly at price changes for new housing can be misleading because of quality changes. Over time, new houses tend to get bigger and to have more amenities. Additional bathrooms, central air-conditioning, and more insulation all add to the cost of a house. And if costs are rising simply because of improved quality, then buyers have little to complain of. It might seem that looking at the median price of existing housing would hold quality constant, but it doesn't. Some of the worst housing simply goes off the market each year, and some recently built housing goes onto the resale market. The number of homes lacking indoor plumbing has declined over time, for example, and most other measures of quality show steady increases over time.

Although housing prices may not be a very large deterrent to homeownership, the monthly outlays associated with owning a house have been skyrocketing. Monthly ownership

costs have been rising faster than other prices, with higher interest rates contributing heavily to cost growth; but it wasn't until the most recent round of mortgage rate rises that new housing construction started to suffer. In fact, housing sales were booming during much of this rapid runup in costs.

In short, housing prices have been rising rapidly. But the current relation of housing prices to income does not seem to be terribly out of line with historical trends. Monthly housing costs appear to have risen faster than the CPI, at least partly because of mortgage interest costs. Yet this rise apparently did not affect the demand for housing until mortgage rates hit record levels in 1978. What does the future hold?

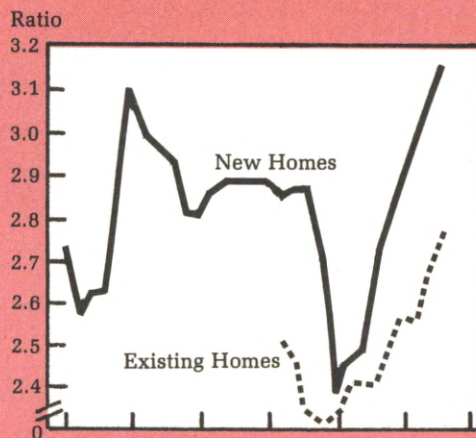
It is quite possible that the conditions underlying the surge in housing prices could weaken and that the sharp upward trend in prices could be reversed, especially if inflation slows dramatically. With predictions of lower housing prices becoming more widespread in the financial press, economists are looking closely at the influences that may shape the housing picture in the years ahead.

THE SINGLE-FAMILY HOME AS AN INVESTMENT

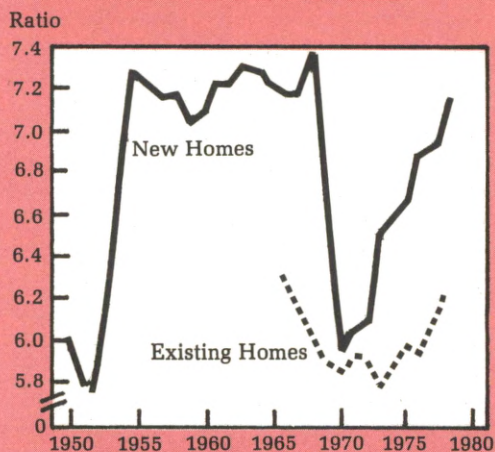
Unlike certain other consumer goods, housing has value as an investment item. Indeed, for many homeowners, a house offers the chief avenue toward increasing wealth over time. If inflation unwinds, however, housing could lose its investment appeal and housing prices could rise much more slowly—or perhaps even fall.

Housing's Dual Role: Consumption and Investment. A family buying a house is interested primarily in how much enjoyment living in that house would provide. But whenever consumers buy something that is going to last for a while, they are also making an investment decision. Separating out the consumption and investment components of housing may help explain why high housing prices did not seem to deter buyers very

BUT THE RATIO OF HOUSING PRICES TO FAMILY INCOME IS NOT MUCH ABOVE THE PREVIOUS PEAK



AND THE RATIO OF OWNERSHIP COSTS TO PER CAPITA INCOME STILL IS BELOW ITS PRIOR LEVELS



SOURCES: New homes ratio equals new homes data divided by family income data or personal income data; existing homes ratio equals existing homes data divided by family income data or personal income data. Personal (per capita) income data 1950-70 compiled from *Historical Statistics of the United States: Colonial Times to 1970, Part 2* (Washington: U.S. Bureau of the Census, 1975); subsequent personal income data compiled from *Survey of Current Business*.

much during most of the 1970s.

The consumption part of owning a house is the value that the family gets from living there. It is essentially equivalent to the rent they would have to pay if someone else owned the house. In a sense, the family is renting the house to itself, and this so-called imputed rent can be viewed as the income return on the investment. A family that owns a \$50,000 house which could be rented for \$5,000 per year, for example, is in a sense getting a \$5,000 per year dividend on its \$50,000 investment.

Like most other investments, housing can go up or down in value. Today's \$50,000 house may be worth \$40,000 or \$60,000 one year hence. These changes in capital value, which can be realized if the house is sold, are also part of the return on investment in housing. In fact, because housing has been mostly going up in value, homeowners have been getting large returns on their housing investment. And these high returns offset some of the cost of owning a house. Thus the net cost of homeownership has actually been much lower than the cash payments (see THE ROLE OF MORTGAGE RATES).

Although recent experience seems to indicate that housing can only go up, it is dangerous to make such an assumption. Even in times of generally rising housing prices, homes in certain neighborhoods and towns have declined in value. And the sudden appearance of a slowdown in housing prices could create a feedback effect which might cause a more broad-based decline in housing prices.

When housing stops increasing in value, other things being equal, the net cost of homeownership will increase. (There will not be as much capital gain to offset the interest, maintenance, and other expenses.) Such a turnaround could cause many people to try to switch back to renting. And reduced demand for homes should create more downward pressure on prices. The possibility of such a scenario depends crucially on what

causes housing prices to rise in the first place. Clearly, some of the recent housing demand is attributable to the baby-boom generation's moving into the home buying age group. But some is attributable to the effects of taxes and inflation on the demand for housing as an investment, and the influence of these factors might be reversed in a fairly short time.

Housing's Tax Status Makes It Especially Attractive. Housing is different from other investment items not only because it has a consumption component but also because it enjoys very favorable tax treatment. And the tax advantages of home ownership become even greater in an inflationary environment.¹

Virtually everyone is aware that the U.S. tax code provides tax breaks to homeowners. But many people are mistaken about the source of these tax benefits. In their view the tax benefit comes primarily from being able to deduct interest payments for a mortgage from income in computing Federal income taxes; but, in fact, *the tax benefit is available even to those who own their home outright.* The reason, simply put, is that the imputed rent from owning a home isn't taxed.

Consider two families—the Owners and the Renters. The Owners own their own home worth \$50,000. Mr. Owner earns \$20,000 per year as does Mr. Renter. But Mr. Renter owns \$50,000 worth of stocks which pay him \$5,000 per year. And he pays \$5,000 rent for a house identical to the Owners'. These two families enjoy the same dollar income and the same housing. Yet the Renters will pay

¹Ownership does not get all of the tax advantages. For example, a landlord can depreciate the property for tax purposes and deduct maintenance expenditures while the owner-occupier can do neither. It is generally agreed, however, that the tax laws on net favor the owner-occupier over the landlord-renter by a fairly large margin. In addition, the tax benefits to landlords, such as depreciation deductions, tend to be reduced in inflationary periods while the tax benefits to owners tend to increase in value.

THE ROLE OF MORTGAGE RATES

In determining whether to own or rent housing, the mortgage rate becomes a crucial factor. At a rate of 14 percent, for example, a prospective buyer has to pay one-seventh of the mortgage in interest alone each year. But until recently, record rates were not deterring buyers, because many felt that the house they were buying would go up in value at a higher rate than the interest they were paying. A \$35,000 house with a 100-percent mortgage at 14 percent, for example, would cost almost \$5,000 in interest in the first year alone. But suppose the house increases in value at the same 14-percent rate. Then at the end of the first year, the house is worth \$40,000. Thus, the buyer could save the \$5,000 and buy the \$40,000 house at the end of the year and still get a \$35,000 mortgage. But this isn't the whole story. That \$5,000 interest payment can be deducted from income for Federal tax purposes. So the net (after-tax) cost of the mortgage interest can be much less than \$5,000.

High mortgage rates do tend to discourage homeownership, but high mortgage rates usually are associated with high rates of inflation, and high rates of inflation tend to encourage homeownership. It is really the relation of mortgage rates to inflation that determines the effect on housing demand. Only when mortgage rates are substantially above the expected rates of inflation do they provide a strong incentive not to buy.

When mortgage rates and inflation rates both are high, buyers are likely to have cash-flow difficulties because of their large monthly payments even if housing remains a good investment. The mortgage lending industry commonly figures that a buyer can carry a home priced in the range of two to three times his annual income. Thus the buyer of a \$35,000 home might have an annual income of roughly \$12,000 to \$18,000. An individual who saved \$5,000 would be saving from about a quarter to about 40 percent of his income—a savings rate far above the national average. And paying \$5,000 a year in interest for housing could strain the household budget, leaving too little for other forms of consumption. But lower down payments, second mortgages, and other forms of consumer credit can be used to offset this unintended saving.

Another advantage that homeowners can have with respect to a conventional mortgage is the fixed interest rate. If interest rates rise, the debtor gains by being allowed to pay off the mortgage at the lower rate. But if interest rates fall, many homeowners can renegotiate the mortgage. Thus even if someone expects both interest rates and inflation rates to come down in a few years, it may make sense to borrow now and incur the renegotiation costs if current interest rates are below current inflation rates.

tax on \$25,000 of income while the Owners pay tax on only \$20,000. Implicitly the Owners are receiving \$5,000 income on their housing investment which they then pay to themselves as rent. But this imputed rent is not subject to taxation. Clearly, the Renters have a strong incentive to become owners. And as inflation pushes actual rents higher and higher, the incentive gets still stronger. In other words, inflation makes the imputed-rent tax shelter more valuable and hence creates additional demand for homeownership. The consequence: a more rapid rise in

the price of housing relative to other goods.²
Gains Not Taxed at Turnover. For most investments, if you sell something with a

²Interest rate deductions are indeed a benefit to many people because they make it possible to borrow money in order to buy a house and take advantage of the imputed-rent tax shelter. Without the interest deductibility, only people with enough wealth to buy a house outright would reap the full benefit of the imputed-rent tax break.

The property tax writeoff is an additional tax benefit to homeowners. In computing their Federal tax liability, homeowners who itemize can deduct this tax from their

capital gain and then invest the proceeds again, you pay the capital gains tax. But if you sell your house and buy another, you can defer the capital gains tax. And if you are over fifty-five, you can now receive up to \$100,000 in capital gains tax free.

The tax treatment of capital gains on housing can be an important consideration for investment purposes. Going back to Owner and Renter, suppose that both Owner's home and Renter's stocks doubled in value and each sold his investment to purchase a \$100,000 house. The Owners would have \$100,000 to purchase this new home, but the Renters would pay a portion of their \$50,000 capital gain in the form of income taxes. They could easily have \$10,000 diverted to paying additional taxes and end up with only \$90,000 to reinvest.

Inflation typically means higher capital gains on most kinds of investments. But the capital gains from owning a house receive more favorable tax treatment than others. Therefore, when inflation accelerates, housing becomes more attractive with respect to other forms of investment. If housing and stock prices both double, for example, the Owners gain relative to the Renters. Why? Because the Renters incur a tax liability associated with the capital gain. Since accelerating inflation means bigger capital gains, the tax advantage of owning a house increases during periods when inflation is on the rise. More people are induced to try to

become homeowners, and current homeowners are encouraged to buy bigger houses. The increase in demand for homes is likely to bid up their price relative to other investment goods.

If Inflation Unwinds, Housing Prices Could Fall. If accelerating inflation makes housing prices rise more rapidly than the price of other investments, shouldn't decelerating inflation do the opposite—reduce the rate of housing price increases relative to that of other assets? In the extreme, might housing prices actually fall? There are several reasons to suspect that housing prices will not fall sharply in absolute dollar value. The first is that inflation is unlikely to go away overnight; and the relative attractiveness of housing as an investment will only come down with the rate of inflation. Second, the current tax treatment of capital gains on houses makes it difficult for most homeowners to shift back to renting. Those under fifty-five or with more than \$100,000 in capital gains would have to pay the taxes on their capital gains. They would have a tax-based incentive not to shift out of housing. Finally, the relative price increase for housing really does not appear to have been extremely large.

Of course, people don't make calculations in quite this fashion when they decide to buy housing. They look at the expected increase in housing prices and the tax breaks, as well as the mortgage payments and other costs of ownership. When housing prices look as if they are going to rise rapidly, prospective buyers rush to buy; but they may be buying because they feel that if they wait they won't be able to buy as nice a house. Yet this has the same outcome as calculating the increase in housing value, treating it as a return on an investment, subtracting this return from the costs of homeownership, and buying on the basis of this lower cost. And the tax benefits make it easier to finance a house. The imputed-rent benefit makes the monthly payments easier to take by lowering income

income. Renters cannot deduct the property tax, however, because they do not pay it directly.

It might seem that there is no real difference between owning and renting because landlords can deduct property taxes as an expense on their tax returns. But there is a difference. Suppose that property taxes go up for the owner and landlord by \$100 per year and that the landlord then raises rents by this amount. The owner gets a \$100 deduction on his Federal tax return as does the landlord; but the landlord's income has gone up by \$100 also. Hence the landlord gets no net writeoff and the renter is paying the increased property tax through his rent.

subject to Federal tax, and the sheltering of capital gains makes it possible for people moving from one house to another to finance a more expensive house.

When people no longer believe that housing prices will rise rapidly, many of these incentives to buy will be reduced. First-time home buyers will be more inclined to wait and save for a bigger down payment; and people will not be as inclined to spend so much on housing relative to other investments because the reduced tax shelter on housing will make other investments more attractive.

Thus a slackening off of inflation, which many observers are predicting will occur by the end of 1980, could make housing less attractive than other forms of investment. And a shift out of housing by investors would lower its relative price. If inflation subsides rapidly enough, the absolute dollar price of housing could even fall. But the price of housing does not seem to be greatly out of line with other prices, and accrued capital gains make it advantageous for most homeowners to remain homeowners. So it seems unlikely that there would be much of a long-term fall in housing prices. The short-term outlook is, of course, more dominated by current mortgage rates and worries about the recession, so it is not possible to rule out fairly large fluctuations in housing prices.

But even these effects are likely to be tempered by the long-run considerations.

IN SUMMARY

The above-trend increases in housing prices have several explanations, including the rise in the quality of housing and the advantages that inflation and a favorable tax treatment bestow on homeowners. Some factors, such as improved housing or increased demand from the baby-boom generation, are not likely to be reversed in the near future. But the tax advantages which make housing an especially attractive investment during inflationary periods would be greatly reduced if the rate of inflation came down rapidly. This lower investment return would reduce the demand for homeownership somewhat and should lead to slower rates of increase in housing prices than in other prices. If inflation were expected to come down rapidly, housing would start to look like a poor investment; and as people tried to shift into other forms of investment, the price could actually decline. But many people would have to pay fairly stiff capital gains taxes if they decided to stop being homeowners. Thus even a rapid fall in the rate of inflation is not likely to cause much of a shift away from homeownership, and any fall in housing prices is likely to be fairly shallow.

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