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What Makes a Difference?

&

What's Ahead
for Housing Prices?

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WHAT MAKES A DIFFERENCE?**

Timothy Hannan

. . . Robberies can be deterred, a Philadelphia Fed study shows, but not always in the expected ways.

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100 North Sixth Street
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WHAT'S AHEAD FOR HOUSING PRICES?

Anthony M. Ruffolo

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

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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.