

# Does Bank Regulation Help Bank Customers?

Based on a speech given by President Santomero to the Frontiers in Services Conference, Bethesda, MD, October 26, 2001

BY ANTHONY M. SANTOMERO

**T**he answer to the question posed in the title is yes, no, and maybe, according to President Santomero. Yes: the government must absorb some of the risks inherent in the banking system in order to maintain the system's stability. No: regulations that ignore the self-interested reactions of both bankers and their customers will not serve those customers well. And maybe: bank regulations, in principle, can help if they increase competition or the flow of information. In practice, however, some regulations designed to improve the quality of information have met with mixed success. President Santomero suggests that focusing on improving both financial literacy and information disclosure might be more productive.

Since becoming a central banker, I have been considering the question: "Does bank regulation help bank customers?" As a long-time economist, my answer is: "Sometimes yes. Sometimes no. It all depends."

## BANKS CANNOT SERVE THEIR CUSTOMERS WITHOUT SOME REGULATION

One way in which bank regulation and the associated process of supervisory oversight help customers is by keeping the banking system stable. At the most basic level, stability means that banks can provide a safe place to make deposits, and one that gives ready and reliable access to them when needed.

Bank regulations focused on ensuring that banks prudently manage

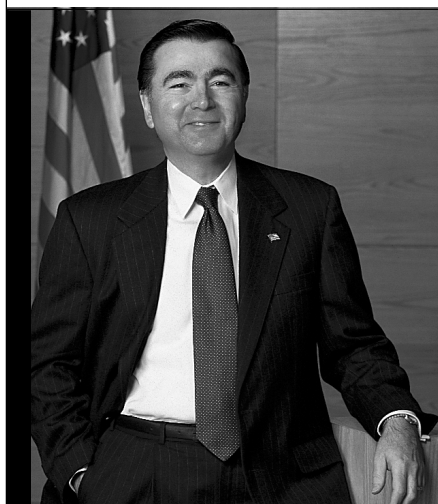
the risks in their portfolios and that they maintain adequate capital against unforeseen contingencies are part of a government infrastructure designed to bring stability to the overall financial system. For the U.S. banking sector, this infrastructure has evolved over the last century. It includes prudential regulation along with FDIC deposit insurance, the Fed's discount window, and the Fed's bank-to-bank payment system, called Fedwire. Each piece is necessary to ensure a stable banking system.

The core business of a bank is to take in deposits and make loans. Theoretically, depositors could look at the bank's balance sheet, assess the riskiness of the loans and securities outstanding, and determine the overall riskiness of the institution. If the risk level were too high for a depositor's

taste, he could take his deposit elsewhere.

The reality, of course, is considerably different. Depositors cannot assess the risks in the bank's loan portfolio very easily, since banks devote time and resources to developing an intimate understanding of the risk characteristics of a particular lending opportunity. The assets banks put on their books reflect their case-by-case judgments. Since depositors cannot see their bank's risk profile clearly, they cannot accurately assess the risk to which their deposits are exposed. This uncertainty creates the potential for instability in the banking system.

A banking panic is the classic manifestation of this instability. Some event, real or imagined, convinces depositors that their bank cannot meet its obligations to all of them, and so they rush to the bank to get their money back before the bank fails. Of course, depositors at other banks are also



**Anthony M. Santomero**, President,  
Federal Reserve Bank of Philadelphia

uncertain about risk exposure of their deposits. The depositors at another institution observe the activity at the troubled bank, which increases the uncertainty they have about their own institution. So, the run at one bank could easily upend their confidence in their bank. Thus, the run becomes contagious, setting off a genuine banking panic.

We think of banking panics as a thing of the past. You have to go back to the Great Depression to find a banking panic in the United States. One important reason is that, at that time, the federal government created the FDIC insurance program to protect the average depositor from losses, regardless of the fate of his or her bank.

Deposit insurance has been proven successful, not only by the track record of the banking system in the U.S. since its introduction but also by the fact that the governments of most industrialized countries have adopted deposit insurance schemes of one type or another. In fact, explicit deposit insurance is required for all countries seeking entry into the European Union.

Government insurance for the individual depositor eliminates one potential source of instability to the banking system, but it creates another one. It gives banks the incentive to overload their portfolios with risky assets. Insured depositors do not bear any of the risk the bank takes on, so they don't demand a risk premium in the interest rate they are paid on their deposits. And since equity holders face limited liability, they don't bear the downside risk when the bank takes a chance on a high-return, high-risk asset.

With the natural market mechanism disabled, the government must introduce its own regulation and supervision of banks to ensure that they are properly limiting their risk exposure. In short, through a combination of deposit insurance and bank regulation, the government has introduced greater

stability into the banking system, despite depositors' inevitable uncertainties about the risk profile of their bank.

Banks' role in the payment system is a second feature of the banking business that creates the potential for instability. Banks routinely make payments for their depositors. Indeed,

to make a payment it owes to Bank C, and so on. Again, problems at one bank become contagious, and the entire banking system fails to deliver the basic payments services its customers count on. Worse, if the payments are large enough, the liquidity or solvency of the entire financial system is at risk.

## Through a combination of deposit insurance and bank regulation, the government has introduced greater stability into the banking system, despite depositors' inevitable uncertainties about the risk profile of their bank.

most consumers keep a bank account primarily so that they can write checks, make and receive electronic payments, and get cash to make purchases.

But this role for banks creates a strong interdependence among them, and because of this interdependence, a problem at one institution can quickly put the entire banking system at risk. A simple example will make the point. A check written by one of Bank A's customers is presented to Bank A by Bank B. Normally, Bank A pays Bank B by transferring funds from its account at the Fed to Bank B's account at the Fed. It does this over Fedwire, the Fed's electronic payment network for banks.

However, suppose Bank A has insufficient funds in its Fed account. This could happen for any number of reasons, from a mismatch of inflows and outflows during the course of a busy day to an operations disruption, as happened at some New York banks on September 11. If Bank A cannot pay Bank B, Bank B may not be able

The Federal Reserve uses two devices to contain the systemic risk created by banks' role in the payments system. First, the Fed guarantees that all Fedwire payments are final. That is, if the Fed moves funds from Bank A's account into Bank B's during the course of the day, the Fed will not rescind that payment, even if Bank A is insolvent at the end of the day. Second, the Fed



makes discount window loans available to otherwise healthy banks that have insufficient funds and no place else to borrow them at the end of the day. This prevents our hypothetical Bank A from closing out the day insolvent.

Serving as a guarantor of payments and lender of last resort contains one threat to the stability of the banking system, but like deposit insurance, it also creates the incentive for individual banks to take on too much risk. Banks know that if, at the end of the day, a bank does not have sufficient funds to make its payments, the Fed will step in and provide the necessary funds. So, banks do not concern themselves as much as they should about their reserve position or the positions of the banks from which they are collecting payments.

Again, with marketplace oversight of risks neutralized, bank regulators and supervisors must step in to ensure that banks are properly limiting their risk positions. Therefore, it takes a combination of serving as payments guarantor, lender of last resort, and bank regulator for the government to bring greater stability to the banking system, despite banks' interdependence in payments.

So, yes, bank regulation does help bank customers — and in a way that one does not always think about — by helping to ensure the stability of the banking system.

A stable banking system benefits more than just bank customers — it is an essential element of a strong economy. It helps gather people's savings and channel them to the most productive investment opportunities available. That kind of investment in new equipment and new technologies is an essential engine of growth and rising standards of living. Indeed, improving overall economic performance is government's ultimate purpose in building the banking infrastructure that it has over the past century.

## DO BANK CUSTOMERS NEED SPECIAL PROTECTION?

So, we might pose the following question. Suppose the banking industry is operating with government-provided deposit insurance, payments guarantees, and lending facilities. Further suppose that supervisory and regulatory mechanisms are in place to manage the risk exposures that these programs create. Finally, suppose that within this environment, banks are free to offer any financial service, serve any market segment, and charge any price. Would a "free market" serve bank customers' interests best, or would such a marketplace be inimical to the interests of bank customers?

This is not an easy question to answer. Today, most people would lean toward the first view. Given that the market for financial services is an intensely competitive one, banks have

middle ground. Legislation passed in the 1930s made banking arguably the most heavily regulated industry in the United States. Gradually, we have been dismantling the unnecessary, burdensome, and even counterproductive regulations that have thwarted the legitimate workings of the marketplace. At the same time, we have been trying to devise regulations to eliminate the genuine flaws in the marketplace that create opportunities for exploitation or abuse.

## ELIMINATING DYSFUNCTIONAL REGULATIONS

However, this middle ground is hard to find and harder to tread. But we can find some lessons in the mistakes and successes of the past. Perhaps the clearest is that regulators can achieve their goals only if they respect the power of the marketplace.

## There are clear-cut cases of bank regulations that failed to achieve their intended goals.

strong incentives to deliver at fair prices a broad array of products and services that effectively meet the needs of their diverse customer base.

Historically, most people, including researchers, politicians, and policymakers, were not always of this opinion. During the 1930s, in the midst of the Great Depression, people leaned heavily in the other direction. The thinking was that there existed substantial need for rules and regulations to protect bank customers from the unbridled workings of the marketplace, which included both monopoly and customer exploitation.

As you might imagine, the truth lies somewhere in between these two views. Indeed, the history of banking legislation and the regulation of banks over the past 75 years has been essentially a story about finding that

There are clear-cut cases of bank regulations that failed to achieve their intended goals because regulators failed to take into account the market forces at work and the capacity of bankers, and occasionally consumers, to innovate around a regulatory barrier when it is in their interest.

Attempts to regulate market prices — or, in the case of banking, market interest rates — offer an instructive example. Under Regulation Q, the Fed was authorized to set ceilings on the interest rates that banks paid on their deposits. The intention was to supply banks with funds at relatively low cost and thereby hold down interest rates on bank loans, particularly residential mortgages. But in the 1970s market interest rates on other savings instruments rose above the Reg Q ceilings, and the result was a reduced supply of funds to banks and a harder



time for mortgage borrowers. Savers withdrew their bank deposits to buy higher yielding assets. Meanwhile, potential mortgage borrowers found their options reduced and their local bank in dire financial straits.

Not long after, some state banking regulators tried to impose usury ceilings, or interest rate caps, on consumer credit, including installment loans and credit cards issued by banks operating in their jurisdictions. The intention was to make credit available to state residents at lower interest rates. However, the providers of consumer credit skirted the regulation. They simply ceased issuing credit in those states and moved to states where usury ceilings were not in force. The financial activity in Delaware is a testimony to banks' ability to shift operations to more friendly terrain. Delaware is now home to nearly half the credit cards issued in the U.S.

As these attempts to regulate market prices and other examples of restrictions on product features, organizational structure, or market geography show, regulation will not deliver the intended result unless that result serves the interests of those on both sides of the market: bankers and their customers.

Over the past 20 years, in particular, we have acted vigorously to remove the rules and regulations that stifle competition and innovation. The Depository Institutions Deregulation and Monetary Control Act of 1980 eliminated many restrictions on banks' pricing and product offerings. Next, limitations on banks' market area were set aside. The Garn-St. Germain Act of 1982 allowed bank holding companies headquartered in one state to acquire banks in other states. The Riegle-Neal Interstate Banking and Branching Efficiency Act of 1994 permitted banks headquartered in one state to open branches in other states if permitted by state law.

This process of deregulation brought positive results. It intensified competition among banks, inducing them to expand product offerings, increase efficiency, align prices with production costs, and improve service to their target customers.

Recently, the string of pro-market legislation culminated in the passage of the Gramm-Leach-Bliley Act, also known as the Financial Modernization Act of 1999. This act repeals the long-standing Glass-Steagall Act of 1933 that had prohibited banks from affiliating with securities firms and insurance companies. Under Gramm-Leach-Bliley, banks, insurance companies, securities firms, and other financial institutions can affiliate under common ownership and offer their customers a complete range of financial services.

The ultimate impact of Gramm-Leach-Bliley is yet to be realized. Will people want one-stop shopping for financial services at a financial "supermarket"? Or do they prefer shopping in a financial services "mall," purchasing services from a variety of different specialized providers? With the presence of both big institutions and niche players, people have a choice. Probably, both types of institutions will do well because consumers' tastes and preferences are not uniform. The virtue of the current structure is that the mix of suppliers in the financial services industry will be determined by consumer preferences.

### **DEVISING REGULATION THAT OVERCOMES MARKET FAILURES**

This is not to say that the banking marketplace functions perfectly and there is no need for regulations aimed at helping bank customers. Regulators' primary focus today has shifted away from product and price restrictions and toward improving the quality of market information available to consumers.

For any market to function properly, those buying the good or service must fully understand their choices, what they are buying, and what they are not. In the marketplace for financial services, this is a challenge. Financial products and services have many complex features, and innovative financial firms armed with the latest in information technology are creating more sophisticated products and services all the time.

To help consumers make more informed choices, regulators have pushed for greater clarity in loan documents and financial disclosure statements. The first step was to standardize the information on disclosure forms. Truth-in-Lending and Truth-in-Saving regulations are two classic examples.

Truth-in-Lending establishes a standard formula that lenders must follow in disclosing the interest rates and fees they will charge on a particular loan. The regulators' aim is to give consumers the information they need to do some "comparison shopping" when they look for a loan. Truth-in-Saving does the same thing for investment products.

Have these regulations worked? The fact is that the required disclosure forms have been attacked from both sides. Lenders claim the disclosure statements are expensive to produce. Consumer advocates argue that they are imprecise and difficult to understand. Both sides have valid points, but these are issues about particulars. Such disclosures are steps in the right direction, and regulators should work to refine and improve them.

But we must go beyond improved disclosure statements for the banking marketplace to function smoothly and deliver maximum benefit to all its potential customers. We must build consumers' understanding of the workings of the financial system so that



their level of financial literacy is commensurate with the sophistication of today's financial marketplace.

In the burgeoning subprime lending market, where concerns about predatory lending have sprung up, we see some momentum toward increasing financial literacy today.

## REGULATION AND DEREGULATION GIVE RISE TO SUBPRIME LENDING MARKET

While the subprime lending market is relatively new, it has had a fairly long gestation period. When the banking marketplace was heavily regulated, banks allocated consumer credit sparingly. Good or "prime" borrowers received credit; others did not. In the early 1970s, legislators and regulators wanted to ensure that banks provided equal access to credit for all segments of their market area, including low- and moderate-income communities. The Community Reinvestment Act and associated regulations encouraged banks to target bankable assets in these previously untapped market segments, essentially extending credit availability down-market. Lending volumes grew rapidly in this area, and bankers became more familiar with the lending opportunities available.

Initially, banks were able to charge high interest rates to these new borrowers. But, in recent years, as deregulation and innovation have intensified competition among banks and other financial service providers, those interest rates have declined substantially.

This is not to say that the interest rates on subprime loans were driven to equality with the rate on prime loans. However, the interest rates banks charged and the amounts they were willing to lend to subprime borrowers reflected a reasonable assessment of the higher loss rates and differential risk involved. In short, a reasonably well functioning subprime lending market

has been established. The initial impetus, which came from legislators' and regulators' imperative that banks expand access to credit, was largely successful.

## PREDATORY LENDING

But along with these positive developments in subprime lending have come alarming incidents of abusive practices by some lenders operating in that market. These practices — often targeted at elderly women and minorities — are commonly referred to as predatory lending.

**Clearly, the best way to eliminate predatory lending is to eliminate the information asymmetry that gives rise to it.**

As the competition drove banks and other lenders to expand the subprime market, credit was made available to more people relatively unfamiliar with the financial marketplace. As research done by groups like The Reinvestment Fund in Philadelphia shows, the sad truth is that some unethical lenders take unfair advantage of the situation, exploiting customers' naivete and convincing them to take on mortgages with onerous, and often unrealistic, terms, charging excessive fees or exorbitant interest rates, rolling in hidden costs or unnecessary insurance, or simply committing outright fraud.

The root cause of predatory lending is, of course, the differential level of knowledge between the lender and borrower — an extreme case of what economists call "information asymmetry." It is difficult enough for mainstream customers to understand and choose wisely from among the many complex financial products and

services offered today, but it is an exceptionally daunting challenge for those with limited financial experience or education to make such decisions.

In addition, low-income people usually have limited access to long-term credit and can ill-afford to keep money on hand. Consequently, they are receptive to a sales pitch offering upfront cash and a long payback period. And when an unexpected expense comes along, the need for immediate cash makes them easy prey for the predatory lender.

I want to reiterate that subprime lending is by no means synonymous with predatory lending. Subprime loans carry a higher interest rate because they carry a higher risk of default. This makes perfect sense in a competitive market where expected loss and risk determine price. Predatory loans carry disproportionately high interest rates or onerous terms not justified by higher risk. Rather, these rates or terms are imposed by lenders willing to exploit a borrower's lack of financial knowledge, market access, or economic resources.

It is important for regulators to make this distinction because we want to put an end to predatory lending without otherwise impeding the workings of the subprime lending market. How do we accomplish this?

Tempting as it may seem, I doubt that the solution lies in imposing interest rate ceilings or outlawing certain terms on loans, given our previous experience with interest rate ceilings. Our intention would be to get better terms for victims of predatory lending. Instead, we would likely shrink the pool of funds now available to high-risk, low-income consumers in the subprime lending market. And the victims of predatory lending would likely be no better off — their economic and financial circumstances would not change.

Clearly, the best way to eliminate predatory lending is to

eliminate the information asymmetry that gives rise to it. Consumers who understand basic personal finance, are willing to explore their options, and know how to exercise their contract rights are less likely to be victimized.

Efforts to advance financial literacy are booming. In Philadelphia, for example, the Neighborhood Reinvestment Corporation, a publicly funded organization with a solid reputation for its community information and counseling programs, is starting on a new project to educate low-income people about home mortgages. Meanwhile, at the national level, the American Bankers Association has formed a working group to educate bankers and community leaders about predatory lending.

We at the Federal Reserve are doing our part to foster greater financial literacy by providing materials and supporting local efforts through our Community and Consumer Affairs Department. The Fed continues to pursue basic research into the financial behavior of consumers at all income levels, so that we can better understand how and why they use the financial system as they do.

My reading of the evidence from Fed research and elsewhere is that

the need for greater financial literacy extends well beyond that of low-income people or other relative neophytes to the financial marketplace. People generally know relatively little about the financial marketplace. Even regular consumers of various financial services do not really understand the costs and benefits of their choices.


## CONCLUSION

Let me conclude by returning to the question with which I began: Does bank regulation help bank customers? In some cases, my answer is a clear yes, though perhaps not in the way one might at first think. For the nation to have a sound and stable banking system, the government must absorb some of the risks inherent in the system. In the United States, the government does so by serving as deposit insurer, payment guarantor, and lender of last resort. Having absorbed these risks, the government must regulate and supervise banks to ensure they do not introduce new ones. So bank regulation is part and parcel of having the sound and stable banking system that bank customers in the U.S. enjoy.

In other cases, my answer is a clear no. Regulations that do not take into account the self-interested reac-

tions of market participants — both bankers and bank customers — will not serve bank customers or achieve any other regulatory goal. At best they will have no effect; at worst they will produce unintended and deleterious consequences.

Finally, in some cases, my answer is maybe. In principle, bank regulations can help bank customers if they increase the degree of competition or the flow of information in the marketplace and thus drive suppliers to do a better job of meeting their customers' demands. But in practice, regulations designed to improve the quality of information, such as Truth-in-Lending or Truth-in-Saving, have met with mixed success at best.

Recent developments in the subprime lending market, particularly the egregious episodes of predatory lending, deserve regulators' serious attention. I believe that the most effective and lasting solution to this problem lies not in regulation but in education. Given today's fast-growing, complex, and sophisticated financial marketplace, raising the general level of financial literacy among consumers may be a more productive use of public resources than any new regulatory initiative. 

# Housing Policy and the Social Benefits of Homeownership

BY N. EDWARD COULSON

**T**he major subsidies to homeownership arise from the U.S. tax code, and the costs of these subsidies are high. Are the social benefits from homeownership sufficient to warrant such subsidies? In this article, Ed Coulson reviews the research on the social benefits of ownership and some related questions. The evidence indicates that homeownership does carry substantial social benefits, but their dollar value remains uncertain.

Homeownership has long been a goal of social policy in the United States, and programs to promote it have been extraordinarily successful, at least on the surface. The homeownership rate — the percentage of households that live in housing units that they own — has risen from around 40 percent before World War II, to around 65 percent today. This pronounced rise has surely been in part due to the subsidies that owner-occupied housing has received. The major subsidies to homeownership arise from the U.S. income tax code, and their costs are high.



**Ed Coulson** is an associate professor of economics at Pennsylvania State University. When he wrote this article, he was a visiting

scholar in the Research Department of the Philadelphia Fed.

Are such subsidies warranted? They can be if the social benefits from homeownership — the benefits received by those other than the homeowners themselves — are substantial. A variety of potential social benefits have been discussed in the economics literature. The evidence indicates that homeownership carries substantial social benefits, but their dollar value remains uncertain.

## HOMEOWNERSHIP AND ITS SUBSIDIES

Although many institutions that encourage homeownership (such as the Federal Home Loan Bank System and the Federal Housing Administration) were established in the 1930s and 1940s, the oldest, and perhaps most powerful, incentives for ownership lie in the federal income tax code. The two most important such incentives have been part of the code since its formation in 1913: the exclusion of rental income in an owner-occupied unit and the deductibility of mortgage interest.<sup>1</sup>

**Tax Subsidies and Their Effects.** As Satyajit Chatterjee explained in an earlier issue of the *Business Review*, the owner of a piece of real estate might consider renting it to another household and live in a rental unit somewhere else. Although some people might want to do this (say, if they become empty-nesters and wish to live in a smaller unit), the tax system discourages this behavior because the rental income that others pay a landlord is taxable income for the landlord, whereas if we own the house we live in, we pay ourselves rent, which is not taxed. The Internal Revenue Service doesn't consider this rent to oneself to be part of a homeowner's income (and you probably don't either) presumably because there's no record of any transaction taking place and no funds changing hands. Nevertheless this rental income is as real as the house you live in and provides a major subsidy to homeownership.<sup>2</sup> As Chatterjee also pointed out, the deductibility of mortgage interest, while far more "visible" than the exclusion of rent, is, in reality, a

<sup>1</sup> Owner-occupied housing is also subsidized through the exclusion of the first \$250,000 to \$500,000 in capital gains from the sale of the unit and through the deductibility of local and state property taxes (see the article by Steven Bourassa and William Grigsby). Evidence suggests that these are less important in terms of their impact on the economy or tax collections than the exclusion of rental income and the deductibility of mortgage interest.

<sup>2</sup> Indeed, a number of European countries tax this implicit income. Whether such a tax can be administered fairly is an open question, since the absence of an actual record of the transaction leaves unknown the dollar amount of the implicit rent.



device that allows those who finance the purchase of their homes to have the same tax advantages (with regard to the rent excludability) as those who own their homes outright.

In a 1991 study, James Follain and David Ling estimated that the loss in federal tax revenue from those two provisions was in excess of \$100 billion in 1988, and it is almost assuredly larger than that today.<sup>3</sup> More important, these tax breaks can give rise to “overinvestment” in housing. Overinvestment in this context means that the treatment of housing in the tax code causes people to invest more in housing (by becoming homeowners or buying a larger house) and less in other investment vehicles than would otherwise be the case. That, after all, is the point. But people do this because housing is cheaper than other investments, or, in what amounts to the same thing, housing has a higher rate of return because of the tax breaks. This gives housing an advantage over an investment whose return is taxed in the ordinary way.

This can be bad for the economy as a whole because some housing investments, for example, the ones that wouldn’t get built if there were no tax breaks, are driving out investments that have a higher rate of return before taxes. This brings down the aggregate value of gross domestic product (GDP), that is, what the country produces. So, to the extent that GDP measures our well-being, this overinvestment in housing is not good, as noted by Edwin Mills in a 1987 *Business Review* article. This overinvestment is perhaps

---

<sup>3</sup> The mortgage interest deduction on its own accounted for only about 10 percent of this figure. Presumably, the \$100 billion figure would be higher today, since more households are owners and marginal tax rates have increased in the top brackets since then (which increases the value of the deduction).

substantial; the most recent estimate — 1998 — comes from a study by Lori Taylor, who claims that roughly \$200 billion in GDP is lost each year because of this misallocation of capital.<sup>4</sup>

In addition, it is somewhat disconcerting that these tax preferences are more beneficial to homeowners with higher levels of income because the

## The largest subsidies go to those in the highest tax brackets, that is, those with the highest income.

value of the tax deductions is directly linked to the marginal tax bracket of the household. When you are in the 27 percent bracket, the government is in effect paying 27 percent of your mortgage interest bill each month. But if your income is low enough to qualify you for the 15 percent bracket, the government pays only 15 percent. The largest subsidies go to those in the highest tax brackets, that is, those with the highest income.

---

<sup>4</sup> The method used by both Mills and Taylor involves calculating the real rate of return to housing and nonhousing capital. Each of these authors finds that the marginal return to housing is less than the marginal return to nonhousing capital. They infer from this that GDP would be higher if investment were shifted out of housing. Their method thus assesses the overinvestment that arises from all forms of housing policy preferences, including the tax features noted above. It cannot separate out the subsidies directed to owner-occupied housing from those directed to landlords, such as accelerated depreciation, nor to consumers of rental properties such as public housing. Nevertheless, since two-thirds of households live in owner-occupied dwellings, and given the large estimated loss in revenue from the rental exclusion, it seems clear that much of the difference noted by Mills and Taylor arises from subsidies to this group.

Moreover, the subsidies to owner-occupied housing are thought to be responsible, at least in part, for other problems in the economy. One of these is urban sprawl. In a 1999 article in the *Business Review*, Richard Voith argued that the desire for larger amounts of space, spurred by the tax treatment described above, pushes the borders of urban areas beyond what is desirable. Another economist, Andrew Oswald, has argued that homeownership is directly tied to unemployment. To become owners, people spend a great deal of time and money upfront in the form of search costs, finance charges, and the like. Therefore, they are more closely tied, both financially and psychologically, to their dwellings than renters are. Consequently, owners are reluctant to move when their job prospects change. Oswald presents some evidence for this from European countries. The article by Coulson and Fisher finds little support for this link in the United States.

**Why Subsidize Homeownership?** If subsidizing homeownership has such negative effects on the economy, why are there such lucrative tax incentives in its favor? One argument is simply that homeownership is a good thing. Not only is it part of the American dream, but it’s also something that people “should” have, in the same way that they “should” have medical care or even food. And since we have programs such as Medicare and food stamps that lower the price of these goods, why not programs for homeownership as well?

Such “merit good” arguments, as they are called, are unsatisfactory. On the one hand, if the goal is to simply make people better off, the government could just provide cash or lower tax rates to all households and avoid the misallocation of capital described above. On the other hand, providing tax breaks for any commodity, for no other reason than that it’s good for consumers, smacks of paternalism — the notion that the

government somehow knows what is good for its citizens. Economists tend to reject such views. They prefer to let people make their own choices as much as possible.

**Can Subsidies Be a Good Thing for Everyone?** In spite of these drawbacks, can a case be made for providing tax incentives for owner-occupied housing? Yes, *if homeownership provides benefits to people other than the homeowners themselves*. Why does this matter? Suppose that all the houses along some street would benefit if one house in particular — call it the Smith residence — were converted from a rental property to an owner-occupied property. (Why they would so benefit will be discussed in a moment.)

In a perfect world, the street's residents would all get together, figure out how much they would value this conversion, get that much money together, take it over to the Smiths, and tell them to buy the unit. The Smiths may or may not take the money. That would depend on whether these contributions, when added to the money the Smiths themselves put into the pot, exceeded the cost of the conversion. But what's important is that in this perfect world, the right decision would be made. By "right," we simply mean the change in status from renting to owning should come about when, and only when, the total benefits are greater than the total costs. The total benefits include those that accrue both to the Smiths and to the Smiths' neighbors. The Smiths, in making the decision about ownership, are normally going to think only about their *private* benefits. The neighbors' contributions are necessary to get the Smiths to consider the *external*, or *social*, benefits. These contributions lower the price of ownership to the Smiths, causing them to *internalize*, or *take into consideration*, the *external benefit*.

But all this would happen in a perfect world. In the real, imperfect

world, neighbors would not, under ordinary circumstances, make these contributions. The mere costs of coordinating the rest of the neighborhood would be enough to dissuade most people from implementing this scheme. Also, most people would find it difficult to guess how much benefit they would receive and so would not really know

**[Another] thing that makes renters and owners behave differently is that ... owners reap the rewards of any improvements; renters do not.**

what the right contribution was. Perhaps most important, everyone would wait for other people to make their contributions first and hope that this would be enough. They would try to be what economists call free riders: They would try to get the benefit without paying the cost. And the Smiths would stay renters.

This is where the government might have a motive to step in. The tax incentives described above are a way of making the contributions that the neighbors would have made in the perfect world. They are an attempt to replicate what the private market would have done under ideal circumstances, but has failed to do.

## **WHY ARE HOMEOWNERS BETTER NEIGHBORS?**

**Homeownership Carries Incentives.** In the previous scenario, the neighbors were willing to "bribe" the Smiths into becoming homeowners in the belief that ownership would make them better neighbors — homeownership would, in some way, change their behavior. Economists call this removing the *moral hazard* associated with renting. The moral hazard in this case involves an incentive to behave "badly" because renting provides less incentive to behave "well."<sup>5</sup> In what ways does ownership mitigate moral

hazard? First, owners stay longer than renters because buying a house involves a lot of upfront costs that don't arise when you rent. There are transfer taxes, legal fees, and mortgage points to be paid, as well as hidden costs such as the time it takes to find just the right house or condo. These are not costs that households want to pay annually,

so people become owners only when they are reasonably sure that they won't have to pay them again for a long time. Because owners usually live in their units for a longer time, the payoff from good behavior will be larger.

The second thing that makes renters and owners behave differently is that (regardless of time spent) owners reap the rewards of any improvements; renters do not. When it comes time to sell the unit, the price will reflect the wear and tear to the residence and any deterioration to the neighborhood. Renters never see a return on any maintenance or care they may put into the unit; hence, they have less incentive to do so.

While these can be powerful incentives, it's possible that the cause and effect in the above arguments are backward. It may be that the differences in behavior are unaffected by whether a household owns or rents and that the choice to own or rent is motivated by the behavior itself.

How can this happen? Casual observation can confirm what research

---

<sup>5</sup> Moral hazard often comes up in the analysis of insurance markets, where being insured against bad outcomes (illness, traffic accidents) tempts people into risky behavior that leads to these same outcomes.

has shown: that owners are, on average, older, better educated, and richer than renters.<sup>6</sup> (See *Homeownership in the United States*.) They are more often married couples and, if they are not retired, have more children living at home. These demographic differences can be powerful influences on how one behaves, regardless of whether one is a homeowner. Another important difference is that owners most of the time live in single-family detached housing units, while renters usually live in multi-unit structures. Any number of these factors *could* cause the kind of social benefits that we might mistakenly associate with the choice to own or rent. Therefore, it would be a grave mistake to simply compare renters' and owners' behavior and attribute any difference to the fact that their housing choices are different.

In the discussion below, a number of studies that compare renters' and owners' behavior are analyzed. None of them makes the mistake of simply comparing the two groups; all of them use a statistical tool called multiple regression analysis, which allows the analyst to factor in other "controls" to isolate the "pure" effect of homeownership on behavior. For example, if the multiple regression analysis "controls" for income while measuring the effect of the choice to own or rent, it allows us to separate the influences of income and ownership on behavior. In effect, it shows how owners and renters with identical incomes would behave differently. Clearly, a fair number of controls are necessary in order to isolate the pure impact of homeownership — that is, the change in behavior that arises from becoming a homeowner.

<sup>6</sup> See the article by Allen Goodman; the article by L.M. Segal and D.G. Sullivan; and my 1999 article.

### Homeownership Influences

**Behavior.** For the most part, the studies discussed above all provide a large number of such controls; nevertheless, the reader might retain the suspicion that homeowners are different in some deeper sense. Homeownership might be motivated by a desire to have property of one's own, a desire for stability, and pride of ownership, things that cannot be easily captured by age, income, or other variables that we can measure in a survey. Nevertheless, we can gain some insight into how these motivations might affect other behavior by looking at the



ownership decision itself. Much of the research described below uses even more sophisticated statistical techniques to analyze who buys a house and who doesn't and separates the motivations to become a homeowner into observable ones (income, kids, and so forth) and unobservable ones. By doing this, we can estimate the unobservable motivation and use it as a control when looking at the behavioral differences of owners and renters, thus providing greater credibility to these measurements.

What, then, does the research show? We examine three behavioral dimensions in which differences between homeowners and renters are observed: maintenance, child-rearing, and citizenship.

### Maintenance.

A strong argument can be made that owner-occupants maintain their dwellings to a greater extent than renters (or landlords) maintain theirs.<sup>7</sup> Generally, renters don't maintain rental units as well as homeowners maintain their houses precisely because owners reap the benefit of good maintenance. The very act of becoming an owner leads people to behave differently toward their property because they have a financial incentive to do so. Thus, the moral hazard argument for improved maintenance in owner-occupied housing is straightforward.

On the other hand, it may be the case that renters are renters because of their ingrained behavior and that the difference is due to adverse selection. Imagine that the world has two kinds of people: sloppy and neat. When these two types of homeowners try to sell their respective properties, sloppy people pay for their behavior because they realize a lower selling price. Neat people are rewarded for the time they invested in being neat in the form of higher prices.

But notice that when sloppy people are renters, the landlord pays the price of sloppy behavior and reaps the rewards from having neat tenants. What does a landlord do when faced with this kind of market? She probably can't tell which type of tenant is moving in. If she could, she would try to charge sloppy renters a higher rent. Instead, she has to raise rents for *all* tenants or impose security deposits to cover the possibility that a new tenant is a sloppy person. But either of these strategies is going to drive

<sup>7</sup> Landlords have an incentive to maintain their units, but it is more costly for them to do so than it is for owner-occupants. Among other things, problems are harder to observe because landlords do not live on the property.



the neat tenants away because now homeownership is going to look like a much better deal to a typical neat person: He doesn't have to help pay for sloppy people's behavior, and he doesn't have to risk not getting his security deposit back from a dishonest landlord. Conversely, renting looks like a great deal to sloppy people because they might not have to pay the full cost of their behavior. So now most of the rental applicants will be sloppy people.

While something of a simplification, the above analysis serves to demonstrate that renters aren't going to be as careful as owner-occupants and that while landlords clearly have an incentive to maintain their units, they are not going to provide upkeep as easily or as cheaply as an owner-occupant.<sup>8</sup> When this happens, it causes a neighborhood externality.<sup>9</sup>

Various pieces of evidence suggest that this sort of thing happens. In what seems to be the only direct test, George Galster found that more money is spent on maintaining owner-occupied housing than is spent on maintaining rental property. Interestingly, he also found that the effect was greater for low-income households. Denise DiPasquale and Edward Glaeser found that homeowners spend more time gardening than renters. Equally important, though less direct, is the

evidence provided by studies that test whether rental property depreciates faster than owner-occupied property. Depreciation and maintenance are two sides of the same coin: When money is spent on maintenance, it slows down the rate of depreciation. James Shilling, C.F. Sirmans, and Jonathan Dombrow compared depreciation rates of single-family houses that were tenant-occupied with ones that were owner-occupied and found that, in fact, the rental units depreciated significantly faster.

Is this difference due to homeownership per se or to inherent differences in owners and renters? Galster's regression analysis contained a number of important controls, including a number of family demographic characteristics and length of time in the unit. DiPasquale and Glaeser also had a large number of controls for demographic characteristics and building type, and they also used the more sophisticated statistical techniques that control for the unobservable factors that lead to homeownership. Perhaps the most compelling, though somewhat indirect, evidence is from a study by John Harding, Thomas Miceli, and C.F. Sirmans, who found that owners on the brink of defaulting on their mortgage loans engaged in less maintenance than other owners. Thus, *owners who become more like renters* (in the sense of having less financial stake in their property) have less incentive to maintain their units, which provides additional evidence of moral hazard in maintenance.<sup>10</sup>

<sup>10</sup> Such occupants may spend less because of financial constraints, although the financial return to maintenance provides incentives to keep up the property, even for those most constrained. These authors also speculate that many kinds of maintenance are not particularly visible and, therefore, may not pay off upon sale of the unit. They found little evidence that this is the case, though, and anyway this sort of maintenance is not going to cause the kind of neighborhood externality under discussion here.

<sup>8</sup> There is always the possibility of too much maintenance. The act of maintaining one's property may create noise, for example, from a hammer or lawnmower, and possibly other inconveniences for one's neighbors.

<sup>9</sup> An externality, or spillover, is an uncompensated benefit or cost that results from the actions of an individual or group. For example, when a property owner does not maintain his property, others in the neighborhood may incur the cost in the form of lower property values, and they are not compensated for the decline in values. Similarly, when a property owner maintains her property, others in the neighborhood may benefit in the form of higher property values, and they do not have to contribute to the cost of maintenance.

**Child-Rearing.** Children can also create external effects in neighborhoods. According to a study by Richard Green and Michelle White, bad behavior of children — a homeowner's own or his neighbors' — “may reduce the attractiveness of the neighborhood and threaten the value of [the] homes. Thus, homeowners have a stronger incentive than renters to monitor their own children and their neighbors' children.” The higher stake that homeowners have in the quality of their neighborhoods causes them to raise better children to the benefit of all.

Although it's difficult to measure the behavior of children directly, there are a number of indicators we can observe. Prominent among these are the quality and level of education children receive. While educational attainment is not a direct measure of neighborhood quality, the long tradition of public education in the United States attests to a societal belief that the education of children has significant external benefits. A number of studies have asked whether children in renter and owner households receive different education when other factors are held constant.

In fact, Green and White found that homeowners' children are less likely to drop out of school. Interestingly, the effect appears to be more pronounced in families with lower incomes: A high-schooler in a family with \$40,000 in income (in 1980, the census year from which their data are drawn) is 4 percent less likely to drop out of school when the family owns its own home. However, for families with an income of just \$10,000 there is a 9 percent decline in dropout rates. A similar study by D. Haurin, T. Parcel, and R. Haurin measured the educational attainment of children as a function of homeownership (among other things) and found that math and reading scores were about 7 to 9 percent higher for the children of homeowners.

Homeownership also appears to improve noneducational measures of behavior that may have external consequences. For example, Green and White found that the probability that a girl in an “average” household will become pregnant while in high school decreases from roughly 13 percent to 11 percent if her family owns its home. Haurin, Parcel, and Haurin found that an index of behavioral problems of younger children declines about 3 percent for children from an owner-occupied dwelling.

**Citizenship.** The greater commitment that homeowners presumably have toward their neighborhoods might very well manifest itself in greater socialization with neighbors, civic participation, volunteerism, and the like. These activities have obvious external benefits for the neighbors, who can “free ride” on others’ efforts to make the community a better place to live. To the extent that homeownership does encourage this kind of behavior, it provides a powerful argument for subsidizing ownership. On the 50th anniversary of the Housing Act of 1949, former Secretary of Housing and Urban Development Andrew Cuomo said: “Housing is more than just bricks and mortar; it is the building block of community, it is powerfully tied to civic behavior — to working together with neighbors on shared concerns, to literally making us a part of a block, a neighborhood, a town, a county, a nation. Homeownership makes us stakeholders in something grander than ourselves.”<sup>11</sup>

Do homeowners behave in the way that Secretary Cuomo suggests? In a 1996 study, Peter Rossi and Eleanor Weber used the General Social Survey and other data to compare the actions of renters and owners, actions that

<sup>11</sup> Secretary Cuomo’s speech is available in its entirety at <http://www.hud.gov/library/bookshelf18/pressrel/nanm.html>.

## Homeownership in the United States

**T**he U.S. Census Bureau defines the homeownership rate as the percentage of households that own the unit in which they live.<sup>a</sup> This rate increased more or less steadily throughout the 1990s, particularly after 1994. However, there are significant differences in homeownership rates across regions, ethnic groups, and other demographic dimensions of U.S. society. To the extent that homeownership is responsible — as the text of the article proposes — for maintaining the social capital of a neighborhood or larger area, policymakers are right to be concerned when homeownership rates for particular groups are low, especially when groups are concentrated in certain areas.

For example, large differences in homeownership rates exist across the different regions of the U.S. (Figure 1). Ownership rates are quite high in the Midwest and South but much lower in the Northeast and West. In a forthcoming study, I found that much of these differences can be traced to the character of large northeastern cities, particularly New York City, which has a higher concentration of high-density urban housing, which leads to more rental housing and higher prices for homeownership. Higher prices for ownership (versus rental rates) also hinder the growth of owner-occupied housing in the West (particularly in California and Hawaii). Both of these low-homeownership regions also are home to large numbers of immigrants (both foreign and domestic), who tend not to become homeowners for a number of years after arriving at their new locations.

Immigration from other countries also helps explain the potentially puzzling differences seen in Figure 2, which plots historical homeownership trends for whites, blacks, Hispanic-Americans, and “others” (primarily Asian-Americans). It is clear that white households have much higher ownership rates than any other group. What is somewhat surprising is that Asian-Americans have such low rates, despite the fact that their income levels are comparable to those of whites. Recent research indicates that Asian households are more likely to be immigrant households and that immigrants of all ethnic groups are less likely to own.<sup>b</sup> In any case, Asian-American households are also likely to be younger and to live in the expensive Far West and Northeast regions (regardless of their immigrant status).

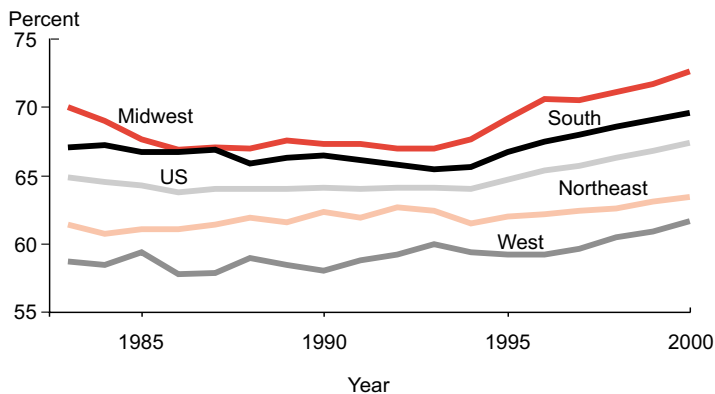
African-Americans have historically tended to have very low ownership rates. This is partly due to the lower income and wealth of African-American households. But these differences in resources do not completely explain the low propensity for homeownership. Some of the remaining difference may be attributed to discrimination in mortgage or real estate markets. Hispanic families have lower homeownership rates than any other ethnic groups. While Hispanics and blacks have roughly similar (low) income levels, the relatively large number of immigrants among Hispanic households tends to drive down their homeownership rate below that of African-Americans.<sup>c</sup>

Figure 3 gives the homeownership rate for different age groups for the head of household for 2001. This figure shows that homeowners tend to be older than renters and, therefore, more established citizens. Homeownership is very low for people in their twenties, but it rises sharply as people enter their thirties. It stays at a very high level for the remainder of one’s life, declining only slightly when people reach their mid-seventies.

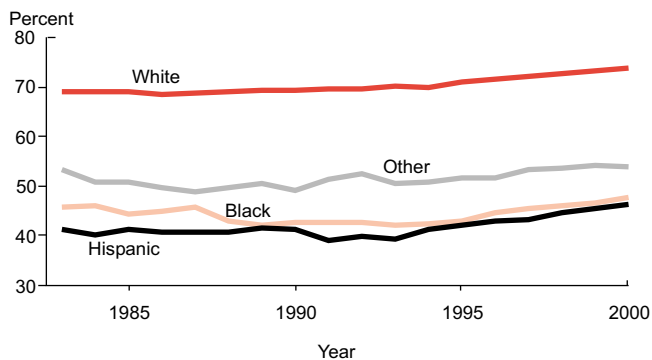
<sup>a</sup> “Owner” does not mean that one has completely paid off one’s mortgage.

<sup>b</sup> See my 1999 article, and the article by G. Painter, S. Gabriel, and D. Myers.

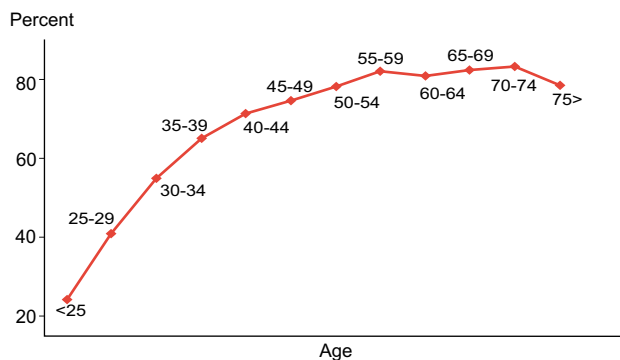
<sup>c</sup> See my 1999 article.

**FIGURE 1****Regional Homeownership Rates, 1983-2000**

Source: Department of Housing & Urban Development, Housing Market Conditions, November 2001.

**FIGURE 2****Homeownership by Ethnic Group, 1983-2000**

Source: Department of Housing & Urban Development, Housing Market Conditions, November 2001.

**FIGURE 3****Homeownership Rates by Age, 2001**

Source: Housing Vacancy Survey, Fourth Quarter 2001, U.S. Bureau of the Census

correspond in various ways to our common perceptions of neighborliness.<sup>12</sup> A large number of comparisons were made, so it is not particularly surprising that the results were mixed. In some ways, renters are better neighbors than owners; in other ways, owners are superior. For example, renters are “more likely to spend evenings with neighbors,” which perhaps casts some doubt on the greater “neighborliness” of owners; however, owners are more likely to “give help to others.”

DiPasquale and Glaeser derived rather different conclusions from their examination of the General Social Survey. They found that homeowners consistently provide a greater degree of social benefit. Specifically, DiPasquale and Glaeser measured owners’ and renters’ propensity to create neighborhood benefits through tasks such as gardening, volunteering for public services, being interested in political affairs, and several other activities. In practically all of the cases that these two authors examined, owners participated more in civic activities than renters did.

The comparison between these two studies is of interest in light of the discussion above about controlling for related influences. These two studies both used the General Social Survey to gauge owner-renter differences. However, Rossi and Weber used only two controls: age and an index of socioeconomic status. While undoubtedly important, these two factors alone probably cannot isolate the pure effect of ownership. It is possible that some of the results they get arise from this problem. For example, the behavior described as “more likely to spend

<sup>12</sup> The General Social Survey, conducted by the National Opinion Research Center at the University of Chicago, is a survey of 1500 representative households in the United States.



evenings with neighbors” may be due to the type of structures that renters live in — multi-unit, high-density dwellings.

Indeed, an article by Edward Glaeser and Bruce Sacerdote looked at the difference in social behavior across *building type* (rather than tenure type) and found that people who lived in multi-unit buildings did socialize more than those in detached units. Thus, a failure to control for the type of structure (among other differences) may lead to misleading statements about the benefits (or lack thereof) of ownership. DiPasquale and Glaeser did control for structure type and many other differences; therefore, their results about the positive social benefits of homeownership carry somewhat more credibility. As noted above, they found that owners put more effort into gardening than renters (thereby creating the social benefit of a pleasant-looking neighborhood).

While the opportunity to garden is clearly related to the type of housing one lives in, these authors controlled for this difference and still found that owners do more than renters.

DiPasquale and Glaeser were also able to provide a deeper explanation for homeowners’ more neighborly behavior. These authors related this behavior to the fact that homeowners stay in their units for a longer period of time; they’re not just there for the investment. And the payoff to improving the neighborhood through participating in civic activities is higher the longer one stays.

An analysis by William Rohe and Michael Stegman indirectly supports this notion. These authors followed a group of low-income families in Baltimore as they moved from rental housing to subsidized homeownership in a newly built neighborhood. When Rohe and Stegman compared this group with a control group that stayed in rental housing, they found that owners *did not* have a greater degree of activism

or involvement in the new neighborhood than renters with similar demographic characteristics. The authors attribute this, at least in part, to the fact that in this particular case, the owners’ neighborhood was very new. No previous long-term residents had built up an inventory of social capital, and consequently, there was no easy way for

aspects of their decisions, and therefore, too few households will opt for ownership. We’ve noted that homeownership is already heavily subsidized, primarily because rental income to oneself is not taxed and mortgage interest is deductible. The questions then arise: Is this the right amount of subsidization, and is this the right way of going about it?

**This review of research seems to indicate that homeownership provides external, or social, benefits in the form of greater maintenance and neighborhood conditions, better-raised children, and better “civic” behavior.**

the new residents to contribute to that inventory, despite their putative desire to do so in their role as new homeowners.

The conclusion, therefore, does not necessarily contradict that of DiPasquale and Glaeser; the work of these authors and of Rohe and Stegman is consistent with homeownership creating social benefits primarily because homeownership creates longevity and stability for neighborhoods.

### THE POLICY DILEMMA

This review of research seems to indicate that homeownership provides external, or social, benefits in the form of greater maintenance and neighborhood conditions, better-raised children, and better “civic” behavior. These researchers have taken great care to overcome the objection that it’s the type of people who choose ownership that makes the difference, and not the fact of owning or renting.


If we accept the evidence that homeownership does provide social benefits, the question is whether this should influence social policy. It was suggested above that it should. In the absence of some sort of subsidy to homeownership, potential home buyers will not take into account the social

About the first question we have very little to go on. All of the research discussed in this article is concerned with establishing the existence of the social benefits of owner-occupied housing, rather than the harder question of how much external value there is to homeownership. The kinds of benefits brought about by ownership would seem to be very hard to quantify. What is the value of a well-raised child or a neighbor who votes more often? It’s hard to know. However, the cost of the tax subsidies to the government and society is quite large, so if the external benefits are not large, the subsidies are clearly not justified. More research in this area is clearly needed to assess the monetary value of these benefits.

Should the tax system be changed? The mortgage interest deduction has come under increased scrutiny over the past decade or so, but as pointed out by Satyajit Chatterjee, this tax preference and the nontaxation of owners’ rental income go hand in hand. J. Follain and L. Melamed make this point forcefully. If only the mortgage interest deduction were eliminated, households with sufficient wealth to purchase a home outright would still

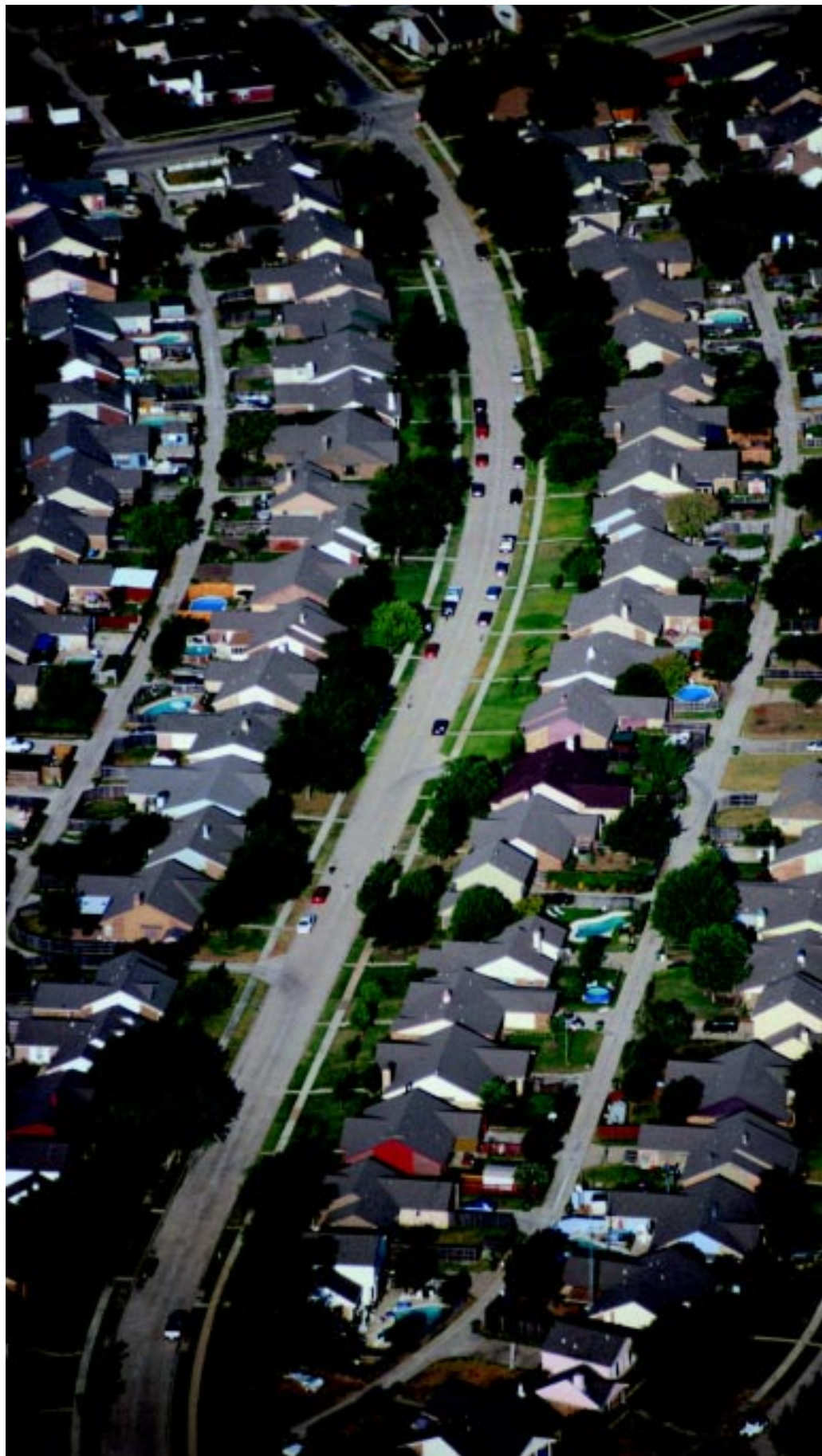
enjoy a tax advantage from ownership through the rental exclusion. Middle-income households would no longer have that advantage, since it would no longer accrue to those who finance the purchase of a house.<sup>13</sup> Since the taxation of implicit rent appears to be infeasible, one might argue that the mortgage interest deduction should stay as well.

The policy dilemma is clear. Homeownership has definite social benefits, and on that account, there is a clear case for subsidies that encourage homeownership. Indeed, homeownership is subsidized. Furthermore, the tax subsidies are very large, and they're larger for high-income households than for low-income ones. Moreover, eliminating the subsidies from the tax code would be difficult at best.

But the dilemma is compounded because some of the research discussed in this article indicates that the social benefits are higher for low-income households; therefore, the benefits may be scaled the wrong way. Green and White and other authors have suggested the use of tax credits (as opposed to tax deductions) for first-time or low-income home buyers. In this way we can better match the subsidies to and benefits from homeownership and provide a more coherent set of policies to support an important social goal. 

---

<sup>13</sup> People who do not itemize their deductions gain nothing and lose nothing from this change; these may be the lowest income households.



## REFERENCES

- Bourassa, Steven, and William Grigsby. "Income Tax Concessions for Owner-Occupied Housing," *Housing Policy Debate*, 11, 2000, pp. 521-46.
- Chatterjee, Satyajit. "Taxes, Homeownership and Real Estate Risks," Federal Reserve Bank of Philadelphia *Business Review*, September/October 1996.
- Coulson, N. Edward. "Why Are Hispanic- and Asian-American Homeownership Rates So Low? Immigration and Other Factors," *Journal of Urban Economics*, March 1999, 45, pp. 209-27.
- Coulson, N. Edward. "Regional Variation in Homeownership Rates, or, If California Housing Prices Were as Low as Pennsylvania's Would Its Ownership Rate Be as High?" *Journal of Real Estate Finance and Economics*, forthcoming.
- Coulson, N. Edward, and Lynn Fisher. "Tenure Choice and Labor Market Outcomes," *Housing Studies*, January 2002, 17, pp. 35-50.
- DiPasquale, Denise, and Edward Glaeser. "Incentives and Social Capital: Are Homeowners Better Citizens?" *Journal of Urban Economics*, 45, 1999, pp. 354-84.
- Follain, James, and David Ling. "The Federal Tax Subsidy to Housing and the Reduced Value of the Mortgage Interest Deduction," *National Tax Journal*, 8, 1991, pp. 155-99.
- Follain, J., and L. Melamed. "The False Messiah of Tax Policy: What Elimination of the Home Mortgage Interest Deduction Promises and a Careful Look at What It Delivers," *Journal of Housing Research*, 9, 1998, pp. 171-99.
- Galster, George. "Empirical Evidence on Cross-Tenure Differences in House Maintenance and Conditions," *Land Economics*, 59, 1983, pp. 107-13.
- Glaeser, Edward, and Bruce Sacerdote. "The Social Consequences of Housing," *Journal of Housing Economics*, 9, 2000, pp. 1-23.
- Goodman, Allen. "Demographics of Individual Housing Demand," *Regional Science and Urban Economics*, 23, 1990, pp. 83-102.
- Green, Richard, and Michelle White. "Measuring the Benefits of Homeowning: Effects on Children," *Journal of Urban Economics*, 1997, pp. 441-61.
- Harding, John, Thomas Miceli, and C.F. Sirmans. "Do Owners Take Better Care of Their Housing Than Renters?" *Real Estate Economics*, 28, 2000, pp. 663-81.
- Haurin, D., T. Parcel, and R. Haurin. "The Impact of Home Ownership on Child Outcomes," Working Paper, 2000.
- Mills, Edwin S. "Dividing Up the Investment Pie: Have We Overinvested in Housing?" Federal Reserve Bank of Philadelphia *Business Review*, March/April 1987.
- Oswald, Andrew. "A Conjecture on the Explanation for High Unemployment in the Industrial Nations: Part I," Working Paper, University of Warwick, 1996.
- Painter, G., S. Gabriel, and D. Myers. "Race, Immigrant Status, and Housing Tenure Choice," *Journal of Urban Economics*, 49, 2001, pp. 150-67.
- Henderson, J. Vernon, and Yannis Ioannides. "A Model of Housing Tenure Choice," *American Economic Review*, 73, 1983, pp. 98-113.
- Rohe, William, and Michael Stegman. "The Impact of Home Ownership on the Social and Political Involvement of Low-Income People," *Urban Affairs Quarterly*, 30, 1994, pp. 152-72.
- Rossi, Peter, and Eleanor Weber. "The Social Benefits of Homeownership: Empirical Evidence from the National Surveys," *Housing Policy Debate*, 7, 1996, pp. 37-81.
- Segal, L.M., and Sullivan, D.G. "Trends in Homeownership: Race, Demographics, and Income," Federal Reserve Bank of Chicago *Economic Perspectives*, 22, 1998, pp. 53-72.
- Shilling, James, C.F. Sirmans, and Jonathan Dombrow. "Measuring Depreciation in Single-Family Rental and Owner-Occupied Housing," *Journal of Housing Economics*, 1, 1991, pp. 368-83.
- Taylor, Lori. "Does the United States Still Overinvest in Housing?" Federal Reserve Bank of Dallas *Economic Review*, Second Quarter 1998, pp. 10-18.
- Voith, Richard. "Does the Federal Tax Treatment of Housing Affect the Pattern of Metropolitan Development?" Federal Reserve Bank of Philadelphia *Business Review*, March/April 1999, pp. 3-16.



# What's in the File?

## The Economics and Law of Consumer Credit Bureaus

BY ROBERT M. HUNT

**L**enders in the United States have voluntarily shared information about their customers — through credit bureaus — for nearly a century. In this article, Bob Hunt explains how sharing information about consumers' indebtedness and payment histories can benefit both consumers and lenders. These benefits depend, however, on the accuracy of the information reported and the care taken to ensure that information is disclosed only when it is appropriate. Hunt also describes the Fair Credit Reporting Act, which attempts to address these concerns. Finally, he closes by reviewing a number of challenges consumer credit bureaus may face in the early years of this new century.

Consumer credit bureaus are organizations that compile and disseminate reports on the creditworthiness of consumers.<sup>1</sup> Firms that lend to con-

<sup>1</sup> This article focuses exclusively on firms that furnish credit reports on consumers. There are comparable institutions, such as Dun and Bradstreet, that collect and disseminate information on businesses.



**Bob Hunt** is an economist in the Research Department of the Philadelphia Fed.

sumers provide the underlying data to the bureaus. In the United States today, there is at least one credit bureau file, and probably three, for every credit-using individual in the country. Over 2 billion items of information are added to these files every month, and over 2 million credit reports are issued every day (see *Consumer Credit Bureaus in the U.S.*). In many instances, real-time access to credit bureau information has reduced the time required to approve a loan from a few weeks to a few minutes or even seconds.

In this article, I examine the information problems lenders encounter when making loan decisions and how information-sharing — through institutions such as credit bureaus — can mitigate these problems. I then

explore some of the factors that influence whether lenders will agree to share their information and credit bureaus' incentives to maintain accurate credit report files and to correct them when errors are found. With these insights in mind, I will examine the system of regulation adopted to safeguard privacy and improve the accuracy of credit bureau files. Finally, I'll review some of the challenges the industry faces in the first years of the 21<sup>st</sup> century.

### THE ECONOMICS OF INFORMATION SHARING

Lenders encounter two problems in conducting their business. The first problem, *adverse selection*, occurs when borrowers are not all the same — they have different characteristics that affect the likelihood they can repay their debts — but lenders cannot always tell them apart. In this situation, lenders will offer terms that depend on the average risk of default. Since riskier borrowers are more likely to default anyway, this raises the cost of a loan disproportionately for the borrowers most likely to repay. Hence the customers most likely to produce an adverse outcome — defaulting on a loan — are the ones most likely to accept the less attractive loan terms.<sup>2</sup>

The second problem, *moral hazard*, occurs if once a loan is made, a

<sup>2</sup> See the article by George Akerlof and the article by Joseph Stiglitz and Andrew Weiss. Evidence of adverse selection in the market for credit cards is found in the article by Lawrence Ausubel.

borrower would benefit by defaulting on the loan. More generally, a borrower may not take sufficient precautions to avoid default. Lenders try to design loan contracts to deal with this problem, but that's not always possible. In that case, lenders will lend to fewer borrowers, in smaller amounts, and on harsher terms.

Sharing information about borrowers' characteristics and payment histories can mitigate these problems. Armed with more information, lenders can better evaluate potential borrowers and offer loan terms commensurate with their risk of default. And if future access to credit is a valuable option to a borrower, he or she will have an incentive to avoid a default that might become known to other creditors.

Lenders could share information about their borrowers by simply sending it to every lender willing to reciprocate. But it is clearly more efficient for lenders to send this information to a single repository, which

can make the information available to other lenders when they need it. Such repositories are the credit bureaus we have today.

### BUT DO CREDIT BUREAUS JUST HAPPEN?

Should we expect credit bureaus to emerge as a natural response to the self-interest of creditors? The answer is often yes, but not always.<sup>3</sup> Economic analysis suggests a variety of factors can influence the formation of credit bureaus.

#### Technology and Market Size.

One important factor is the cost of establishing and operating an information-sharing regime. These costs may be prohibitive if fixed costs are high

---

<sup>3</sup> This section draws on the articles by Tullio Jappelli and Marco Pagano, those by Jorge Padilla and Marco Pagano, and the article by James Vercammen.

and relatively little lending is going on. But if loan volume is sufficiently large, the costs can be amortized over many loans. In the U.S., advances in computing and telecommunications have reduced the marginal cost of sharing information but increased fixed costs because of the required investments in information technology. These fixed costs are affordable — in the U.S. anyway — because the consumer credit market has become so large.

Loan volume matters for another reason: When there is a high volume of applications for loans of modest size, lenders cannot afford to invest a lot of resources evaluating each application. A credit bureau can help lenders adopt lower cost techniques for screening applications — such as credit scoring — without incurring an unacceptable rise in overall credit risk. These methodologies can be refined using credit histories gathered from all

## Consumer Credit Bureaus in the United States

T

here are about 1000 consumer credit-reporting agencies in the U.S., employing 22,000 people and generating \$2.8 billion in sales. If we control for inflation, industry revenues have quadrupled since 1972 — twice the rate of increase of the overall economy or consumer credit.<sup>a</sup> The industry is segmented into many small and a few big firms. The most well-known credit bureaus, Equifax, Experian, and TransUnion, enjoy universal coverage of consumer borrowers in the U.S.

The four largest consumer credit bureaus alone accounted for over half of industry receipts in 1997. These

large firms concentrate on high-volume businesses — lenders seeking credit file information thousands or even millions of times a year. Some offer credit scoring and other risk assessment tools and fraud detection services, which attempt to limit losses by detecting anomalies in consumers' credit files. The largest bureaus offer *pre-screening* services that enable firms to send the billions of solicitations for credit cards or insurance delivered by mail each year.<sup>b</sup> They are also important players in direct marketing, generating targeted mailing lists and, in some cases, printing and mailing billions of items through their own subsidiaries.

---

<sup>a</sup> This section draws on information from the 1997 Census of Service Industries, the web sites of various credit bureaus, and the web site of the industry's trade association, the Consumer Data Industry Association, or CDIA (<http://www.cdiaonline.org>). For many decades, and until just recently, this association was known as Associated Credit Bureaus, Inc., or ACB.

<sup>b</sup> Prescreening works in the following way. A lender specifies a set of characteristics it wants a set of borrowers to satisfy. Using its files, a credit bureau identifies those customers who satisfy the criteria and generates a list of names and addresses of people who will receive a credit card solicitation. The Fair Credit Reporting Act requires that every customer found to satisfy the criteria must receive a firm offer of credit. There are also limitations, specified in the Equal Credit Opportunity Act, on the criteria lenders may use when making credit decisions.

participating lenders rather than just a lender's own files.<sup>4</sup>

**Potential Customers and Competition.** The advantages of access to a credit bureau's information will be greater if lenders frequently encounter potential customers they don't know very much about. Another important consideration is the nature and extent of competition among lenders. But here the effects are less clear cut. Suppose that a given retailer or lender enjoys a large share of its market. Most local residents are already customers and are relatively well known to the firm. Unless there is significant immigration from other areas, the benefits of sharing information might be small.

Now consider a large city with many small lenders and retailers. The pool of potential new customers will include both newcomers to the area and local residents shopping for a better deal. In that case, lenders might frequently encounter potential new customers. Those customers may also borrow from several lenders at the same time. In that case, every lender would like to know how much a potential customer owes to other lenders before making a loan. So it would seem that a more competitive market is conducive to the formation of credit bureaus.

But there can be a counter-vailing effect if a lender's profits result primarily from knowing its own customers better than its rivals do. Suppose that one or more lenders compete for Bank A's customers. Once again, the problem of adverse selection emerges — loan terms offered by competitors will be relatively more attractive to Bank A's higher risk borrowers than its lower risk ones.

Knowing this, other lenders cannot compete as aggressively for Bank A's customers by offering more credit or more generous terms. But if Bank A's customers find it difficult to obtain better terms from other lenders, Bank A need not offer them the best terms either, allowing it to earn a profit lending to customers it already knows relatively well.

Suppose someone opened a credit bureau. Would lenders agree to join? If they did, each lender would be better equipped to compete for customers currently served by its rivals because the adverse-selection problem would be lessened. But the net effect on profits is ambiguous — lenders might earn additional income lending to customers enticed from their competitors, but they will also have to offer better terms to their existing customers in order to retain their business. If lenders would not earn enough lending to new customers to offset reduced profits earned on their existing customers, they wouldn't voluntarily join the credit bureau.

Alternatively, lenders might agree to share some information with each other, but not everything. For example, lenders might share information about delinquencies or defaults but not about the size of the credit line and the amount actually used. Reporting negative payment information should encourage borrowers to repay their debts, but it might not trigger so much competition that sharing this information would reduce profits.

**Joining the Bandwagon.** The incentive to join a credit bureau tends to increase with the number of creditors that agree to participate. Economists call this a *bandwagon effect*. Credit bureaus become more useful to lenders as the coverage of potential customers increases. Increased coverage may reduce moral hazard if borrowers are aware that their payment history is available to a larger number of potential

creditors. Additional membership in a bureau can also help amortize the fixed cost of setting it up. Each of these factors would tend to result in just a few credit bureaus, perhaps only one, serving a particular market. Today, in most countries that have private credit bureaus, just a few firms account for the vast majority of credit reports generated, and they enjoy nearly complete coverage of the credit-using population.

But the bandwagon effect may not be strong enough to induce all creditors to participate in information sharing or to create a monopoly credit bureau. At a minimum, creditors may choose to share information with more than one bureau in order to stimulate competition and innovation for such services. Also, the historical trend toward concentration is not irreversible. For example, as competitive conditions change, lenders' incentives to continue sharing information may also change.

## CREDIT BUREAUS AS BLACK SHEEP?

Consumers care about who has access to their credit reports and the accuracy of the information contained in them. Credit bureaus are concerned about these issues too. But do they weigh the benefits and costs of greater privacy or greater accuracy in the same way most consumers do? The answer is probably not. The resulting tension has been addressed, at least in part, by government regulation.

**Privacy.** Credit bureaus are information-sharing arrangements that improve the performance of credit, insurance, and other markets. But the flip side of information sharing is a loss of consumer privacy. Sharing a little information about borrowers, such as delinquencies or defaults, ought to generate benefits that exceed the costs associated with any loss of privacy, especially if access to such information is limited. But if access is less well regulated or if information is used for

---

<sup>4</sup> Credit scoring is the process of developing numerical indices of the risk associated with consumers with certain observable characteristics and payment histories. See Loretta Mester's 1997 article in the *Business Review*.

purposes not envisioned by consumers, that case becomes harder to make (see *Credit Reports and Privacy*).

**The Quality of Credit Bureau Information.** Because no system is perfect, there will always be some errors in credit files (see *Errors in Credit Reports*). But should we expect to see one type of error more frequently than another? The answer is yes. Given that creditors are also the bureaus' primary customers, the standards set by the bureau will likely reflect the interests of creditors. A well-functioning credit bureau will set standards so that the incremental cost of reducing errors contained in credit reports is equal to the reduction in lenders' losses that results from greater accuracy.

Consider a typical lender that

is a member of a credit bureau. The lender benefits from access to accurate and timely information provided by other bureau members, but it bears the cost of maintaining the quality of information it provides to other members. Under these circumstances, lenders have an incentive to "free ride" in terms of the quality of the information they provide.<sup>5</sup> The credit bureau can mitigate the free-riding problem by enforcing minimum standards on the quantity and quality of the information members provide.

Broadly speaking, two types of

---

<sup>5</sup> That is not to say that lenders do not care about the quality of this information — after all, the data are typically a direct output of their own internal information systems.

errors can creep into a credit bureau's files: inclusion of inaccurate information and omission of accurate information. Suppose that a credit report contains a reference to a delinquency that, in fact, never occurred. Based on the information in the report, a lender might not extend credit — but it might have, had the credit report been accurate. Consequently, the lender loses interest and fee income it would have earned on that loan.

Alternatively, suppose that a credit report omits the fact that a borrower defaulted on a loan. In this case, a lender might extend credit to this person, but would not have, had the lender been aware of the default. As a result, the lender takes on more credit risk than intended. This type of mistake

## Credit Reports and Privacy

T

he credit-reporting industry has been embarrassed on several occasions by the ease with which people have obtained credit reports when they should not have. For example, a 1989 *Business Week* article described how Vice

President Dan Quayle's credit report was obtained under the pretext of making him a job offer. Some deception was required to obtain the report, but a little deception seemed to go a long way.

Under the Fair Credit Reporting Act (FCRA), credit reports may be furnished only for purposes specified in the act, for example, to lenders making a loan decision, insurers underwriting a policy, or employers considering a person for employment.<sup>a</sup> The FCRA does permit prescreening (see *Consumer Credit Bureaus in the U.S.*) without the prior consent of the consumer, but consumers have the right to opt out of this process.<sup>b</sup> A credit report may be used in an employment decision, but only with the potential employee's prior consent. Medical information about a consumer cannot be shared with

creditors, insurers, or employers without the consumer's consent.

Under the FCRA, credit bureaus must use *reasonable procedures* to prevent disclosures of consumers' information that violate the act. Users of credit bureau information must identify themselves and the reason why a credit report is being sought. Credit bureaus must make a reasonable effort to verify this information when dealing with new customers.<sup>c</sup>

The FCRA specifies penalties for violations of consumers' privacy. A credit bureau or a user of a credit report found to be in negligent noncompliance with the act is responsible for the consumer's actual damages plus his or her reasonable legal expenses. Punitive damages may be awarded in instances of willful noncompliance. Officers or employees of a credit bureau who knowingly or willfully disclose consumer information to a person not authorized to receive it can be prosecuted. Any person who obtains a consumer report under false pretenses is subject to criminal prosecution and can be sued by the credit bureau for actual damages.

---

<sup>a</sup> A credit report may also be issued to any person with a legitimate business need arising from a transaction initiated by the consumer or with an existing account with a consumer. An example might be a credit check performed by a prospective landlord.

<sup>b</sup> A single toll-free number (1-888-567-8688) can be used to opt out of prescreening services provided by Experian, Equifax, and TransUnion.

<sup>c</sup> When a consumer report is purchased for resale to an end-user, the identity of the end-user and the proposed use of that report must be provided to the credit bureau.



causes lenders the greatest concern.

But balancing costs and benefits to lenders does not take into account the interests of borrowers, who are not directly customers of the bureau. Borrowers also experience losses from errors: When a loan is denied because of erroneous information in a credit report, the borrower loses the benefit of having the loan.<sup>6</sup> If that loss is not also reflected in weighing costs and benefits, too many errors of this type will occur.

When consumers become aware of mistakes that result in an erroneous denial of credit, they naturally have an incentive to correct those errors. Because they know their own credit history well, it is easier for them to

---

<sup>6</sup> More generally, a borrower in this situation may have to accept harsher loan terms or may have to expend time and effort to have an erroneous delinquency expunged from his or her credit file.

identify errors than it is for the credit bureau. Therefore, one way to improve the accuracy of credit reports is to encourage consumers to dispute errors in their reports, setting in motion a process for rechecking the source and accuracy of the data reported.

Since lenders value more accurate data, we should expect credit bureaus to make some form of dispute process available to consumers. However, lenders bear the cost of this process but enjoy only a portion of the resulting gains. So we can't assume that credit bureaus will devote appropriate resources to the dispute process, especially when the costs of doing so are high.

Given the difficulties in forming a private arrangement between borrowers and credit bureaus, government intervention might produce a better balancing of the costs and

benefits of accuracy. For example, the government could set minimum standards for information providers and credit bureaus, as well as for the consumer-dispute process. The U.S. and many other countries have enacted laws with precisely this goal in mind.

## THE REGULATION OF CONSUMER CREDIT BUREAUS

In the U.S., the primary mechanism for regulating the activities of consumer credit bureaus is the Fair Credit Reporting Act (FCRA), which was enacted in 1970 and significantly amended in 1996.<sup>7</sup> The primary agency responsible for enforcing the FCRA is the Federal Trade Commission (FTC),

---

<sup>7</sup> 15 U.S.C §§ 1681-1681(u). A thorough description of the law, together with brochures explaining its obligations in plain English, may be found at the FTC's web site [www.ftc.gov](http://www.ftc.gov).

## Errors in Credit Reports

C

redit bureaus assemble reports on individuals by linking accounts with the same names, addresses, birthdays, Social Security numbers, and other information that is supposedly unique to the individual. Credit bureaus have developed sophisticated processes to do this, but they are not perfect. Important parts of a person's credit history, such as the payment history on a student loan, may sometimes be omitted. Or erroneous information, such as a delinquency on someone else's account, might be included.

Perhaps no other issue about this industry generates more heated debate than the accuracy of credit reports. For all of that heat, there aren't a lot of data available, and most are old. In 1992, the industry's trade association released results of a study based on a sample of

nearly 16,000 applicants, all of whom were denied credit. Relatively few of these people requested a copy of their credit report, but a quarter of those who did disputed something in their report. While we don't know for sure, it is likely that serious errors occurred more frequently among disputed reports than for the whole study sample or the entire population of credit users.<sup>a</sup> In about 14 percent of the disputed reports, the resulting changes were significant enough to reverse the credit decision. In the study, there were only 36 such instances (0.2 percent of the sample). But a simple extrapolation, based on other statistics provided by the same organization, suggests that in the early 1990s, the number of applications for credit mistakenly denied could have been large — in the tens if not hundreds of thousands each year.<sup>b</sup>

---

<sup>a</sup> The study itself was not made available to the public. The statistics cited here are from a 1992 speech by Barry Connelly of Associated Credit Bureaus, Inc. (ACB).

<sup>b</sup> In testimony submitted to Congress, ACB reported that consumers disputed something in 3 million credit reports in 1989: 13.5 percent of 3 million disputes is 405,000. See the 1989 hearings. It should be noted that not all of the 3 million reports disputed in 1989 occurred after a denial of credit, and this may imply that the 405,000 number is too high. But we don't know by how much.

but other federal agencies (including the Federal Reserve Board) are responsible for enforcing the act among firms they regulate.<sup>8</sup>

In many ways, this law is an attempt to refine the balance between the obvious benefits credit bureaus generate and consumers' legitimate concerns over accuracy and privacy. The FCRA creates obligations for credit bureaus, users of credit reports, and credit bureau members. The duties of lenders and other information providers are relatively modest — to avoid furnishing information known to be erroneous and to participate in the process of correcting errors identified by consumers. This increases the quality of information provided to credit bureaus without significantly raising the cost of sharing the information. Regulation should not raise these costs to the point where information providers drop out, a situation that would undermine this voluntary mechanism for sharing information.

Similarly, inaccuracies in credit files do not violate the FCRA. Rather, the act requires bureaus to use *reasonable procedures to ensure maximum possible accuracy*. This standard is satisfied if the bureau adopts procedures a reasonably prudent person would use under the circumstances. These procedures, in turn, depend on a balancing of the incremental benefits and costs of attaining higher levels of accuracy.<sup>9</sup> This balancing of benefits and costs may change over time as advances in technology make it easier for bureaus to adopt ever more powerful computers and software.

---

<sup>8</sup> Under the act, state attorneys general may sue on behalf of their residents. In addition, certain state laws provide consumers with additional rights.

<sup>9</sup> These interpretations are found in the 1982 case *Bryant v. TRW, Inc.* 689 F.2d 72 and the 1989 case *Houston v. TRW Information Services, Inc.* 707 F. Supp. 689.

The FCRA also encourages consumers to correct errors in their reports. The cost to consumers of obtaining their own reports is limited by regulation. The cost is free whenever information contained in a credit report has contributed to an adverse decision affecting the consumer — precisely the circumstance in which an error may be more costly. The FCRA requires users of credit bureau information to remind

computer and communications technology have reduced the cost of investigating alleged errors and correcting them when found.

### WHAT LIES AHEAD?

In the U.S., the two-tier industry structure — a few giant credit bureaus with national coverage serving high-volume customers and many smaller bureaus serving specific niches or

**Numerous congressional hearings in the late 1980s and early 1990s culminated in amendments, enacted in 1996, that significantly strengthened consumer protections.**

consumers of their right to obtain and, if necessary, correct their credit reports. The act sets a time limit for reinvestigations to be completed, at no cost to the consumer, and includes a number of mechanisms for ensuring that any corrections are disseminated to other credit bureaus and users of the report in question.

This is not to say that the FCRA has attained the ideal balancing of benefits and costs that might be achieved. Consumer groups remain concerned about the problems of accuracy and privacy and, in some areas, question whether the act is adequate.<sup>10</sup> Numerous congressional hearings in the late 1980s and early 1990s culminated in amendments, enacted in 1996, that significantly strengthened consumer protections. Thereafter, the FTC sued a number of credit bureaus, alleging they were devoting inadequate resources to the consumer-dispute process.<sup>11</sup> At the same time, continued improvements in

reselling data to low-volume customers — is likely to mature while adapting to new forms of delivery, for example, the Internet. Advances in predictive modeling such as credit scoring will likely increase the value of information contained in credit bureau files. But the industry also faces new challenges from governments as well as their own customers.

### Challenges from

**Governments.** The industry faces the prospect of more intense scrutiny and possibly regulation. In 2001 the FTC succeeded in restricting the use of certain data in consumer credit reports to generate target marketing lists used to sell nonfinancial products to consumers. The FTC also succeeded in applying the financial privacy requirements of the Gramm-Leach-Bliley Act to credit bureaus' "look-up" services, whereby a person's name and other identifying information are matched with a current address or phone number contained in

---

<sup>10</sup> See Edmund Mierzewski's April 2001 testimony and Jon Golinger and Edmund Mierzewski's 1998 report, for the Public Interest Research Group, on the accuracy of credit reports.

---

<sup>11</sup> In January 2000, the FTC announced a settlement, involving the three largest credit bureaus, that requires them to adequately staff the toll-free lines used by consumers seeking information about their credit reports.


credit files.<sup>12</sup> And while the 1996 amendments to the Fair Credit Reporting Act limited the ability of states to enact new, more restrictive legislation affecting credit bureaus, those limits expire in 2004.

#### **Challenges from Lenders.**

For a brief period in the late 1990s, lenders accounting for one-half of all consumer credit ceased reporting certain information (credit limits and high balances) on at least some of their credit card accounts. Financial

regulators warned lenders their underwriting systems might be compromised by incomplete credit bureau information.<sup>13</sup> The leading credit bureaus responded by announcing they would limit access to their databases for lenders providing incomplete credit histories. Thereafter, these lenders began to send more complete credit information to the bureaus.

This behavior might be a reaction to a period of intense competition among credit card lenders. During this period, an increasing share of consumers' unsecured debt was held on the books of a few lenders. In just

five years (1996-2000), the share of bank credit card balances held by only 10 institutions increased from 43 percent to 63 percent. These banks are the principal source of information about consumers' payment habits for bank cards, as well as the principal source of potential new customers. And during those five years, consumers were inundated with offers of credit card accounts that carried low introductory interest rates on balances transferred from other banks. This episode is a reminder that lenders may not always choose to share information about their borrowers. 

---

<sup>12</sup> See *TransUnion Corp. v. Federal Trade Commission*, 245 F.3d 809 and *Individual Reference Services Group, Inc. (IRSG), v. Federal Trade Commission et al.*, 145 F. Supp. 2d 6. Credit bureau activities may also be affected by the European Privacy Directive, which is generally more restrictive than U.S. law. This directive is reviewed in Fred Cate's book.

---

<sup>13</sup> See the articles by Lisa Fickensher and the one by Lucy Lazarony. See also the advisory letter issued by the Federal Financial Institutions Examination Council.



## REFERENCES

- Akerlof, George A. "The Market for 'Lemons': Quality, Uncertainty, and the Market Mechanism," *Quarterly Journal of Economics*, 84,1970, pp. 488-500.
- Ausubel, Lawrence M. "Adverse Selection in the Credit Card Market," mimeo, Department of Economics, University of Maryland, 1999.
- Cate, Fred H. *Privacy in the Information Age*. Washington, DC: Brookings Institutions Press, 1997.
- Cole, Robert H., and Lon Mishler. *Consumer and Commercial Credit Management*, 11<sup>th</sup> ed. Boston: McGraw-Hill, 1998.
- Connelly, D. Barry. "Announcement of the Credit Report Reliability Study," text of speech before the National Press Club (February 4, 1992).
- Fair Credit Reporting Act*, Hearings before the House Subcommittee on Consumer Affairs and Coinage of the Committee on Banking, Finance and Urban Affairs. 101<sup>st</sup> Congress, 1<sup>st</sup> Session (September 13, 1989).
- Federal Financial Institutions Examination Council Advisory Letter, "Consumer Credit Reporting Practices" (January 18, 2000).
- Fickensher, Lisa. "Credit Bureaus Move Against Lenders That Withhold Info," *American Banker*, 149 (December 30, 1999), p. 1.
- Fickensher, Lisa. "Lenders Hiding Credit Data and Regulators Object," *American Banker*, 149 (July 7, 1999), pp. 1,7.
- Golinger, Jon, and Edmund Mierzwinski. "Mistakes Do Happen: Credit Report Errors Mean Consumers Lose," Washington: Public Interest Research Group, 1998. [www.pirg.org/reports/mistakes](http://www.pirg.org/reports/mistakes) (accessed 10/15/2001).
- "Is Nothing Private?" *Business Week* (September 4, 1989), pp. 74-82.
- Jappelli, Tullio, and Marco Pagano. "Information Sharing in Credit Markets: The European Experience," CSEF Working Paper No. 35 (2000).
- Jappelli, Tullio, and Marco Pagano. "Information Sharing, Lending and Defaults: Cross Country Evidence," CSEF Working Paper 22 (1999).
- Klein, Daniel B. "Promise Keeping in the Great Society: A Model of Credit Information Sharing," in Daniel B. Klein, ed. *Reputation: Studies in the Voluntary Elicitation of Good Conduct*. Ann Arbor, MI: University of Michigan Press, 1997.
- Lazarony, Lucy. "Lenders Defy Credit-Reporting Crackdown, Hoarding Data that Could Save You Money," *Bankrate.com*, posted April 28, 2000 (accessed September 28, 2001).
- Mester, Loretta. "What's the Point of Credit Scoring?" Federal Reserve Bank of Philadelphia *Business Review* (September 1997), pp. 3-16.
- Mierzwinski, Edmund. Prepared Statement in *An Examination of Existing Federal Statutes Addressing Information Privacy*, Hearings before the House Subcommittee on Commerce, Trade, and Consumer Protection of the Committee on Energy and Commerce. 107<sup>th</sup> Congress, 1<sup>st</sup> Session, (April 3, 2001).
- Padilla, A. Jorge, and Marco Pagano. "Sharing Default Information as a Borrower Discipline Device," *European Economic Review*, 44, 2000, pp. 1951-80.
- Padilla, A. Jorge, and Marco Pagano. "Endogenous Communication Among Lenders and Entrepreneurial Incentives," *Review of Financial Studies*, 10,1997, pp. 205-36.
- Pagano, Marco, and Tullio Jappelli. "Information Sharing in Credit Markets," *Journal of Finance*, Vol. XLVIII (1993), pp. 1693-1718.
- The Privacy Protection Study Commission. *Personal Privacy in an Information Society*. Washington: U.S. Government Printing Office, 1977.
- Stiglitz, Joseph E., and Andrew Weiss. "Credit Rationing in Markets with Imperfect Information," *American Economic Review*, 71,1981, pp. 393-410.
- U.S. Bureau of the Census. *1997 Economic Census, Administrative and Support and Waste Management and Remediation Services*. Washington: U.S. Government Printing Office, 2001.
- U.S. Bureau of the Census. *Census of Service Industries*. Washington: U.S. Government Printing Office, various years.
- U.S. Bureau of the Census. *Current Business Reports, Service Annual Survey: 1999*. Washington: U.S. Government Printing Office, 2001.
- Vercammen, James A. "Credit Bureau Policy and Sustainable Reputation," *Economica*, 62,1995, pp. 461-78.



# Understanding the Life-Cycle of a Manufacturing Plant

BY AUBHIK KHAN

W

hat determines whether a manufacturing plant survives? Is it access to credit markets? Or does learning about plants' profitability over time determine survival?

Should government policy play a role in helping plants survive? In this article, Aubhik Khan discusses the collateral and learning views as two possible explanations for a typical plant's life-cycle. He concludes that although it remains unclear as to which explanation is the more relevant, the two views have very different implications for what government *can* do and what it *should* do.

Local news reports tend to highlight major plant closings whenever they occur. Sometimes, when the number of workers displaced is large, such events are even reported in the national news.<sup>1</sup> Such reports indicate the importance of plant openings and closings to the general public.

<sup>1</sup> In the 1980s, General Motors closed its production plant in Flint, Michigan. In a town of 150,000 people, this closing, which was even reported in the *New York Times*, resulted in the loss of 40,000 jobs and Michael Moore's 1989 documentary film, "Roger and Me."



Aubhik Khan is a senior economist in the Research Department of the Philadelphia Fed.

Actually, such events are of interest to economists also because they help economists understand changes in employment and investment.<sup>2</sup> In recent years, a large quantity of information on the behavior of U.S. manufacturing plants, or factories, has become available through the census. These data have created an opportunity for economists to improve their understanding of both the distribution of production across manufacturing plants and the evolution of individual plants over time.

<sup>2</sup> Economists refer to a place where production takes place, for example, a factory, as a plant. Firms own plants, and there exist both single- and multi-plant firms. For example, Lockheed Martin operates many plants, including several located in Fort Worth, Texas; Marietta, Georgia; and Palmdale, California. The musical instrument company Mid-East Manufacturing operates at a single location in West Melbourne, Florida. Small plants are ones with fewer than 250 employees; large plants are those with more than 250 employees.

The census data indicate that large changes in economic activity are common within plants. Moreover, as some plants are growing, others are declining, and production is reallocated from declining to growing plants. This reallocation of production requires an associated reallocation of both employment and investment. Hence, this simultaneous growth and decline of plants implies a concomitant investment in and scrapping of equipment and hiring and firing of workers. When economists first used census data to study changes in plants, they were surprised to learn how often plants that are undergoing growth and decline are not only in the same region but also in the same industry. In some cases, they are even owned by the same firm.

Census data also indicate a typical pattern to a plant's life-cycle. Most new plants are small, and they begin with relatively low levels of production. New plants also appear to be riskier. They are very volatile — swings in economic activity are large and frequent — and they tend to have unusually high failure rates. Over time, those that survive grow larger. The survivors increase both their number of employees and stocks of equipment. Survivors also become less risky, and their production exhibits less month-to-month volatility.

This article summarizes some of what we know about plants and explores two explanations of the typical plant's life-cycle: the collateral view and the learning view. The collateral view stresses the importance of a firm's access to credit markets, which is generally believed to be more constrained in

smaller, newer firms. The learning view suggests that as managers learn which plants can be run more profitably than others, this influences employment patterns across plants and may be responsible for the observed life-cycle of the typical plant.

While both of these views are able to explain the same data, they suggest very different approaches for monetary policy. If some firms have trouble obtaining loans during downturns in demand, for example, in a recession, a central bank may stimulate economic activity by cutting interest rates, thereby facilitating firms' borrowing. However, if the differences across plants are not primarily caused by differences in the collateral of the firms that operate them, then the plant-level data do not, in and of themselves, provide evidence of a channel for monetary policy to affect the economy.

## WHAT THE JOB DATA REVEAL

To discuss differences across plants and how individual plants change over time, we need to measure their output. This is difficult because of the formidable problem of finding direct measures of plant output that can be usefully compared across plants. (See *Difficulties in Measuring Output at the Plant Level*.) However, recent work at the U.S. Census Bureau offers a very comprehensive look at a large majority of U.S. manufacturing plants. The Census Bureau collects data on the number of jobs in a plant. As a plant increases in size and produces more, it will hire more workers and buy more equipment. Hence, job creation should be a good measure of a plant's output growth. Alternatively, when a plant reduces production, the number of jobs destroyed serves as a measure of its output decline.

These data on plant-level

employment reveal startling insights about the manufacturing sector. There is constant, simultaneous expansion and contraction within industries; that is, some plants are hiring workers while others are laying workers off.

The following example may help illustrate the importance of this simultaneous job creation and destruction. In 1973, net U.S. manufacturing employment growth was 5.7 percent.<sup>3</sup> Now consider two alternatives, both of which might have led to this growth in



employment. In the first case, all plants engage in job creation. As a result, the total number of jobs in the manufacturing sector rises by 5.7 percent because each plant increases its employment by this amount. In the second case, some plants engage in job creation, but others engage in job destruction. Assume that the job creation driven by plants' expanding employment is 11.8 percent while the level of job destruction at declining plants is 6.1 percent. In this instance, net employment growth — the difference between job creation and destruction — was also 5.7 percent.

<sup>3</sup> All percentages reported here are fractions of total U.S. manufacturing employment.

*Excess job reallocation* — the sum of creation plus destruction minus net employment growth — was 12.2 percent.<sup>4</sup> This is one measure of churning in the labor market — that is, the amount of job reallocation beyond that explained by job growth alone.

While the net effect on total employment is the same in either case, the first case involves far less social disruption and far less short-term unemployment than the second one. (Indeed, there is no excess job reallocation in the first case.) Nonetheless, the second case describes what actually occurred in 1973. This type of simultaneous expansion and contraction across plants and the resultant reallocation of employment often impose large adjustments on workers, local schools, and housing markets.<sup>5</sup> The greater the employment reallocation across plants, the larger the size of these effects on local communities. The data indicate substantial reallocation.

Between 1973 and 1993, the last year for which data are available, job creation averaged about 9 percent while job destruction averaged 10 percent. In their book, *Job Creation and Destruction*, Steven J. Davis, John C. Haltiwanger, and Scott Schuh show that this level of excess job reallocation is amazingly consistent across very diverse industries such as food, rubber, and electric machinery.<sup>6</sup> While there is some inter-industry variation, relatively little of the

<sup>4</sup> When net employment growth is negative, excess job reallocation is the sum of job creation and job destruction plus net employment growth.

<sup>5</sup> See Davis, Haltiwanger, and Schuh (1996), page 30, for additional discussion.

<sup>6</sup> See Table 3.1, page 39, in Davis, Haltiwanger, and Schuh.

excess job reallocation we observe can be explained by structural adjustments across industries as they respond to shifting patterns of supply and demand. In other words, job creation in plants in the rubber industry and job destruction in plants in the paper industry do not explain most of the simultaneous expansion and contraction we observe. Much of the concurrent job creation and destruction occurs within the same industry.

Simultaneous job creation and destruction occurs not only within the same industry but also within the same region. While manufacturing employment shrank most in the middle Atlantic region and grew fastest in the Mountain region over the sample period of 1972–88, all regions exhibited excess job reallocation of 12 percent or more.<sup>7</sup> Therefore, the concurrent job creation and destruction we observe cannot be explained by differences in economic growth across regions. While workers may well be moving from one region of the country to another, this movement is not driving most of the excess job reallocation. Indeed, regional differences in rates of job creation and destruction are smaller than cross-industry differences.<sup>8</sup>

Davis, Haltiwanger, and Schuh argue that most of the excess job reallocation, which averages over 15 percent of employment in a typical year, must be caused by differences between plants that are not the result of changes in the industries or regions in which they operate.<sup>9</sup> Moreover, much of the simultaneous job creation and destruc-

<sup>7</sup> See Table 3.3, page 42, in Davis, Haltiwanger, and Schuh.

<sup>8</sup> Davis, Haltiwanger, and Schuh, page 42.

<sup>9</sup> In their 1992 paper, Stephen Davis and John Haltiwanger argue that cross-industry flows explain less than 1 percent of excess job reallocation, and that cross-regional flows explain even less.

## Difficulties in Measuring Output At the Plant Level

T

o examine differences across plants or changes within a plant over time, we need to measure plants' size. One possibility is to measure the output of each plant in the economy. However, different plants produce different goods, and it is not always easy to compare them. You cannot determine if a tire factory is larger than a chemical plant by comparing the number of tires produced by the first to the drums of paint shipped from the second.

Of course, you could use the prices of tires and paint to compare the value of their different total outputs. This requires access to data on the value of sales and costs incurred by each plant. Changes in plants would then be defined to be changes in the value of their production. Unfortunately, the Longitudinal Research Datafile, which is the Census Bureau's most comprehensive data on U.S. manufacturing plants, does not contain plant-level sales data.

Plants are secretive about the prices at which they sell goods. One reason may be that often the same plant sells the same commodity at different prices; for example, a plant may offer quantity discounts to large customers. In other instances, some plants do not sell their output in a market that determines prices. Instead, they produce specialized intermediate goods for a single firm that owns both the producing and the consuming plants. As these commodities are neither bought nor sold outside the firm, it is particularly difficult to judge their price. While it is true that a firm will declare a value to its intermediate inputs, these values are unlikely to be accurate. The prices of these internal inputs are determined by many factors, including tax considerations.

The alternative that many economists have adopted is to use the rich information on employment changes in the Longitudinal Research Datafile. We define changes in plants to be changes in their employment. This would be a perfect alternative if all plants used the same type and amount of labor for each unit of output. But, of course, they do not; therefore, our approach is a compromise based on the availability of data.

tion we observe involves large changes in plant size. More than two-thirds of total creation and destruction occurred in plants that adjusted employment by more than 25 percent. *Sharp changes in employment are the rule, not the exception.*

What lies behind this simultaneous job creation and destruction? Two explanatory factors are the plant's size — that is, the number of employees — and the plant's age.<sup>10</sup> New plants tend to be small. The census data show that in the first decade of their existence, plants exhibit substantial growth. Start-ups — which account for about 7 percent of all existing plants in a typical year — are roughly one-tenth the size of the average plant in their industry. Over the next 10 years, should they survive, they reach average size. However, failure rates are much higher for

younger and smaller plants than for larger and more mature plants.

We can examine the rates of job creation, job destruction, and excess reallocation over plants of different sizes (Table 1). The table illustrates that small plants have higher rates of job creation, which explains why politicians and

<sup>10</sup> As discussed by Thomas Cooley and Vincenzo Quadrini in their forthcoming paper, both size and age are independently important, in a statistical sense, as factors when trying to explain differences in growth or failure rates for plants or firms. The 1989 paper by Timothy Dunne, Mark Robert, and Larry Samuelson finds that both size and age are independently important when examining U.S. manufacturing plant failure and growth rates. Similar evidence for U.S. manufacturing firms is presented in the 1987 papers by David Evans and Bronwyn Hall and also the 1989 paper by David Evans.

lobbyists often tout small businesses as engines of employment growth. However, the table also indicates that small plants have higher rates of job destruction. As a result, *net* employment growth — the difference between job creation and job destruction — shows no evidence that small plants grow faster than large plants. This may raise questions about policies that either directly subsidize small businesses or offer them regulatory relief in an effort to promote employment.

The most striking finding in Table 1 is that excess job reallocation — the level of job reallocation across plants above that attributable to net employment growth — falls with plant size. In other words, small plants undergo a lot more day-to-day fluctuations in employment that don't affect the total number of jobs available. Individual

small plants clearly exhibit more fluctuations in employment and, presumably, in their investment and production as well.<sup>11</sup> In this sense, they are riskier than large plants.

More evidence that small plants are riskier is apparent from the finding that jobs created in small plants are more likely to be permanently destroyed than those in large plants. Davis, Haltiwanger, and Schuh calculate that in firms with less than 250 employees, 50 percent of the jobs created in any typical year still exist two years later. For large firms — those employing more than 250 employees — 60 percent of the jobs created in a

<sup>11</sup> Unfortunately no data are available to measure directly investment and production at the plant level.

typical year survive for two or more years.<sup>12</sup>

Plants also show systematic differences due to their age (Table 2). The table shows that young and middle-aged plants have higher rates of job creation and destruction than do mature plants. As a result, they have higher rates of excess job reallocation. Thus, younger plants are more volatile, exhibiting, on average, more dramatic changes in the number of employees than mature plants. Moreover, this is not simply the result of rapid transition to a larger, more stable size. Younger plants exhibit higher rates of both job creation and job destruction. In this sense, they are riskier than mature plants.

<sup>12</sup> See Davis, Haltiwanger and Schuh, Table 4.6, page 79.

**TABLE 1**

**Average Levels of Job Creation and Destruction Across Plants of Different Sizes between 1973 and 1988**

Employees	Job Creation	Job Destruction	Net Growth	Excess Reallocation
0 – 9	18.7	23.3	-4.5	34.6
20 – 49	13.2	15.3	-2.1	23.6
50 – 99	12.2	13.5	-1.3	21.5
100 – 249	9.6	10.7	-1.1	16.1
250 – 499	7.7	8.7	-1.0	12.5
500 – 999	7.0	7.6	-0.6	10.7
1000 – 2499	6.3	7.3	-1.0	10.2
2500 – 4999	6.1	7.5	-1.3	9.7
5000 and more	5.4	5.6	-0.2	7.7

The numbers reported here are the averages over the years 1973–88. For any year, job creation for plants in a particular size class is the average number of new jobs created at each plant in the size class that created jobs as a fraction of the plant's average employment in the year and the prior year. For any year, job destruction in a particular size class is the average number of jobs destroyed at each plant in the size class that destroyed jobs as a fraction of the plant's average employment in the year and the prior year. Net growth is the difference between job creation and job destruction. For any year, excess reallocation is the sum of job creation and destruction minus the absolute value of net growth across all plants in the size class. All numbers are expressed as percentages. Since each column is an average over time and excess reallocation involves an absolute value calculation, the formula for excess job reallocation does not directly apply to the averages displayed in the other columns. From Steven J. Davis, John C. Haltiwanger, and Scott Schuh, *Job Creation and Destruction*. Cambridge, MA: MIT Press, 1996, Table 4.1, page 61. Reprinted with permission.



We have additional evidence that younger plants are inherently more risky (Table 3). The table shows the percentage of plants of each age group that do not survive to the next age group. We observe that 41 percent of plants shut down before their sixth birthday, while the probability of failure falls as a plant grows older.

In summary, plant-level data lead us to three conclusions. First, the U.S. manufacturing sector experiences a lot of excess job reallocation — far more jobs shift between plants than can be explained by the net change in employment growth. Second, smaller plants exhibit more employment volatility than larger plants. Third, younger plants exhibit more employment volatility and have higher failure rates than older plants.

We now turn to two explanations for these phenomena: the collateral view and the learning view. The collateral view emphasizes the role of a firm's size in determining its access to credit. To the extent that small firms mainly operate small plants, we can explain the observed relationship between plant size and employment volatility. The learning view explains the relationship between a plant's age and

employment volatility as the result of a gradual process of learning how a plant can be operated most efficiently.

### THE IMPORTANCE OF COLLATERAL

Anyone who has ever applied for a loan knows the value of collateral. If a lender can secure a potential loan, he is more likely to make the loan. Home-equity loans are routinely offered to borrowers who might not otherwise get a loan without offering their homes as collateral. Moreover, the more collateral a borrower has, the lower the interest rate on the loan is likely to be.

By their very nature, small firms have fewer assets. Since they don't have as much marketable property to use for collateral, they may find borrowing more difficult. This situation has several implications. First, a small firm is unable to borrow sufficiently to invest as much as it would like. Instead, it has to rely on sales to finance investment; therefore, most firm-level investment is financed through retained earnings. Over time, as small firms reinvest their profits in the enterprise, they accumulate more equity and they grow. Note that the collateral view can easily explain why new firms tend to be

small: they have to generate profits to finance investment, and this takes time. As a result, they cannot begin production at their ideal size, but instead reach it slowly over time.<sup>13</sup>

Another implication of the collateral view is that any short-term fall in sales will tend to have a much larger impact on small firms because these firms are either unable to obtain or cannot afford sufficient loans to sustain their employment levels. Workers have to be laid off, machines sold off, and operating hours shortened. So a small firm's lack of access to short-term credit means that a temporary fall in sales will lead to a disproportionate decline in its operations. Moreover, subsequent increases in sales will generate a sharp rise in employment at a small firm.

By contrast, a large firm, which is not subject to severe borrowing constraints, is able to sustain a short-term drop in demand and to continue operating most of its plants and retain its

<sup>13</sup> There are many papers that examine the role of collateral, for example, the paper by Mark Gertler and Simon Gilchrist; the paper by Ben Bernanke, Mark Gertler, and Simon Gilchrist; and the one by Thomas Cooley and Vincenzo Quadrini.

**TABLE 2**

#### Average Job Creation and Destruction Across Plants Of Different Ages between 1973 and 1988

Plant Age in Years	Job Creation	Job Destruction	Net Growth	Excess Reallocation
Young (0-1)	45.8	12.5	33.3	25.1
Middle-Aged (2-10)	12.3	13.3	-1.0	21.0
Mature (10+)	6.9	9.4	-2.5	12.4

See Table 1 for definitions of job creation, destruction, net growth, and excess reallocation. All ages are in years. From Steven J. Davis, John C. Haltiwanger, and Scott Schuh, *Job Creation and Destruction*. Cambridge, MA: MIT Press, 1996, Table 4.5 page 77. Reprinted with permission.

**TABLE 3**

#### Failure Rate by Plant Age

Plant age	1-5	6-10	11-15
Exit rate	0.41	0.35	0.30

From Timothy Dunne, Mark J. Roberts, and Larry Samuelson, "The Growth and Failure of U.S. Manufacturing Plants," *Quarterly Journal of Economics*, 104(4), 1989, pp. 671-98. Reprinted with permission.

workers through a temporary fall in demand. When demand recovers, returning to full production is a simple matter, since a large firm does not have to bear the costs of first reducing, then increasing its scale of production. Hence, the collateral view can explain the higher volatility of job creation and destruction at small firms.

## LEARNING YOUR TRUE VALUE

Another explanation for the life-cycle of a plant emphasizes differences in plants' long-run profitability. This explanation assumes that managers are able to discern long-run profitability only through experience gained by operating the plant. This long-run profitability, which determines the plant's value and its most efficient scale of operation, is difficult to discern because shocks — such as unexpected fluctuations in input prices, delays in supplier deliveries, workers quitting, unexpected changes in demand, changes in regulation, and entry of a new competitor — constantly buffet plants. All of these shocks temporarily influence profits and thus make long-run profitability harder to determine.<sup>14</sup> Over time, however, as managers gain experience with operating a plant, they can better determine long-run profitability because temporary shocks will tend to offset one another and managers will learn what to expect.

This slow process of learning can explain why younger plants are riskier. When there is little information about long-run profitability, managers are very responsive to new information. In a plant's early years, any observed change in profits is likely to have a large influence on managers' assessment of the plant's value. Their lack of experience leads them to place con-

siderable weight on each new piece of evidence. This can lead to sharp adjustments in employment as managers re-evaluate the plant's long-run profitability. However, as more and more

thus not very useful as collateral. If the borrower defaults on a loan, the lender can sell such capital only at a large discount because it is not very useful to other firms.

## Whether we consider the role of collateral or the importance of learning, we gain insights into why a plant changes over time.

evidence of the plant's profitability accumulates, the influence of additional evidence lessens. Managers will adjust employment far less in response to new information.

In addition to predicting that older plants will have less employment volatility, the learning view can also explain why older plants are larger. Over time, profitable plants are more likely to continue operating, while less profitable plants shut down. Being more productive, more profitable plants typically hire more workers, that is, they are larger according to our measure of plant size.

## EVALUATING THE COLLATERAL AND LEARNING VIEWS

**Some Difficulties with the Collateral View.** Whether we consider the role of collateral or the importance of learning, we gain insights into why a plant changes over time. We are able to explain differences across plants of different ages and sizes. However, neither explanation really addresses the question of why plants are risky or why plant employment exhibits so much variation in the first place. Both views make assumptions about the magnitudes of the shocks that hit plants, but do not explain why the shocks occur.

The collateral view assumes that large firms have more collateral, relative to their borrowing needs, than small firms. However, while large firms may possess far more physical capital than small ones, most of the equipment and structures may be specialized and

Again, the collateral view was developed to explain *firm* growth, not *plant* growth: a plant is a physical location where production occurs; a firm is a collection of property under common ownership; and a large firm may well operate multiple small plants. However, to the extent that small firms *typically* operate small plants and large firms *typically* operate large plants, this may not present a serious problem.

**Empirical Evidence.** The main difference between the collateral and learning views is their prediction about borrowing by firms. The learning view suggests that if you gave \$500 to a small firm's manager, he would be as likely to invest it elsewhere as to purchase more plant and equipment for his firm. Remember that according to this view, the small firm's manager faces no difficulty in meeting his firm's borrowing needs. Therefore, the return on investing in his own firm won't necessarily exceed the return he could expect from investing in another firm. In contrast, the collateral theory predicts that he would invest the extra funds in his own firm because, under this view, a small firm's ability to borrow is constrained.

Empirical evidence helps us to distinguish between these views. However, the evidence is controversial. If firms are competitive and don't face borrowing constraints due to inadequate collateral, the profitability of their potential investment projects is measured by the market value of the firm

<sup>14</sup> Boyan Jovanovic's article offers an excellent explanation of the learning view.

per unit of its capital stock, and that is the sole determinant of their investment spending.<sup>15</sup> As Robert Chirinko describes in his survey, there is a large literature that finds that firms' investment spending is affected by their cash flow as well as by the market valuation of their investment opportunities. Thus, if cash flow matters, this would imply that firms' borrowing is constrained by a lack of sufficient collateral, and consequently, when managers have excess cash flow, they invest it in their firms.

However, recent work by economists Andrew Abel and Janice Eberly and Russell Cooper and Joao Ejarque argues against this conclusion, suggesting instead that the results indicate greater market power on the part of firms than previously assumed. When firms have market power to set their own prices, these economists show that a firm's market value – even if we assume that the market correctly values the firm's investment prospects – is not a complete determinant of investment spending. In such cases, cash flow, given its relationship to other important determinants of investment such as profitability, will be important for explaining investment even without borrowing constraints.

In their forthcoming paper, economists Thomas Cooley and Vincenzo Quadrini argue that properly matching the data on employment changes across plants requires a model with elements of both the learning and collateral theories. While the learning view can explain how employment volatility depends on a firm's age, it

<sup>15</sup> Strictly speaking, the value of the next dollar invested in the firm determines its level of investment in competitive markets.



cannot address why employment volatility depends on a firm's size. They note that the data present evidence that both age and size are independently important in determining a plant's riskiness.

In sum, although recent research has called into question earlier empirical evidence for the collateral view, it appears the collateral view and the learning view may be complementary explanations of plant-level data.

## POLICY IMPLICATIONS OF THE TWO VIEWS

It remains unclear as to which explanation is more relevant to the actual evolution of plants. While these theories help us understand plant dynamics, they also differ in important ways with respect to their implications for government policy. They have very different implications about what government *can* do and what it *should* do. A proponent of the collateral view might argue that since government *can*

do quite a lot during recessions, it *should* help small firms by lowering the cost of borrowing.<sup>16</sup> This argument supports the collateral view's contention that when lending declines, as it does in recessions, the incidence of the reduction in credit falls disproportionately on smaller firms with less collateral. However, by reducing interest rates, the monetary authority can ease the costs of borrowing and help small firms survive.

A subscriber to the learning theory will argue that the evolution of plants is not related to financial market characteristics that make borrowing more difficult for small establishments. As such, it provides evidence of neither a role nor a channel for monetary policy to affect the economy. Given the important differences in policy implications, it will be important to develop

<sup>16</sup> Recall that financial markets discriminate against small firms. So the collateral view implies that government can help small firms by lowering the cost of financing.



more empirical evidence to better distinguish between these two theories.


## SUMMARY

Plants evolve over their lives. Typically, they start out as relatively small factories, and employment fluctuates sharply in the early years. In contrast, older plants are not only larger, they are also far less volatile.

There are two leading explanations of plant evolution. The first emphasizes the impact of the lack of collateral and, thus, the difficulties of

obtaining credit for new plants. This lack of collateral makes new plants less able to borrow, to weather a temporary decline in earnings. And this inability to withstand a temporary decline makes new plants riskier.

The second view emphasizes the importance of learning about the profitability of a plant slowly over time. Managers operate new plants with less confidence, and they are quick to make large changes in the scale of their operation. These frequent, large changes make new plants riskier.

While either the collateral or learning view may explain the observed differences between plants of different ages and sizes, the theories differ sharply in their implications for monetary policy. The collateral view provides support for the existence of a channel through which changes in interest rates could affect a small firm's ability to borrow and, therefore, its chances to survive. The learning view sees no role for monetary policy to affect smaller plants. These differences indicate the need for further empirical tests of the two views. 

## REFERENCES

Abel, Andrew, and Janice C. Eberly. "Q Theory Without Adjustment Costs and Cash Flow Effects Without Financing Constraints," unpublished research available from <http://finance.wharton.upenn.edu/~abel/>, 2001.

Ben S. Bernanke, Mark Gertler, and Simon Gilchrist. "The Financial Accelerator in a Quantitative Business Cycle Framework," in John B. Taylor and Michael Woodford (eds.): *Handbook of Macroeconomics* Volume 1c. New York: Elsevier Science, North-Holland, 1999.

Chirinko, Robert S. "Business Fixed Investment Spending: Modeling Strategies, Empirical Results, and Policy Implications," *Journal of Economic Literature*, 3, 1993, pp. 1875-1911.

Cooley, Thomas F., and Vincenzo Quadrini. "Financial Markets and Firm Dynamics," forthcoming in *American Economic Review*.

Cooper, Russell, and Joao Ejarque. "Exhuming Q: Market Power vs. Capital Market Imperfections," Boston University Working Paper, 1999.

Davis, Steven J., and John C. Haltiwanger. "Gross Job Creation, Gross Job Destruction, and Employment Reallocation," *Quarterly Journal of Economics*, 107(5), 1989, pp. 819-63.

Davis, Steven J., John C. Haltiwanger, and Scott Schuh. *Job Creation and Destruction*. Cambridge, MA: The MIT Press, 1996.

Dunne, Timothy, Mark J. Roberts, and Larry Samuelson. "The Growth and Failure of U.S. Manufacturing Plants," *Quarterly Journal of Economics*, 104(4), 1989, pp. 671-98.

Evans, David S. "Tests of Alternative Theories of Firm Growth," *Journal of Political Economy*, 95(4), 1989, pp. 657-74.

Evans, David S. "The Relation Between Firm Growth, Size, and Age: Estimates for 100 Manufacturing Industries," *Journal of Industrial Economics*, 35(4), pp. 567-81.

Gertler, Mark, and Simon Gilchrist. "The Role of Credit Market Imperfections in the Monetary Transmission Mechanism: Arguments and Evidence," *Scandinavian Journal of Economics*, 95(1), 1993, pp. 43-64.

Hall, Bronwyn. "The Relation Between Firm Size and Firm Growth in the U.S. Manufacturing Sector," *Journal of Industrial Economics*, 35(4), 1989, pp. 583-606.

Jovanovic, Boyan. "Selection and the Evolution of Industry," *Econometrica*, 50(3), pp. 649-70.