

Why Don't Banks Take Stock?

Mitchell Berlin*

Banks in the U.S. are forbidden to hold stock in nonfinancial firms under most circumstances. This restriction contrasts with more liberal banking regulations in other countries and also with the prescriptions of traditional financial theory, which says that a firm's lender would make better decisions if it also held some equity in borrowing firms.¹ According to this theory a bank that holds an equity share in firms to which it lends would strike a more sensible balance be-

tween caution and risk-taking and would also be more concerned about its borrower's long-term financial health. The Gramm-Leach-Bliley Act of 1999 modestly expands bank powers to hold equity in nonfinancial firms, but it stops well short of permitting banks to hold mixed debt-

¹See the article by James Barth, Daniel Nolle, and Tara Rice for a comparison of international restrictions on bank equity holdings and Christopher James's 1995 article for a discussion of U.S. laws governing bank equity holdings in distressed firms. Loretta Mester's article provides a general overview of the issues involved in the separation of banking and commerce.

*Mitchell Berlin is an economic advisor in the Research Department of the Philadelphia Fed.

equity claims as a normal lending practice, as would be permitted, for example, in Great Britain or Germany.

Are banks in the United States really shackled compared to those in other nations? Do restrictions against U.S. banks holding equity make a difference for banks' behavior? Are U.S. banks' borrowers at a disadvantage because their lenders are too cautious when evaluating project risks and too harsh when a borrower experiences financial difficulties? And if U.S. regulations were relaxed, would we see a stampede by banks to take ownership stakes in their borrowers?

Evidence from around the world suggests that the answer to all these questions is no. Even in those nations where banks are free to take equity stakes, they mostly specialize in making loans and hold only small equity stakes in borrowing firms — when they hold any equity at all. And in countries where banks do hold equity, the evidence says that it usually has little to do with the prescriptions of traditional theory. Nonetheless, recent work by financial economists helps explain why a bank that only makes loans may be more effective than one that holds both debt and equity in the same firm. Banks play a special role in disciplining firms and in facilitating coordination among financially troubled firms' various claimants. The types of financial claims that banks hold are well designed to enable the bank to perform these functions.

BANKS DON'T HOLD MUCH EQUITY, EVEN WHEN THE LAWS PERMIT

Traditional Finance Theory Holds That Banks Should Hold Mixed Claims...The conflict between stockholders and debtholders is one of the key ideas in modern finance. The underlying conflict can be stated simply: Stockholders prefer excessively risky investments, and debtholders are excessively cautious. These preferences flow from differences in how the holders of each type of security are paid. Stockholders own the firm's profits when it does well, but they receive nothing when the firm goes bank-

rupt. Debtholders own the firm's assets when it goes bankrupt, but they receive a fixed payment (principal plus interest) when the firm does well. The conflict is most severe when a firm is near bankruptcy. Stockholders would prefer that the firm roll the dice (because they have little to lose), and debtholders would prefer that the firm's assets be conserved at all costs (because they have everything to lose).

One potential solution to these conflicts is to give final control over a firm's investment decisions to an investor that holds debt and stock in the same proportions as the firm's debt-equity ratio. This investor's decisions would then represent the interests of all investors in the firm, because any policy that increases the value of this investor's claim — which mirrors the financial claims on the firm as a whole — also increases the value of the firm as a whole. A large institutional investor, such as the firm's bank, is a natural candidate to monitor the firm's investment decisions, since the bank is also likely to be well informed about the firm's affairs.

...But Banks Mostly Specialize in Lending. A look at the financial claims held by banks throughout the world shows that banks' equity positions are very small compared to their loans (see Table). Bank portfolios don't look much like the holdings of an investor with a blended claim intended to mirror the financial structure of borrowing firms. In part, bank portfolios reflect regulatory restrictions on bank ownership positions, but in many countries, banks hold less equity than can be explained by regulatory restrictions. For example, banks in Great Britain, Luxembourg, and the Netherlands hold virtually no equity in borrowing firms, although they are permitted to do so by the European Community's Second Banking Directive.²

²The European Community's Second Banking Directive imposes no direct restrictions on a bank's share of a firm's equity, but it limits a bank's qualifying investments in any one firm to 15 percent of the bank's own funds and also limits total qualifying investments across all firms

TABLE
Bank Stockholdings in the
EU and G-10 Countries, 1996

Country	Number of Commercial Banks	Loans/ Assets (percent)	Shares/ Assets (percent)
Austria	1019	51	4
Belgium	100	35	2
Canada	11	67	0
Denmark	117	42	4
Finland	8	49	6
France	400	32	3
Germany	258	56	5
Greece	20	31	5
Italy	264	40	2
Japan	136	66	5
Luxembourg	221	19	0
Netherlands	172	64	1
Portugal	39	33	0
Spain	165	42	4
Sweden	15	38	3
Switzerland	85	45	5
United Kingdom	44	55	0
United States	9575	64	0

Sources: Bank Profitability: Financial Statements of Banks 1998, OECD, and the article by Barth, Nolle, and Rice.

The United States stands alone in generally prohibiting stockholding by banks, but even U.S. banking law gives banks some leeway to take equity positions.³ However, specialization in

to 60 percent of the bank's own funds. (A qualifying investment is an equity stake in excess of 10 percent of a firm's stock, and a bank's own funds roughly approximates regulatory capital.) However, formal regulations may not fully capture the constraints on banks' behavior in Great Britain and elsewhere. For example, according to Herwig Langohr and Anthony Santomero, banks in Great Britain may be subject to implicit restrictions by the Bank of England.

lending dominates the international banking picture, whatever regulatory restrictions apply. We should be careful in drawing too many conclusions from the aggregate numbers. The figures hide a lot of variation in equity holdings by individual banks, and even for any particular bank, the composition of its holdings in individual firms will vary. One possibility is that banks concentrate their equity holdings in those firms that offer the greatest benefits. Since most countries place some restrictions on banks' equity stakes in firms, banks may decide to hold no stock in those firms in which stockholder-debtholder conflicts are small and hold significant equity shares in those firms in which such conflicts are most severe and the bank can do the most good. For example, a bank might hold little or no stock in a firm under routine financial conditions and substantially increase its equity stake should the firm enter troubled financial waters.

However, more detailed research about banks' behavior in individual countries doesn't provide much support for the view that banks do attempt to hold a mixed financial claim to reduce stockholder-debtholder conflicts, even selectively. For example, the typical German firm's capital struc-

³The main exceptions to the general prohibition are that (i) banks may take substantial equity positions in borrowers that are financially distressed; (ii) bank holding companies (BHCs) may take noncontrolling positions in startups through small business investment corporations; and (iii) BHCs may engage in "merchant banking" through investment banking subsidiaries of the holding company. Thus, Citibank (the bank) can't engage in merchant banking, but Citigroup (the BHC) can provide this service through its investment banking subsidiary, Salomon Smith Barney. Merchant banking generally refers to taking temporary, noncontrolling ownership positions in nonfinancial firms. Under the terms of the Gramm-Leach-Bliley Act of 1999, which first permitted merchant banking for BHCs, bank regulators may revisit the restrictions on merchant banking activities after five years. Specifically, regulators may decide that a bank could offer merchant banking services through a subsidiary of its own.

ture includes a concentrated equity stake (or block), more often owned by a single family or nonfinancial firm than by a bank.⁴ Harald Roggenbuck's study of bank equity stakes found that only a small number of cases involved banks' taking equity in financially troubled firms. In his sample, the main reason a bank took an equity position was that the firm's owners (or their heirs) wanted to sell shares to diversify their own portfolios without breaking up the block. This evidence is buttressed by Jeremy Edwards and Klaus Fischer's survey of German bankers, who expressed extreme reluctance to take equity stakes in distressed firms.

The evidence for Germany is echoed in Christopher James's studies of the behavior of banks in the United States when borrowers enter financial distress. Even though U.S. banks have substantial legal rights to take equity positions in distressed firms for long periods, banks appear very reluctant to take equity stakes. Banks are especially reluctant when their loan is collateralized — that is, when the bank can seize particular assets of the firm should the firm default — or when the firm has nonbank bondholders.

In Japan, a financially troubled firm's main bank has often taken a claim subordinated to the claims of the firm's other creditors, apparently as part of an unwritten agreement that the firm's main bank should bear the costs of its own mistakes.⁵ In other words, the other creditors would be repaid before the main bank.⁶ But the historical record of banks' accumulation of eq-

uity positions is actually equivocal. Paul Sheard's study shows that Japanese banks significantly increased their stockholdings in firms in the early 1960s and again in the 1970s, in large part to guard against takeovers of affiliated firms. But bank stockholdings to prevent takeovers have nothing to do with mitigating stockholder-debtholder conflicts.

In light of the theoretical case for the benefits of having an informed investor holding both debt and equity, especially when stockholder-debtholder conflicts are magnified by financial distress, the weight of the empirical evidence raises two related questions: Why do we see banks specializing so much in loans, even when regulatory constraints are not binding? What are the barriers to banks' willingness to exchange debt for equity in distressed firms? Remember that a distressed firm need not be a poor investment. Even firms with attractive long-term prospects may suffer financial difficulties. In this situation, an informed creditor willing to take equity in exchange for debt can demand very favorable terms for the exchange.

HARD BUDGET CONSTRAINTS MAKE BETTER BORROWERS

When a Bank Has Priority Debt, Why Take Equity? James's evidence seems to offer a straightforward answer to at least the second question. One of his findings is that a bank with collateralized loans is much less likely to accept an equity stake when its borrower enters financial distress. This makes sense. Why would a collateralized lender give up its contractual right

⁴In a study of large German firms with a majority shareholder, B. Ibrer found that in 1983 families owned 22.6 percent of the firms and nonfinancial enterprises owned 11.3 percent of the firms, while banks owned only 8.0 percent of the firms. In earlier years, families' share was larger and banks' share was smaller.

⁵W. Carl Kester's article provides an interesting account of the web of implicit agreements that have traditionally bound Japanese banks and their borrowers.

⁶The subordination of the main bank's claim hasn't typically taken the form of an exchange of debt for equity, which is the most subordinate claim, in that all creditors must be repaid before stockholders receive any payments. More typically, the firm's main bank and other large lenders have purchased the debt claims of smaller lenders. This type of behavior may not survive the current liberalization and restructuring of the Japanese financial system.

to seize a defaulting firm's inventories, or perhaps the deed to its borrower's office building, in exchange for shares of potentially worthless stock? Collateral usually gives the bank priority over the firm's other creditors, which means that it is the first in line to receive payments should the borrower go bankrupt. In bankruptcy, lenders with uncollateralized loans share only the value of those assets that have not already been pledged to lenders with collateralized loans. And the holder of an equity claim has the lowest priority and receives payments only after all creditors have already been paid in full.⁷

And most bank loans are collateralized. According to the Survey of Terms of Bank Lending, which, since 1977, has tracked the details of loans made by an evolving sample of U.S. banks, approximately 75 percent of all loans (by value) made each quarter are collateralized. For Germany, Edwards and Fischer summarize survey evidence from a number of studies that show that nearly 100 percent of long-term loans and 70 percent of short- and medium-term loans (by value) are collateralized.⁸

Actually, collateral isn't the only feature of bank loans that gives the bank effective priority over other creditors. Banks usually make short-

term loans; thus, a bank that is well informed about the borrowing firm's financial health can reduce its exposure to a troubled firm before the firm's other creditors — who may be ignorant of the firm's problems or may be stuck with longer term securities — can adjust their holdings. Bank loan covenants — contractual provisions that restrict the actions that the borrower may take — have much the same effect. For example, a covenant requiring a firm to keep its net worth above some minimum level acts as a tripwire, giving the bank a chance to improve its position at other creditors' expense, perhaps by reducing its exposure or by taking collateral.

Case Closed! Or Maybe Not...While the priority of bank claims certainly helps explain banks' reluctance to take equity in distressed firms, this answer isn't completely satisfactory because it immediately poses another puzzle. If the bank's unwillingness to work flexibly with a distressed firm is a predictable consequence of having a collateralized loan, why does the firm accept this type of financing? In a competitive financial market, as in the United States, it seems sensible that a firm should be able to find bank lenders willing to offer an unsecured loan. Why don't they?

One possibility is that a secured bank feels better protected if the firm defaults; thus, the bank will offer the firm a lower loan rate than would an unsecured lender. But this can't be the whole answer. Giving the bank a priority claim may lower the rate the firm pays for bank credit. However, the firm's other creditors — suppliers that provide trade credit or bondholders — lose in bankruptcy what the bank gains, so bondholders with lower priority will demand a higher interest rate, and suppliers will provide less generous financing terms. In theory, the higher borrowing costs for nonbank financing should directly offset any savings from the lower rate on a bank loan. If giving one creditor priority over another is meant to reduce total borrowing costs, someone's behavior must be affected in a way that makes the firm a better credit risk.

⁷This order of priority — known as the absolute priority rule — is not always strictly observed in practice, especially under U.S. bankruptcy law, which gives a bankrupt firm's top management significant power to influence the terms of the settlement. A firm's stockholders often leave bankruptcy proceedings with a positive equity stake even though noncollateralized creditors have not received their full contractual payments.

⁸Of course, the contractual right to seize collateral is not worth much if legal protections for collateralized lenders are weak. In the United States and Germany, the empirical evidence says that collateralized claims are well protected. For example, Lawrence Weiss found that in a sample of Chapter 11 reorganizations, secured creditors received 100 percent of the face value of their claim in 33 out of 37 cases. Edwards and Fischer survey the evidence for Germany.

Priority and the Economics of Hostages.⁹ A useful way to analyze priority is to think about the economics of hostages. In the Persian empire, conquered kings would send their sons or daughters as hostages to the Persian court to assure the emperor that the conquered kingdoms were not plotting against the empire. Implicit in this arrangement was the threat that the hostage would be killed if his or her father didn't pay tribute or if word arrived from an outlying province that a revolt was brewing.

Similarly, under a debt contract, the borrower has posted his or her assets as a hostage. A firm's creditors have the legal right to take ownership of the firm's assets if the borrower defaults. In principle, at least, posting the firm's assets puts pressure on the borrower to hold down costs, to avoid excessively risky investments, and to make sure that loan payments are made on time.

One difficulty with the hostage arrangement is that the prince's father had to believe the emperor's threat to kill his son or else the subject king's behavior couldn't be controlled. In other words, the Persian ruler's threat had to be credible. Indeed, Persian rulers had little difficulty maintaining credibility: What was the life of a foreign prince worth to the Persian emperor? But in the case of a loan contract, a borrower may have good reason to question the credibility of a creditor's threat to impose default and to take ownership of the firm's assets, especially since the assets are often worth less if they are seized and resold than if the borrower stays in operation. For example, the borrower's main asset may be inventories of unsold goods. With an established network of retailers, even a firm experiencing financial problems can reasonably expect to sell its goods more efficiently and get a

higher price than its creditors could.

The firm's owner understands this and may choose to take large risks using the following reasoning: "If things turn out badly and I can't make my loan payments on time, my creditors would be irrational to actually push me into bankruptcy. All I need to do is explain that we'll all be better off if I retain the inventories, and they will renegotiate and accept lower loan payments." If the firm's owner reasons this way, the threat to seize assets in default is not credible, and it won't impose much discipline. Economists would say that the firm faces a soft budget constraint.

But if one of the creditors, the firm's bank, has priority, its share of the firm's assets when the firm is in default is larger than its share of all the funds initially loaned to the firm. Thus, even if creditors with only proportional claims on the defaulting firm's assets would rationally back away from pushing the firm into bankruptcy, the bank — with a disproportionately large share of the value of the defaulting firm's assets — is more likely to take a hard line in the face of the borrower's entreaties to renegotiate the contract. The bank has a credible threat to seize and liquidate the firm's assets — that is, to kill the hostage — should the firm breach the terms of the debt contract. Recognizing this, the firm will take greater precautions to avoid default.

The bank's priority over the firm's other creditors is not just a transfer between claimants; it changes both the creditors' and firm's behavior in a fundamental way. In particular, priority makes the bank a very hard bargainer and the enforcer of a hard budget constraint. In turn, this imposes more discipline on the firm, but the firm readily accepts the discipline because total borrowing costs are lower when creditors know their investment is safer. Ironically, by pressing its own interests at the expense of other claimants', a bank with a priority claim increases everyone's returns.

How would a mixed debt-equity claim affect the bank's behavior? Equity contracts have the

⁹The material in this section synthesizes some of the insights in articles by Eric Berglöf and Ludwig von Thadden and by Mathias Dewatripoint and Jean Tirole. See Stanley Longhofer and João Santos's article for a good survey of theories explaining the priority of bank loans.

lowest priority among all claims. So, any stock held by the bank would reduce the bank's share of the firm's assets in bankruptcy, thus reducing its willingness to press the firm to liquidate. A bank holding equity in the firm would be less effective as a tough enforcer of a hard budget constraint.

Hard Budget Constraints Don't Rule Out Renegotiation. One criticism of this argument for specialization by banks is that it is one-sided. Most important, it seems to ignore the potential benefits to the firm of having an informed lender willing to renegotiate the firm's contracts to avoid liquidating the firm when it would be more valuable as an ongoing business. And there is substantial empirical evidence that the renegotiability of bank debt is of significant benefit to firms.¹⁰

Actually, there is no contradiction between banks enforcing hard budget constraints and also facilitating renegotiation. Having a bias toward liquidation, rather than renegotiation, doesn't mean that banks and their borrowers would never renegotiate. When renegotiation occurs, however, a bank with priority will take a hard bargaining stance, and a significant share of any expected future profits will end up in the bank's hands as part of the deal. This is borne out by another of James's findings: in renegotiations with distressed firms, other creditors, such as the firm's bondholders, must make the lion's share of concessions before a bank is willing to exchange its priority debt claim for equity.

SPECIALIZED LENDERS ARE MORE CREDIBLE

Banks play a special role in producing and communicating information about the firms to which they lend. The type of financial claim held

by a bank can affect its ability to communicate information to others, especially when a borrower experiences financial troubles. In particular, a bank with a significant equity stake in a borrowing firm will not be viewed as a credible source of information about the borrower's creditworthiness by the firm's other creditors and suppliers.¹¹

Banks Are an Important Source of Information to Other Claimants...A firm's fixed claimants rely on many sources of information when they enter into a business relationship.¹² Sources include published information, such as Dun and Bradstreet, but also more informal ones, such as lawyers or accountants, as well as the firm's other suppliers and customers. Traditionally, banks have been a key source of reliable information about borrowers because it is a bank's job to be well informed about borrowers' financial affairs.

Consider Bend EZ Inc., a supplier of prosthetic joints that has maintained a profitable business relationship with New Parts Medical Supplies for nearly 10 years. Before signing the first long-term supply contract, however, the owner of Bend EZ contacted the New Parts' relationship manager at One-Stop Shop N' Bank, now a diversified financial supermarket (but, originally, a bank). By calling the bank, Bend EZ's owner saved his firm the time and trouble of collecting information about a new customer. Providing information to Bend EZ wasn't par-

¹¹The next two sections are drawn from my article with Kose John and Anthony Saunders.

¹²The term fixed claimant includes both real claimants, such as a supplier of copper pipes, and financial claimants, such as bondholders. Fixed claimants, both real and financial, have debt-like claims. The producer of copper pipes with a five-year supply contract shares many similarities with a bondholder: both get specified payments as long as the firm keeps operating, but neither gets a share of the firm's profits. In contrast, the financial claim of the firm's stockholders rises or falls in value with the firm's profits.

¹⁰James's 1996 article provides evidence that banks facilitate debt restructurings for distressed firms. See my Business Review article for an introduction to the evidence that an important feature of bank debt is that it is renegotiable.

ticularly costly for the bank, since Shop N'Bank was already collecting information about its borrower's creditworthiness as part of its lending relationship with New Parts. And New Parts was happy to have Shop N'Bank provide information to Bend EZ, because the bank could communicate New Parts' creditworthiness to a potential supplier. Indeed, this is one of the services that the firm pays the bank to perform as part of the lending relationship. So all parties benefit from the bank's role in disseminating information.

While the bank's informational role may be important under routine conditions, it is even more important when its borrower is in trouble. New Parts' army of sales representatives has now become a costly luxury in a web-based marketing environment, but the firm has adapted too slowly and has been losing money for nearly two years. The first order of business for a firm in financial distress is usually to cut costs. While reusing paper clips or having executives fly coach may be a start, financial troubles inevitably trigger a round of negotiations with the firm's usual suppliers and customers. These negotiations may also extend to the firm's financial claimants — its lenders and bondholders.

If the firm wants to reduce costs, it must convince many of its claimants to accept lower payments, so some of the firm's financial difficulties are shared with its network of suppliers and lenders. However, negotiations over how to share the pain can be complicated, since most of the firm's claimants don't have first-hand knowledge of the firm's true cost structure. Claimants will be suspicious that the firm is looking to shift its losses onto input suppliers and customers. Bend EZ may well believe that no concessions would be needed if New Parts' managers would just fly coach, use fewer paper clips, and fire some sales reps.

Even without a phone call from a supplier to the borrower's loan officer, Shop N'Bank's willingness to continue lending to New Parts conveys information about the firm's continuing

creditworthiness. Actually, the bank's willingness to continue to provide funds is more eloquent about the firm's prospects than a bill of good health from its loan officer, since actions speak louder than words.¹³ Similarly, Shop N'Bank's willingness to grant concessions also conveys to Bend EZ that concessions really are necessary for New Parts to stay in business. When Bend EZ learns that the bank has renegotiated its loan, the supplier can feel more confident that New Parts and its banker are not just seeking to shift losses onto its suppliers.

...But a Bank with an Equity Stake May Be Less Credible. Consider Bend EZ's owner's thinking when New Parts proposes substantial price reductions after Shop N'Bank has exchanged its loan for a significant equity stake in New Parts. On the one hand, the debt-for-equity exchange contains some good news. Since the bank has not pushed its borrower into bankruptcy, Bend EZ may reasonably infer that the bank expects the firm to survive.

However, as a fixed claimant, Bend EZ also has reason to be suspicious. Now that Shop N'Bank has become a stockholder in New Parts, it profits directly from any concessions made by Bend EZ or by the firm's other fixed claimants. The supplier might reasonably imagine that Shop N'Bank and New Parts have made a back room deal to expropriate the firm's fixed claimants by insisting on excessive concessions and splitting the gains.

If the firm's uninformed claimants look to the outcome of negotiations between a well-informed bank and the firm before deciding whether to make concessions, the bank's financial claim on the distressed firm must take account of claimants' suspicions that the bank and firm have (implicitly or explicitly) colluded to expropriate

¹³Multiple studies have documented a positive effect on a firm's stock price when its bank announces a new loan or loan commitment. The article by Matthew Billett, Jon Garfinkel, and Mark Flannery provides an excellent review of this literature.

them. The bank's renegotiated claim should be designed to create conflicts of interest between the bank and the firm's owners; otherwise, the bank can't serve as an honest broker to facilitate the renegotiation of the firm's fixed claims. The most straightforward way to do this is for the bank to reduce the face value of its loan without taking any equity at all; that is, the bank exchanges one pure loan contract for another pure loan contract with lower payments.

LENDER LIABILITY PROMOTES SPECIALIZATION¹⁴

Lenders in Control May Face Liability. In many countries, under many different types of legal systems, powerful and well-informed investors, including large lenders, often have special legal responsibilities toward the borrower's other claimants. For example, in the United States, an investor with a controlling share of a firm's stock has a fiduciary responsibility to the firm's smaller stockholders, bondholders, and customers.¹⁵ Although the legal definition of a fiduciary responsibility is very elastic — and investors' actual responsibilities can differ quite widely across countries — in the United States an investor with a fiduciary responsibility must make prudent decisions (as might be judged by a hypothetical knowledgeable investor in similar circumstances).

The laws governing an influential lender's responsibilities to other claimants of the firm fall under the general heading of lender liability. U.S. bankruptcy law includes a particular variant of lender liability called equitable subordination, a doctrine that permits a bankruptcy court to subordinate the claim of a lender to that of other claimants if the lender's behavior was inequi-

table. This means that the lender was responsible for improper business decisions that improved its own position at the expense of other claimants'.

For example, Shop N' Bank may continue to extend credit to New Parts merely to postpone an inevitable liquidation. All the while, the bank may be telling Bend EZ that the firm is financially healthy while the bank takes more collateral. Or the bank may insist that New Parts liquidate receivables to pay down as large a share of its bank loan as possible while stringing out payments to Bend EZ. Any of these behaviors may be deemed inequitable in the eyes of the court, but first the court must determine that the lender's behavior constituted control of the firm. (See The Legal Definition of Control.)

The Threat of Subordination Encourages Specialization. Any lender with a priority claim — for example, a collateralized lender — will be wary of taking an open-ended management role in its borrowing firm. In general, a lender that becomes too closely involved in the management of the firm risks having a court view it as a controlling investor, which can undermine its priority should things turn out badly and the firm go bankrupt.¹⁶ In fact, the banking law literature is chock full of cautionary tales about crossing the line into direct management of the borrower's affairs and lists of dos and don'ts for the banker with a borrower in financial distress. And although an equity stake doesn't necessarily give the bank more influence over the firm, the courts have viewed an equity position as evidence that the bank is a controlling investor.

The law draws a distinction between open-ended control and normal creditor remedies; actions that flow from rights granted by the loan

¹⁴This section draws heavily on my working paper with Loretta Mester.

¹⁵The idea of a fiduciary responsibility originates in Roman law and concerns a trustee's responsibility to act in the interests of the beneficiary of an estate.

¹⁶Similar lender liability doctrines appear in other legal systems. The German bankers interviewed by Edwards and Fischer said that the main reason for their reluctance to exchange debt for equity is that their entire claim, including debt claims, could be subordinated in the event the borrowing firm ultimately fails.

The Legal Definition Of Control

In the United States, an influential creditor's potential liability depends on whether the courts view the investor as in control, a term that is hard to define with any precision either in economic or legal terms. Even a very powerful lender may not be in control in the eyes of the court. In general, influence exercised according to the terms of an arm's length agreement won't be viewed as control. An arm's length agreement is one freely entered into by a borrower capable of representing its own interests; thus, an agreement between a healthy borrower and the bank would typically be viewed as an arm's length agreement.

For example, a fairly common loan covenant allows the bank to demand immediate repayment if certain trusted top managers are replaced. This covenant is very intrusive by anyone's standards. But if the contract was agreed upon at arm's length, other creditors can't successfully sue for equitable subordination if the firm is forced into bankruptcy by a bank's exercising its contractual right to withdraw funds. Since control is a prerequisite for liability, other claimants have no grounds to challenge the bank's priority, even if the firm's assets are less valuable than the value of the firm had it continued production.

However, the stringent legal standard for viewing influence as control doesn't offer the bank blanket immunity. For example, consider a distressed firm that has missed multiple loan payments (evidence that the firm has negative net worth). If the bank insists on the right of approval over future managers as a precondition for further funding, the courts may well view the bank as a controlling investor. Unlike in the previous example, the bank's influence over management didn't clearly arise as part of an arm's length agreement. In this case, the courts may look more carefully at the details of the bank's behavior if the firm fails and other creditors are harmed. Much of the case law involving equitable subordination and legal liability has been a search for rules and principles amid the details of cases like these.

contract are not viewed as control in the eyes of the law. But since contracts can't possibly describe precisely how the lender should act in all details, the courts have interpreted normal creditor remedies more broadly and asked whether a creditor's interventions have followed standard industry practice in similar circumstances. One way to think of this is that the courts have a type of boilerplate, or standardized loan contract, in mind. If a lender goes beyond its explicit contract with the borrower and if it also deviates from the court's boilerplate contract, its responsibilities to other claimants increase.¹⁷

The threat of liability not only prevents open-ended interventions by lenders but also promotes coordination among claimants. The firm's claimants can use the court's boilerplate contract as a type of model that delimits a powerful creditor's behavior, even if the actual loan contract between the bank and the firm isn't directly observable. This permits all claimants to form a clearer picture of how the bank will act when firms enter difficult times. And through court decisions, both banks and other claimants learn about the terms of the boilerplate contract as courts encounter novel situations.

Equitable Subordination Allows Claimants to Make Commitments. While the doctrine of equitable subordination may seem to be nothing but a restriction on lenders' opportunities to contract freely, it also allows all claimants to make commitments they otherwise couldn't make. As long as a lender restricts its influence to rights granted under its loan contract and to standard creditor remedies, other claimants can't effectively challenge the priority of the bank's claim. So, if a bank presses its own interests at the expense of other creditors — for example, if a bank

¹⁷Of course, there are multiple legal jurisdictions and no two business transactions are truly identical, so the idea of a single boilerplate contract that lenders and claimants can consult underplays the uncertainty they face in the real world.

with a secured loan exercises its contractual right to push a firm into default — the bank has protection against future challenges by the firm's stockholders, its nonbank creditors, and its customers, all of whom may have been harmed by the default.

But is this a good thing? And why view this as an increase in other claimants' ability to make commitments, rather than just as a restriction on their rights? Recall the main argument for giving the bank priority in the first place: A priority claim ensures that the bank benefits disproportionately when the firm defaults. Thus, nearly every default would be grounds for a legal challenge if imposing harm on other claimants were sufficient grounds for challenging the bank's priority. This situation would be good for the lawyers, accountants, and economists paid to advise the bankruptcy court, but it would use up lots of time and money. Also, the right to challenge and reopen contracts may lead claimants to neglect simple, cost-effective precautions to reduce the risks of a borrower's or customer's default. For example, a bondholder can diversify his or her portfolio and a supplier can avoid excessive dependence on a single customer.

In fact, all claimants may benefit if they can make a prior commitment not to seek to undo existing contracts in court, but writing lots of bilateral contracts to enforce this promise may be impossibly costly. The protections granted a bank by the doctrine of equitable subordination severely limit claimants' ability to undo existing contracts; thus, the legal doctrine serves as a substitute for such contracts. In effect, the law acts as a coordinating device that facilitates the making of commitments by a firm's many claimants.

CONCLUSION

Even though elementary financial theory suggests there may be gains from permitting banks and other institutional investors to hold mixtures of debt and equity, banks in the United States and other countries don't seem to hold as much equity as regulations permit. Instead,

banks typically make loans, which are pure debt claims. And in those cases where banks do take equity positions, the weight of the empirical evidence offers little support that banks are seeking to achieve the blended financial claim predicted by theory.

Recent work in financial economics provides some insights into the reasons banks may prefer to specialize in lending rather than holding mixed claims. All investors may benefit when the bank acts as a tough bargainer should the firm experience financial problems, and tough bargaining may require a priority debt claim. Also, banks may avoid taking equity stakes in distressed firms to reassure other claimants who watch the bank's negotiations with the firm before deciding whether they should make concessions. A significant equity stake in the distressed firm may make other claimants suspicious that the bank and the firm's managers are colluding to seek unnecessary concessions. Finally, lender liability tends to promote specialization by lenders, because blended financial claims and open-ended interventions by lenders may trigger liability and threaten the priority of their debt claims.

These findings put traditional arguments about the potential benefits and costs of mixing banking and commerce in some perspective. A central argument of those who oppose relaxing the walls separating banking and commerce is the concern that banks with equity stakes in nonfinancial firms will feel compelled to bail out such firms when they encounter financial troubles. If so, the safety net would extend to the nonfinancial sector, and taxpayers would be the losers.¹⁸

¹⁸The safety net includes access to deposit insurance and to the discount window. More broadly, banking regulators stand ready to intervene if they determine that problems at a financial institution threaten the stability of the financial system. See Loretta Mester's article for a full account of arguments that mixing banking and commerce might inappropriately extend the safety net.

While the available evidence doesn't strictly allay these concerns, there do appear to be some powerful market-driven forces — strengthened by lender liability laws — that limit banks' desire to take large ownership positions in borrowing firms. And these forces operate quite strongly when borrowers are distressed, just when opponents of mixing banking and commerce would be most concerned. That said, the

evidence doesn't provide strong support for proponents of expanding banks' powers to take equity stakes in firms, either. The evidence does not say that most banks are straining against regulatory barriers to hold the stock of nonfinancial firms. To the contrary, banks and their borrowers often seem to enforce a separation of banking and commerce voluntarily, in the normal course of making contractual agreements.

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Has Suburbanization Diminished the Importance of Access to Center City?

Richard Voith*

In a Business Review article nine years ago, we examined the role that access to Center City Philadelphia (Philadelphia's central business district, or CBD) played in people's choices about where to live and how to commute.¹ That analysis, which was based on 1980 census data, con-

cluded that access to Center City both by car and by public transportation helped shape people's choices in three important ways. First, households with people working in Center City tended to choose residential communities with good public transportation or highway access to Center City.² Second, houses in communities with

*Dick Voith is an economic advisor in the Research Department of the Philadelphia Fed.

¹"Is Accessibility to Center City Still Valuable?" Federal Reserve Bank of Philadelphia, Business Review, July/August 1991.

²We refer to the process of people choosing residential communities based on accessibility to their workplace as "sorting." Sorting results in people with the same work destination concentrating in communities with easy access to that destination.

commuter rail service to Center City tended to command a premium in the real estate market, although similar premiums were not evident in communities with good highway access to the city. Third, households of similar incomes and family size living in communities with good commuter rail service to Center City tended to own fewer cars, on average, than those living in communities without commuter rail service.

Since 1980, the Philadelphia metropolitan area has undergone a great deal of change. As has been the case in many U.S. metropolitan areas, both population and employment have greatly decentralized in Philadelphia. In light of the dramatic changes in the geographic distribution of people and jobs, we will reevaluate whether access to Center City still has a significant impact on residential location and car ownership in Greater Philadelphia or whether decentralization and the formation of new suburban edge cities have diminished or even eliminated this impact. Reexamination of these relationships reveals that access to Center City continues to play an important role in the housing and transportation choices of many Philadelphia-area residents. While decentralization has not significantly diminished the impact of access to Center City, access to maturing suburban centers such as King of Prussia is affecting suburban residential land values independently of access to Center City.

SUBURBANIZATION, EDGE CITIES, AND CENTER CITY

In the past 20 years, there have been dramatic changes in the Philadelphia metropolitan area. From 1980 through 1999, the region has seen continued, rapid suburbanization, with its attendant low-density development on the urban fringe; the maturation of suburban employment and retail centers into edge cities such as King of Prussia; and a continuing decline in population and employment in the city of Philadelphia. Throughout this period of rapid suburban growth and city decline, however, employment

and population levels in Center City have remained relatively stable.

Suburbanization. Suburban Philadelphia has gained population and jobs over the past 20 years while the city of Philadelphia has experienced significant declines in both population and employment. Suburban population increased most rapidly in the least dense communities. Population in the counties with the lowest density in 1980 — Chester and Bucks in Pennsylvania and Burlington and Gloucester in New Jersey — grew an average of 23.9 percent from 1980 to 1998, reaching an average population density of 568 people per square mile in 1998.³ In Pennsylvania, Montgomery County, which, in 1980, was more than twice as dense as the average of the four least dense counties, grew 11.9 percent from 1980-1998, reaching a density of 1490 people in 1998. Camden County, with 2122 people per square mile in 1980, had even slower population growth of 7.1 percent. The population of Delaware County — the suburbs' densest county with 3013 people per square mile in 1980 — declined 2.2 percent. The city of Philadelphia, which had 12,496 people per square mile in 1980 — dramatically more dense than its suburban counterparts — saw its population decline 14.9 percent.⁴

The same pattern of suburbanization emerges when one looks at job growth. From 1980 to 1997, the most rapid job growth occurred in the four least dense counties, paralleling the pattern of population growth. Jobs in Bucks, Chester, Burlington, and Gloucester counties increased more than 50 percent. Jobs in Montgomery County increased slightly less than 50 percent, and jobs in the densest suburban counties,

³In this discussion we are focusing on the eight counties that defined the metropolitan area before Salem County was added in 1993.

⁴The boundaries of the city of Philadelphia are also the boundaries of Philadelphia County.

Camden and Delaware, increased less than 30 percent. The city of Philadelphia lost 8.5 percent of its jobs during this period.

Edge Cities. Although the most rapid growth occurred in the least dense parts of the metropolitan area, several suburban employment and retail centers emerged into fully developed edge cities, one of which is King of Prussia in Montgomery County.⁵ Edge cities differ from their older CBD counterparts in three important and related ways. First, edge cities are auto-oriented. Public transit has an insignificant market share for travel to edge cities, which are accessible to a large geographic market by highway. Second, the auto-orientation is associated with development patterns in edge cities that are much less dense than older cities like Philadelphia, which are more dependent on public transportation. Upper Merion, the township where King of Prussia is located, does not have exceptionally high population or employment densities.⁶ Third, edge cities are dominated by private rather than public space, a situation consistent with the primacy of the private mode of transportation. Commercial and retail centers in suburban areas are often malls, office parks, or shopping centers that are privately controlled. Edge city shoppers and workers typically depart from their

homes in private automobiles and arrive at their destination without ever venturing into a public space except within the confines of their cars. This contrasts with the experience of workers in older central city areas who may use public transportation, and almost certainly use public sidewalks, to arrive at their destination.

Given these differences, one might ask whether proximity to an edge city would generate the same type of patterns for land values that we documented for Center City Philadelphia using 1980 census data.⁷

Center City Philadelphia. Despite the city's overall decline in both population and jobs, Center City experienced increases in both, at least from 1980 to 1990. Population appears to have increased in the 1990s as well, but employment in the CBD slipped, especially in the first half of the decade. The relatively good health of Philadelphia's CBD runs counter to two important trends: (1) the trend toward lower residential and employment density, since Philadelphia's CBD is by far the densest agglomeration of population and employment in the region, and (2) the trend toward increased auto ownership and an improved highway system, since Philadelphia's CBD depends heavily on public transportation.

The population and employment densities of Center City Philadelphia are dramatically higher than anywhere else in the region. The traditional boundaries of Center City include only 2.5 square miles of land, yet in 1990, 45,647 people lived in Center City and 241,169 worked in those 2.5

⁵Joel Garreau, author of *Edge Cities: Life on the New Frontier* (New York: Random House, 1991), lists three edge cities in the Philadelphia metropolitan area: King of Prussia and Willow Grove in Pennsylvania and Cherry Hill in New Jersey. Garreau offers a five-part definition of edge cities: an edge city (1) has five million square feet or more of office space; (2) has 600,000 square feet or more of retail space; (3) has more jobs than bedrooms; (4) is perceived by the population as one place; and (5) was nothing like [a] 'city' as recently as 30 years ago.

⁶In 1990, 25,722 people lived in Upper Merion Township's 17.33 square miles, a population density of 1484. Employment density in 1990 was 2321 jobs per square mile, which is lower than employment densities of older suburban towns, such as Norristown, Pennsylvania, that predate the dominance of the automobile.

⁷A number of papers have examined the relationship between land values and access to employment centers other than the CBD. See, for example, the papers by P. Waddell, B.J.L. Berry, and I. Hoch, "Residential Property Values in a Multinodal Urban Area: New Evidence on the Implicit Price of Location," *Journal of Real Estate Finance and Economics*, 7 (1993), pp. 117-41; and J.F. McDonald and D.P. McMillen, "Employment Subcenters and Land Values in a Polycentric Urban Area—The Case of Chicago," *Environment and Planning A*, 22 (1990), pp. 1561-74.

square miles.⁸ Center City's population density in 1990 was 18,259 per square mile; no suburban township approaches that level of density. Center City's population is more than 10 times higher than that of Upper Merion, where King of Prussia is located.⁹ Similarly, employment density in Center City is extremely high — 96,468 jobs per square mile in 1990. Center City's employment density is more than 40 times greater than that of Upper Merion Township.

Even though Center City has not suffered as severe a decline in jobs as the rest of the city, it now represents a considerably smaller share of the metropolitan economy than it did 20 years ago. As a share of metropolitan employment, Center City employment fell from 10.9 percent in 1980 to 9.9 in 1990; Center City's share has continued to decline in the 1990s. Although employment in the CBD increased slightly in the 1980s, private employment fell in the early 1990s during and after the national recession. However, Center City employment rebounded somewhat in the second half of the decade, according to estimates from the Center City District.

While Center City has become a smaller part of the metropolitan economy, it has become a more important source of jobs for city residents.

In 1990, 157,577 CBD workers, or 65 percent of the total, were city residents, an increase of more than 11,000 from the previous decade. On the other hand, in 1990, 83,592 CBD workers, or 35 percent of the total, were suburban residents. The number of suburban residents working in the city fell by almost 6000 from 1980 to 1990. Thus, not only has Center City's relative share of metropolitan employment declined, its share of employment of suburban residents has fallen even more.

The changing development patterns in Philadelphia, which are similar to those in many U.S. metropolitan areas, raise a number of questions about the continuing validity of earlier work on the importance of access to the CBD. In particular, has the declining share of Center City employment eliminated residential sorting across suburban communities based on access to the CBD? Has the decentralization of economic activity reduced the impact of CBD-oriented public transportation on people's investment in automobiles? Does the availability of commuter rail service still enhance house values? And finally, what effect has the maturation of edge cities like King of Prussia had on the value of access to employment centers as reflected in house prices?

1980 TO 1990: TRANSPORTATION TO CENTER CITY IS STILL IMPORTANT

What impact has decentralization had on households' choices of which community to live in, how many cars to purchase, and how much to pay for a house? To answer these questions, we'll examine changes in patterns from 1980 to 1990 using census data at the tract level. In particular, we'll assess what effect the suburban census tract's access to the CBD has on the percent of people in the tract who work in the CBD, car ownership per household, and the value of housing. Later, we'll look at changes from 1990 to 1998 for Montgomery County, a suburban county for which more recent and more detailed housing data are available.

⁸The boundaries of Center City Philadelphia used here are from South Street to Vine Street and from the Schuylkill River to the Delaware River. Others use broader definitions of Center City; the Center City District, an assessment-funded, privately managed business development organization for Center City, for example, extends the boundaries and claims a population of 75,000 and employment of over 300,000 (1998 data). The employment data are based on Census Journey to Work files, from which one can obtain the number of people in each metropolitan-area census tract who work in Center City.

⁹The population density of the entire city of Philadelphia remains very high as well—11,734 people per square mile in 1990, although this figure declined to 10,631 in 1998.

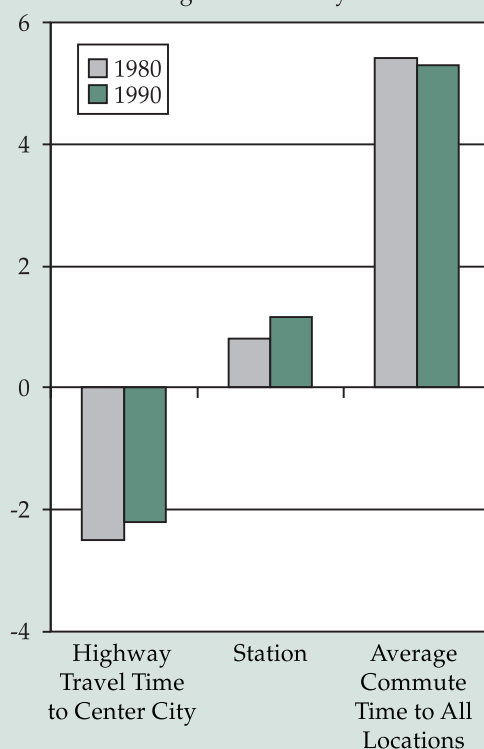
Access to Center City and Location of Residence. The first question raised was whether suburban communities with good transportation access to Center City had disproportionately larger shares of residents who worked in Center City. To analyze this issue, we estimated a statistical model to learn how the percent of people in a census tract who worked in Center City depended on the average commute time by car to Center City, the proximity of the tract to commuter rail service, and the average commute time of people who live in the tract to other work locations.¹⁰

To put the issue of Center City workers' choice of community in perspective, keep some basic facts in mind. In 1990, on average, only 4.84 percent of the labor force in a suburban census tract worked in Center City. This figure was one-fifth lower than the 1980 figure of 6.15 percent. This percentage varies widely across census tracts: some suburban tracts have nearly 20 percent of their residents working in the CBD, yet 74 tracts, or more than 8 percent, have no residents who work in the CBD.

Figure 1 summarizes the effect of access on the percent of people working in Center City Philadelphia. Estimates are presented for both 1980 and 1990. First, let's examine the role of highway commute time to Center City. In 1980, a community that was a 30-minute commute to Center City would have fewer workers (2.4 percentage points fewer) traveling to Center City than would a community 20 minutes away. Our new work shows that further decentralization between 1980 and 1990 appears to have had little impact on the relationship between highway access and residential sorting. Although the 1990 estimate was slightly lower than the 1980 estimate, there was no statistically significant dif-

FIGURE 1
Effect of Access
To Center City on the
Percent of Residents
In a Census Tract Who
Work in Center City

Change in the Percent of People
in Tract Working in Center City



Highway Travel Time to Center City shows the effect of a 10-minute increase in auto travel time.

Station shows the effect of having commuter rail service in or close to the census tract.

Average Commute Time to All Locations shows the effect of a 10-minute increase in auto travel time to all work locations of people in the census tract.

¹⁰See my article "Transportation, Sorting and House Values," *Journal of the American Real Estate and Urban Economics Association*, 19 (1991), pp. 117-37, for a detailed description of the statistical model.

ference between the two estimates of the impact of commuting time on sorting.

Just as communities with good auto access to Center City had greater shares of people working in the CBD, communities with commuter rail service also tended to have greater fractions of their labor force working in Center City. In 1990, commuter rail service added 1 percentage point to the fraction of people in the census tract working in the CBD (second pair of columns in Figure 1). While this may seem like a small amount, it represents an increase of more than one-fifth over the average fraction of people working in the CBD. The impact of the commuter rail system on sorting appears to have increased from 1980 to 1990. This is surprising, given the increase in nonwork destinations that are accessible primarily by car. As more and more nonwork trips are made to scattered destinations, we would expect that the work commute, especially by public transportation, would become less important.¹¹

Finally, consider the impact of the overall average commute time regardless of where people work. Because we explicitly measured the impact of commute time to Center City, this variable is essentially a measure of how convenient a location is for commuting to destinations other than Center City. As we would expect, a community that has poor access to other destinations has a greater percentage of people working in Center City, all other things equal. The impact of a 10-minute increase in commuting time is a little greater than 5 percentage points, and it has changed little from 1980 to 1990 (third pair of columns in Figure 1). While this may seem like a

relatively large impact, the average commute time to all destinations seldom varies by 10 minutes in the data.¹² The average commute time in most tracts is very close to the average of 23 minutes for all tracts.

Access to Center City and Car Ownership. Average car ownership per household in a suburban census tract was 1690 cars per 1000 households in 1990, slightly above the 1980 level of 1650.¹³ A number of factors affect car ownership; household income and household size are two important ones. In addition, there are two reasons why we would expect access to Center City to affect car ownership. First, communities farther from Center City are most often less dense, making the opportunity for sharing rides or walking less attractive, so households in these communities may have a greater need for multiple cars. Second, for communities with commuter rail service, this service may be a viable substitute for an additional car for some families. We estimated statistical models to evaluate the effect of access on car ownership, after taking into account differences in household income and family size.

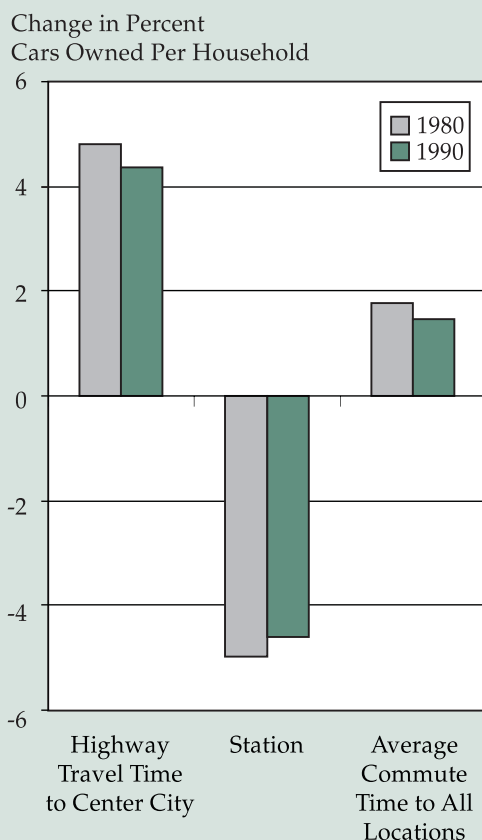
The effects of our measures of access on car ownership for 1980 and 1990 are summarized in Figure 2. Households of similar income and family size, but with shorter travel times to Center City, tend to own slightly fewer cars than households in more distant communities. On average, households in suburban communities located 30 minutes by car from Center City would own roughly 4.4 percent more cars than would average households 20 minutes from Center City (first pair of columns in Figure 2). This increase would mean about 75 more cars per thousand

¹¹One reason for the increase in the measured impact of commuter rail service on sorting is that between 1980 and 1990 several distant low-ridership stations were eliminated. Assuming that the impact of these underused stations on sorting is lower than average, their elimination would enhance the measured impact of the remaining stations on sorting.

¹²The standard deviation of this variable in 1990 was only 3.7 minutes.

¹³These figures are the unweighted averages of the mean number of cars per household in the census tracts in the Philadelphia suburbs.

FIGURE 2
Effect of Access on
Car Ownership Per
Household



Highway Travel Time to Center City shows the effect of a 10-minute increase in auto travel time.

Station shows the effect of having commuter rail service in or close to the census tract.

Average Commute Time to All Locations shows the effect of a 10-minute increase in auto travel time to all work locations of people in the census tract.

households in a community. The impact as measured in 1990 is slightly smaller than that measured in 1980.¹⁴

Households in communities with commuter rail service own 4.6 percent fewer cars than households in communities without commuter rail service, a little less than 80 fewer cars per 1000 households (second pair of columns in Figure 2). Again, the 1990 impact is slightly smaller than that in 1980, although the difference is not statistically significant. Finally, people who live in tracts that involve longer average commutes to locations other than Center City tend to own more cars (third pair of columns in Figure 2). The bottom line is that communities with good access to Center City and to other destinations rely less on cars.

Access and House Values. Basic urban economic theory suggests that prices for similar houses in similar neighborhoods should rise as access to an economic center improves.¹⁵ Thus, houses in neighborhoods close to Center City should have higher prices than similar houses in more distant communities. Likewise, houses in communities with commuter rail service should have higher prices than similar houses in communities without commuter rail service. To examine the effects of access on house values, we constructed statistical models that take into account the effect that some basic differences in houses and neighborhoods have on house prices

¹⁴The difference between the 1980 and 1990 estimates is not statistically significant.

¹⁵That house prices do not fall with distance from Center City is not altogether inconsistent with the basic urban model. For example, if crime rates are higher in the center, and if the negative impact of crime in the center spills over to adjacent communities but also diminishes with distance from the CBD, the negative impact of these spillovers may mask the value of access. Thus, access for work and leisure could be highly valued, but unless the influence of higher crime rates in the city is controlled for, the value of access will be understated in the statistical analysis.

and that give us estimates of the impact of access.

We examine the relationship between access and house values separately for Pennsylvania and New Jersey suburbs because there are significant differences between the two states.¹⁶ As basic urban theory suggests, 1990 prices for otherwise similar houses fall with distance from Center City in the Pennsylvania suburbs (first pair of columns in Figure 3a), but contrary to theoretical predictions, 1990 prices for similar houses in the New Jersey suburbs rise with distance (first pair of columns in Figure 3b). House values in Pennsylvania in 1990 fell a statistically significant 2.0 percent with a 10-minute increase in travel time to Center City. In contrast, in 1990, house prices in the New Jersey suburbs increased a statistically significant 8.6 percent with a 10-minute increase in commuting time to Center City.

Part of the strong positive effect of travel time from New Jersey to Center City may be explained by the fact that Philadelphia's nearest suburban neighbor in New Jersey is Camden, a severely distressed urban area that is still treated as part of suburban Camden County. The weak housing values in Camden tend to skew the relationship between house prices and travel time. While this is part of the story, attempts to statistically isolate the city of Camden from the analysis still yield a positive, though smaller relationship between travel time to Center City and suburban New Jersey house values.

Access to Center City by commuter rail service carries a positive value in the housing market. The premium for houses in communities with commuter rail service, as a percentage of house value, did not diminish from 1980 to 1990, despite Center City's declining share of regional

employment. There are significant differences in the premium between Pennsylvania and New Jersey. In Pennsylvania, where the geographic coverage of commuter rail service is greater but the service is less frequent than in New Jersey, the premium for commuter rail service was only about 6 percent in 1990 (second pair of columns in Figure 3a). On the other hand, in New Jersey, where train service is limited geographically but offers very frequent service for the communities it serves, commuter rail service generates high premiums, about 16 percent of house value in 1990 (second pair of columns in Figure 3b).¹⁷

Finally, the measure of access to all communities has virtually no impact on suburban house values, either in Pennsylvania or in New Jersey. The slight positive effect of a 10-minute increase in average commute time for Pennsylvania suburbs shown in the third pair of columns in Figure 3a is not statistically significant, nor are the negative effects shown for New Jersey in the third pair of columns of Figure 3b, even though the 1990 impact in New Jersey is larger than the 1980 impact. The lack of significant impact of average access is consistent with the idea that most suburban communities have reasonably good access to employment centers other than Center City.

1990 TO 1998: CENTER CITY, KING OF PRUSSIA, AND ACCESS PREMIUMS

Despite rapid suburbanization from 1980 to 1990, access to Center City continued to influence households' choices about where to live

¹⁶In 1980 there was no statistically significant relationship between distance from Center City and prices of similar suburban homes. In 1990 there was.

¹⁷The greater frequency of service in New Jersey is supported by subsidies that are about double those per mile of service in Pennsylvania. Note, however, that the subsidies per rider are much lower for the New Jersey service than for the Pennsylvania service because of its higher ridership per mile of rail service. See my article "Public Transit: Realizing Its Potential," Federal Reserve Bank of Philadelphia, Business Review, September/October 1991, for a discussion of this issue.

FIGURE 3a
Effect of Access on
House Values in the
Pennsylvania Suburbs

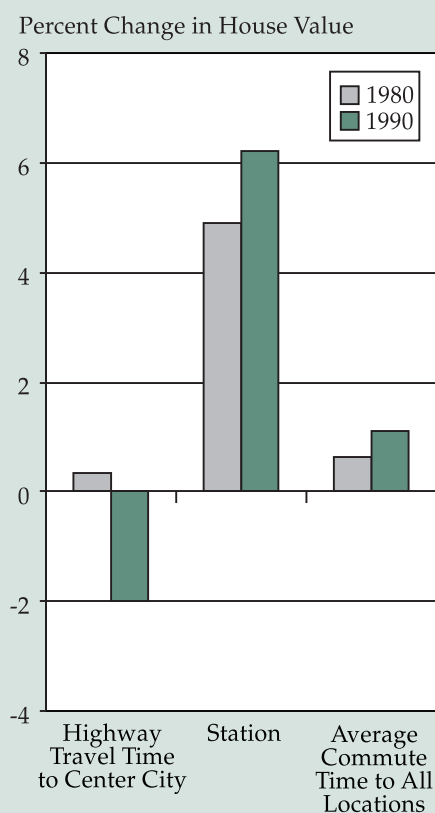
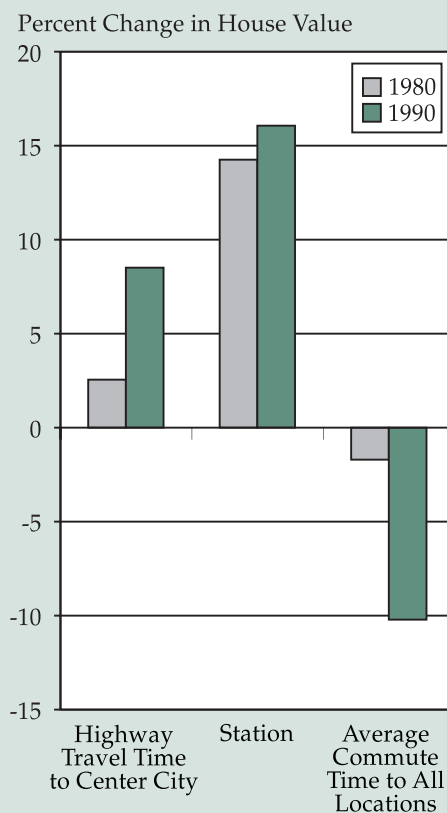


FIGURE 3b
Effect of Access on
House Values in the
New Jersey Suburbs



Highway Travel Time to Center City shows the effect of a 10-minute increase in auto travel time.

Station shows the effect of having commuter rail service in or close to the census tract.

Average Commute Time to All Locations shows the effect of a 10-minute increase in auto travel time to all work locations of people in the census tract.

and how to commute. However, change has continued throughout the 1990s. In response to continuing decentralization, has the value of access to Center City eroded in the 1990s? Has access to other economic centers, such as King of

Prussia, resulted in a significant impact on residential land markets?

Using an extensive data set of housing transactions in Montgomery County, we can examine the role of access not only to the CBD but also to

edge cities from 1990 through 1998.¹⁸ The data are geocoded so that we can compute highway distances not only to Center City but also to the region's largest edge city, King of Prussia. The data also have much finer detail on housing traits, so that we can obtain more precise estimates of the effects of access on value. We can measure the value of access to King of Prussia by car, just as we measured the value of auto access to Center City. In addition, we can trace the changes in the effects of access on house values since 1990 to get a more up-to-date understanding of the roles of the CBD and edge cities in the metropolitan area. Just as we did for the census tract data, we constructed statistical models that take into account the differences across households and neighborhoods so that we can isolate the effects of access on house prices.¹⁹

¹⁸The data on Montgomery County housing sales provide a useful check on the census tract findings for 1980 and 1990. There are substantial similarities in the role of access for Montgomery County compared with the findings based on census tract data for the Pennsylvania suburban area. For example, the premium for commuter rail service in 1990 was a modest 2.9 percent of house value, considerably lower than the 6.2 percent found for all Pennsylvania suburbs based on census tract data, but close to an estimate of 3.2 percent that we obtain using census data for Montgomery County only. For 1980, the premium was 3.2 percent based on individual house-value data for Montgomery County, 4.9 percent for all Pennsylvania suburbs using census tract data, and 2.5 percent for Montgomery County using census tract data. Prices for otherwise similar houses decline with distance from the CBD, a result consistent with the findings based on census tract data for the Pennsylvania suburbs as a whole. But the findings are not directly comparable because the census-based findings are based on travel time, not distance.

¹⁹There are three important differences between the analysis based on the census data and the Montgomery County housing transactions data. The Montgomery County housing transactions data measure access to both Center City and to King of Prussia; our highway access measure is based on distance, not on travel time as was the case with the census data; and the effects of

Center City Access Premiums in 1998: Montgomery County. The most recent data on house sales suggest that, for Montgomery County at least, the house-value premium associated with access to Center City has diminished somewhat. The increase in value associated with neighborhoods with commuter rail service diminished from 2.9 percent of house value in 1990 to 1.4 percent in 1998, a number not statistically different from zero. While we do not have hard evidence on why the premium fell, there are three potential explanations: (1) Center City became less attractive; (2) the attractiveness of driving to Center City increased relative to taking the train; and (3) other destinations not served by the commuter rail system became more attractive, raising house values in communities near them.

Surveys by the Center City District reveal that the overall environment of Center City has improved in recent years, suggesting that the declining premium for access to Center City is not due to deteriorating conditions. Mergers and corporate downsizing, however, have adversely affected Center City employment for most of the decade. Declining attractiveness of the train is likely to be only a small factor in the declining premium, given that ridership has been increasing in recent years and Center City parking prices remain high. Several major highway investments in the 1990s, however, improved auto

access, whether to Center City or to King of Prussia, are not forced to be uniform across space. Specifically, the effect of distance to either King of Prussia or Center City is not forced to be linear with the log of house value. This means that one mile added to a 10-mile commute to Center City may be valued differently from an additional mile added to a 40-mile commute. Effectively, this allows for the possibility that as one gets farther from an economic center, the center's influence on housing markets diminishes. Finally, the data for Montgomery County allow for a richer set of statistical controls for housing traits. See my paper "The Suburban Housing Market: Effects of City and Suburban Employment Growth," *Real Estate Economics*, 27 (1999), pp. 621-48, for a description of these housing traits.

access to the city and may have adversely affected the premium for train service. It seems likely that the most important factor in the declining premium is that extensive decentralization has increased the attractiveness of houses in locations that are not particularly accessible to Center City. As the value of these residential locations increases, the premium paid for access to Center City declines, even if Center City remains an attractive destination.

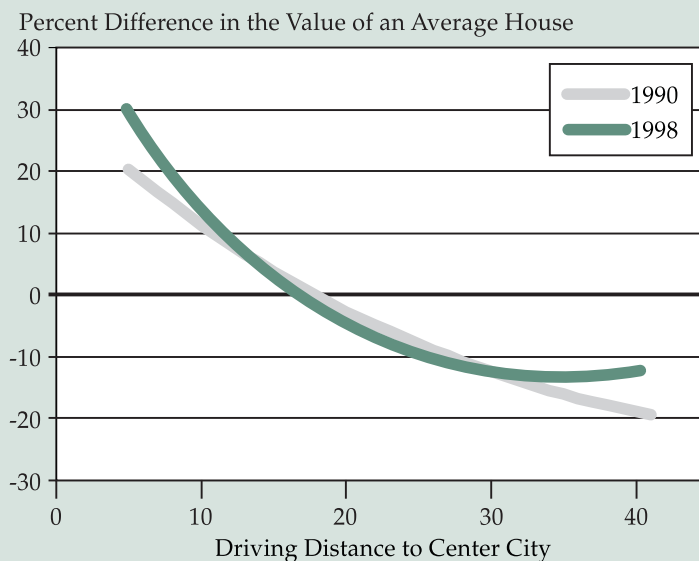
The increasing desirability of locations without good access to Center City can also be seen in the changing premiums for good highway access to Center City (Figure 4). This figure shows the changes in housing prices based on access by auto to Center City, specifically the percentage difference in value of an average house depending on its distance from Center City for both 1990 and 1998. In both years, prices fell sharply with distance from Center City, at least initially. The premium for highway access to Center City in Montgomery County is much larger than the measured premium for the suburbs as a whole. In 1998 houses in communities about five miles from the city cost nearly 20 percent more than similar houses just 15 miles from Center City. While in both 1990 and 1998 value declines as one moves away from the city, the 1998 path begins to diverge from the 1990 path at a point about 30 miles from Center City. In 1998, prices actually increase slightly after 35 miles. Although Center City's influence was undiminished within a range of 30 miles, the fact that prices do not

decline much beyond 30 miles indicates that the range of influence of Center City diminished somewhat between 1990 and 1998.

King of Prussia Access Premiums: Montgomery County. Just as we measured the effect of highway distance from Center City on house values, we also measured the effect of highway distance to King of Prussia on house values. In general, the magnitude of the impact of access to King of Prussia is much smaller than that for Center City. This is not surprising, given that King of Prussia is much more spread out than Center City and has considerably fewer jobs. Still, estimates of the impact of access to King of Prussia are very interesting, especially for their differences between 1990 and 1998.

In 1990, house prices fell with distance from King of Prussia proportionally. Prices one mile from the King of Prussia mall were almost 7 per-

FIGURE 4
Effect of Distance from Center City
On House Values in
Montgomery County



cent higher than the prices of comparable houses 15 miles away and nearly 12 percent higher than houses 25 miles away (Figure 5). Our measurements for 1998, however, changed considerably. In 1998, there is no premium for living very close to King of Prussia, and in fact, house prices rise modestly up to almost 10 miles from King of Prussia.²⁰ Beyond 10 miles, prices decline rapidly until prices of houses 30 miles from King of Prussia are more than 24 percent lower than prices of similar houses that are only 10 miles from King of Prussia. One interpretation of this pattern is that the rapid commercial growth of King of Prussia has had some negative consequences, such as congestion near the center, that reduce house values, so that prices rise initially with distance.²¹ By the same token, the growth of King of Prussia has enhanced its value as a destination; hence, house prices drop off rapidly as commuting distance extends beyond 10 miles.

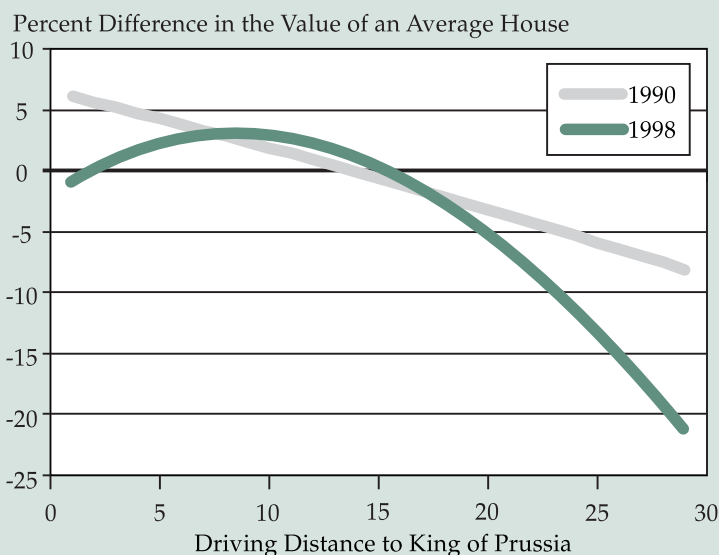
²⁰Given the precision of the estimation, the differences between the 1990 and 1998 estimates are not significantly different from each other statistically in terms of the average levels of the premium. However, we can statistically reject the fact that the 1998 impact is linear with distance while that finding cannot be rejected for the 1990 data.

²¹Another potential reason for this pattern is that King of Prussia is a dispersed employment location but our distance measurements are taken from a single point. Prices may not actually drop off for several miles from our point of measurement because these properties remain essentially in or very close to the employment and shopping areas in King of Prussia.

CONCLUSION

Examination of the 1990 census data and data on housing sales for Montgomery County through 1998 indicates that despite the declining relative share of the employment market, Center City Philadelphia continues to have important effects on suburban land and transportation markets. Highway and transit access still plays a significant role in Center City workers' choice of suburban residences and a modest, though statistically significant role in decisions about car ownership. It also has a considerable impact on the value of residential housing. There is evidence that the geographic extent of this influence declined somewhat in the 1990s as suburban communities continued to grow rapidly. Premiums in house values for public transit access to the CBD remained large through 1990, but recent data for Montgomery County indicate

FIGURE 5
Effect of Distance from King of Prussia on House Values in Montgomery County



that, at least for one county, this premium diminished considerably in the 1990s.

Highway access to King of Prussia generates significant house-value premiums, although this impact is not as large as that associated with access to Center City. From 1990 to 1998, changes in premiums for access to King of Prussia suggest that the declines in value are associated with distances beyond 10 miles from King of Prussia. These declines became more pronounced in the 1990s, indicating that the value of access to King of Prussia has increased over time.

Is continued decentralization likely to change

the pattern of housing values and transportation choices in the suburbs? As many of the suburban employment centers close to Philadelphia approach maturity, it would not be surprising if additional suburban growth on the urban fringe or in new, more distant suburban centers would have little impact on the residential patterns or transportation choices of residents of suburban communities close to the city. Growth on the metropolitan fringe may simply be too distant to be affected by access to Center City or, if decentralization continues unabated, even by access to mature edge cities.