A welfare comparison of intermediaries and financial markets in Germany and the US

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Abstract

There is wide variation in the structures of financial systems in different countries. We compare two polar extremes. In one, which we refer to as the ‘German model’, intermediaries predominate. In the second, which we refer to as the ‘U.S. model’, financial markets play the major role. Our objective is to contribute to a theoretical framework for the welfare analysis of comparative financial systems. The study is divided into two parts, which focus on financial services provided to households and firms, respectively. On the household side, we consider issues such as cross-sectional and intertemporal risk sharing, noise suppression and the provision of services. On the firm side, we consider information, financing, the market for corporate control, and diversity of opinion.

Keywords: Comparative financial systems; Intermediaries; Financial markets; Welfare analysis

JEL classification: G10

1. Introduction

It has long been recognized that financial institutions play an important role in economic development (Schumpeter, 1911; McKinnon, 1973). 1 It has recently been argued that they play an important role in the economic performance of...

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1 See Pagano (1993) and Galetovic (1994) for recent surveys.
developed countries (Mayer, 1988, 1990; Porter, 1992). When we look at developed countries, we see that there is a wide variety of financial systems. Cross-country differences in financial systems and economic performance raise a host of interesting questions. Why have different countries developed different financial systems? Is it an accident of history, is it the product of deliberate policy and regulation, or some other factor? Is each financial system optimal in its own circumstances or does one dominate the others? Did Germany, Japan and France succeed because of their intermediated systems or in spite of them? Would the relative decline of the U.S., Canada and the U.K. have been worse without their reliance on financial markets or would they have done better with intermediated systems? What are the gains and costs of convergence? These questions constitute the study of comparative financial systems, which tries to explain the origins of cross-country differences in financial systems and their implications for economic welfare. Given the pace of financial innovation in recent years and the decision of countries such as Japan and France to move away from intermediated systems and toward more market-based systems, these issues are of great interest.

In this paper, we focus on a narrower set of issues, which we nonetheless hope will contribute to the debate about the optimal organization of financial systems. One of the most striking differences between developed countries is the relative importance of financial markets and intermediaries in different countries. At one extreme we have Germany, where a few large banks play a dominant role and financial markets are not very important. At the other extreme is the U.S., where financial markets play an important role and the banking industry is much less concentrated. In between are countries such as Japan and France. Traditionally, these countries had bank-dominated systems, like Germany’s, but financial markets are rapidly developing and starting to play an important role, as they do in the U.S. Canada and the U.K. also combine elements of the German and U.S. models. Financial markets are more highly developed than in Germany, but the banking sector is more highly concentrated than in the U.S.

Financial theorists often suggest that systems with highly developed financial markets are in some sense more advanced than bank-based systems. According to this view, the tremendous variety of financial products available in the U.S. and the recent pace of financial innovation provide an unambiguous economic advantage. On the other hand, the relative success of Germany, Japan and France, with their intermediated systems, compared to the U.S., Canada and the U.K., with their sophisticated financial markets, may be taken as counter-evidence. As a recent editorial in International Financing Review put it: "...The German financial system is in fetters: it is perceived to be underdeveloped and anachronistic. This view, held by many, is truly a paradox, given the significant contribution of Germany to the global economy." 2 The German financial system also has its

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2 In an historical study of the period 1870–1914, Calomiris (1993) has argued that the German universal banking system dominated the U.S. system in the sense that the cost of capital was lower. Nevertheless, the U.S. economy outperformed the German economy.
advocates, however. Mayer (1988) and Porter (1992) have argued that far-sighted German banks provided better support for industry than American financial markets. 3

From a theoretical perspective, one can make a case for both systems. If we lived in an Arrow-Debreu-McKenzie world with complete markets, there would be no need for intermediaries, except perhaps as a means of reducing transaction costs. On the other hand, in the presence of moral hazard and adverse selection, one can argue that intermediaries must have an advantage over financial markets, since they can in principle replicate the functions of the market and in addition they have the ability to write long-term incentive contracts to reduce agency costs.

We want to argue that reality is more complex than either of these simplified pictures allows. Markets are incomplete and incentive problems abound, so there is a role for intermediaries. On the other hand, intermediaries introduce incentive problems of their own, so that markets may sometimes offer advantages. But finding out which influences dominate in a complex economy is something that cannot be settled on the basis of simplistic economic models alone. The best we can hope for, without extensive empirical research, is to illustrate some of the issues that appear to be important and to indicate how they might be resolved. In any case, understanding the relative merits of financial markets and intermediated systems would appear to be one of the central questions that need to be addressed by a study of comparative financial systems.

Our general approach to this question is influenced by a number of considerations. First, we are interested in tracing the impact on welfare of cross-country differences in financial systems. We have nothing to say about the origins of these differences.

Second, although our study is motivated by observations about actual economies, we are primarily interested in providing a theoretical framework for the empirical analysis of financial systems.

Third, we want to focus on issues of risk sharing and information, since these strike us as critical in the comparison of intermediated and market-based systems.

Fourth, in order to discover the limits of the welfare properties of the different systems, we focus on ideal cases. In practice we recognize that these may be unrealistic models of actual intermediary behavior, because of X-inefficiency, regulation, bounded rationality and so forth. Furthermore, to simplify, we often choose to focus on two limiting cases, which we call the 'German model' and the 'U.S. model' respectively. The 'German model', loosely based on the actual German economy, is an economy in which financial markets are of limited importance or absent and their place is taken by financial intermediaries such as banks, pension funds, insurance companies and the like. The 'U.S. model' is

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3 More recently, Franks and Mayer (1992) and Edwards and Fischer (1994) have argued that both the importance and the virtues of the German banks have been exaggerated.
similarly an economy in which financial markets play the dominant role and intermediaries are unimportant.

Finally, we think it is important to adopt a 'systemic' perspective. Since different countries have different financial systems, they share risk, provide information, and allocate resources in different ways. In order to compare the efficiency with which these functions are performed, one really has to look at the financial system as a whole. For example, if we are interested in risk sharing, we have to take into account the fact that individuals hold, in addition to securities, a variety of claims on the state and their employers. The functions of the market in one system may be undertaken by the state or by employers in another system.

Because of the breadth of this topic, some selectivity has been inevitable. We have ignored some issues for reasons of taste or lack of space. Others we ignored because they did not concern cross-country differences between financial systems. For example, we do not consider the issue of bank runs studied by Bryant (1980), Diamond and Dybvig (1983) and others or the issue of prudential regulation of banks studied by Dewatripont and Tirole (1994). Our systemic perspective leads us not to consider specific institutional issues such as the desirability of allowing universal banking in the U.S. (see Saunders, 1994; Saunders and Walter, 1994). To our knowledge, some of the points we raise have not been considered in this particular context before. Our purpose is not to develop the ideas in detail but to leave them to future work.

The rest of the paper is organized as follows. Section 2 contains a description of the financial systems in Germany and the U.S. We divide our theoretical analysis into two parts. In Section 3, we analyze the household side of the financial system. Issues such as cross-sectional and intertemporal risk sharing, noise suppression and the provision of services are considered. Section 4 focuses on the firm side of the financial system. Information, financing, the market for corporate control and diversity of opinion are discussed. Finally, Section 5 contains concluding remarks.

2. The German and U.S. financial systems

The characterization of Germany as having an intermediated financial system and the U.S. as having a market-based system is, of course, an oversimplification. The financial systems of the two countries have many important differences in addition to these. This section gives a brief account of their characteristics and summarizes the main differences between the two. More extensive descriptions of the German financial system are given in Edwards and Fischer (1994), Pozdena and Alexander (1992) and Saunders and Walter (1994). For the U.S., Baer and

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4 For an excellent recent survey of the theory of banking, see Bhattacharya and Thakor (1993).
Mote (1992) and Saunders and Walter (1994) are useful references. This section draws on all of these.  

2.1. Germany

An overview of the German financial system is provided in Table 1. One important point for what follows in Section 3 is that among the universal banks, only the commercial banks which together constitute about 26 percent of total banking assets are profit maximizing entities. Savings banks, which account for 36 percent of total banking assets, do not maximize profits. They were originally set up to provide credit to the poor and finance local and regional investments and continue to pursue these objectives. The cooperative banks, which have 15 percent of total banking assets, have a mutual structure in which the depositors are the shareholders. Among the specialist banks, which account for the remaining 23 percent of bank assets, some are privately owned and maximize profits while others are not.

Another important aspect of the banking system is the large number of branches maintained by German banks. As of 1988 there were over 45,000 banking offices. During the previous 30 years the number of banks fell by about two thirds but the number of banking offices doubled. The number of people employed by the banking sector has also significantly increased over time.

Financial markets in Germany are relatively undeveloped compared to most other industrial countries. Few households participate directly in the markets. The lack of prohibitions on insider trading makes participation by unsophisticated investors unattractive. In addition, the availability of mutual funds and other indirect means of holding stocks are limited. Overall, German investors have a limited range of instruments in which they can invest directly.

The bond markets are more important than the stock markets. Most of the debt and notes traded is issued by federal, state or local governments, government entities, banks and other intermediaries. The amount of debt issued by German industrial firms in German markets is very small and constitutes less than 0.5 percent of bonds outstanding. Some large firms borrow in the Euro-DM markets but the total amount is less than 2 percent of total domestic debt.

Futures and options markets in Germany are of little practical importance. The Deutsche Termin Bourse, which was Germany’s first futures and options exchange, only opened in January 1990.

A significant characteristic of the German financial system is the role of banks in the control of industrial firms. The direct holding of equity by banks in

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5 The figures given in this section come from these sources unless other citations are given.
Table 1
An overview of the German financial system

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Universal banks</td>
<td>Engage in a full range of activities including taking deposits, granting loans and mortgages, underwriting security issues and investing directly in securities including equities.</td>
</tr>
<tr>
<td>Commercial banks</td>
<td>Include the three major banks which are Deutsche Bank, Dresdner Bank and Commerzbank, the regional banks, branches of foreign banks and private banks.</td>
</tr>
<tr>
<td>Savings bank system</td>
<td>These are not profit maximizing entities but are operated in the public interest. There are three tiers: local savings banks, state savings banks and the central savings bank.</td>
</tr>
<tr>
<td>Cooperative bank system</td>
<td>The depositors are the shareholders. As with the savings bank system there is a three-tier structure with local, state and central levels.</td>
</tr>
<tr>
<td>Specialist banks</td>
<td>These concentrate on providing a narrower range of services than universal banks. They include banks which specialize in providing mortgages, agricultural credit, small business credit and so forth.</td>
</tr>
<tr>
<td>Stock markets</td>
<td>Seven regional exchanges with that in Frankfurt being much the most important. Only 665 companies were listed on these in 1991. These markets have traditionally been an insignificant source of funds for firms.</td>
</tr>
<tr>
<td>Bond markets</td>
<td>Important for the debt of all levels of government, their entities, banks and other intermediaries. Industrial firms issue very little debt.</td>
</tr>
<tr>
<td>Futures and options markets</td>
<td>Only opened in January 1990. The volume of trade is unimportant.</td>
</tr>
<tr>
<td>Firm pension schemes</td>
<td>Firms make provision for employees by investing funds directly within the firm. This is a significant source of funds for firms.</td>
</tr>
</tbody>
</table>


1990–91 was about 8.9 percent of the total. Much of this is concentrated in the larger firms. For example, German banks own more than 25% of at least 33 major industrial corporations. More important than this is the fact that many bank customers keep their shares ‘on deposit’ at banks and allow the banks to exercise proxies on their behalf. As a result, banks control a higher proportion of voting equity and have more representation on the boards of large industrial enterprises than their direct holdings suggest. A 1979 Monopoly Commission report found that, of the top 100 corporations, banks controlled the votes of nearly 40 percent of the equity and were represented on two thirds of the boards. German banks thus

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6 See Kester (1993a, p. 33).
7 Kester (1993b, p. 72).
tend to have very close ties with industry and form long-run relationships with firms. This is known as the *Hausbank* system.

In addition to the close links between banks and industrial firms, another important aspect of the German system is the absence of a market for corporate control. Although many mergers occur, the vast majority are ‘friendly’. It could hardly be otherwise, because of the concentrated ownership of German firms. ⁸ Accounting information supplied by German firms is sparse, which makes hostile takeovers difficult. They are also rare; the first did not occur until 1989. Management buyouts are also rare.

In summary, the German financial system is dominated by banks. The banking industry is relatively concentrated. Banks that are operated in the public interest as well as profit maximizing banks play an important role. The country is heavily banked in the sense that there is a large number of banking offices. Banks have little competition from financial markets, which are relatively unimportant. Households have access to a narrow range of investment vehicles. Banks are heavily involved in the control of industry and form long-term relationships with firms. There is little publicly available information about firms and there is no active market for corporate control.

2.2. U.S.

The banking industry in the U.S. is unique among large industrial countries because it is not dominated by a few large banks. One of the important reasons for this difference is historical. Alexander Hamilton was influenced by British experience with the Bank of England and after the revolution advocated a large federally-chartered bank with branches all over the country. This led to the foundation of the First Bank of the United States [1791–1811] and later the Second Bank of the United States [1816–1836]. However, there was considerable distrust of the concentration of power these institutions represented. In a report on the Second Bank, John Quincy Adams wrote “Power for good, is power for evil, even in the hands of Omnipotence”. ⁹ The controversy came to a head in the debate on the rechartering of the Second Bank in 1832. Although the bill was passed by Congress it was vetoed by President Jackson and the veto was not overturned. ¹⁰ This was a watershed event as far as the development of banking in the U.S. was concerned. There has been a strong bias toward decentralization of

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¹⁰ See Timberlake (1978, Chs. 1–3) for an account of the First and Second Banks and the controversy on rechartering the Second Bank.
Table 2
An overview of the U.S. financial system

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commercial banks</td>
<td>Provide short-term lending to firms, residential real estate loans, agricultural loans and loans to other financial institutions.</td>
</tr>
<tr>
<td>Savings and loans and thrifts</td>
<td>Traditionally have provided mortgages and other consumer loans. Many have a mutual structure so depositors are shareholders.</td>
</tr>
<tr>
<td>Stock markets</td>
<td>There are three major exchanges, the NYSE, AMEX and NASDAQ with a total of 6,409 firms listed in 1991. They have traditionally been a significant source of funds from initial public offerings (IPOs).</td>
</tr>
<tr>
<td>Bond markets</td>
<td>These are an important source of funds for the federal, state and local governments as well as for firms.</td>
</tr>
<tr>
<td>Options and futures exchanges</td>
<td>Founded in the early 1970s these have become very liquid and are widely used.</td>
</tr>
<tr>
<td>Firm pension schemes</td>
<td>Firms have a number of options under Employee Retirement Income Security Act (ERISA) which provides the framework for pensions. Funds are usually invested in the stock or bond markets.</td>
</tr>
</tbody>
</table>


the banking system and an aversion to powerful financial institutions of any kind since then. 11

Another distinguishing characteristic of the U.S. banking system is the Glass–Steagall Act of 1933. Among other things, this led to the separation of commercial and investment banking; commercial banks were forbidden to hold equity. Sensational hearings by the Congressional Committee on Currency and Banking, which found evidence that commercial banks’ security affiliates were cheating their customers, were an important factor in the development of the new regulations and reinforced suspicion of and hostility toward large banks.

Table 2 provides an overview of the U.S. financial system. In addition to a banking structure that is significantly different from those in other countries, the other defining characteristic of the U.S. financial system is the importance of direct finance. Over the last few decades around 50 percent of external funds raised by nonfinancial firms has been obtained through the sale of securities in stock and bond markets whereas in other countries a figure of 10 percent is more typical.

Stock exchanges where stocks and bonds are issued and traded are not the only liquid financial markets that are available to investors. In addition there are very

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11 Roe (1991) carefully documents the role of political factors in the shaping of financial institutions and argues these factors have been critical.
active options and futures exchanges. These have grown from nothing twenty
years ago to being similar in volume to the stock and bond markets.

One important aspect of U.S. financial markets is the availability of infor-
mation. Among other things this makes possible an active market for corporate
control. If one company thinks another company is undervalued or that it can
better utilize the other company's resources, it is able to bid for the other
company. Even if the incumbent management disagrees with the raiders, the target
company can be taken over if the shareholders agree with the raider. In deciding
whether to tender their shares, the shareholders will use all the information
available to them. Without the wide availability of information, it would be very
difficult to reach consensus in such cases.

Overall, financial markets in the U.S. play an important role in providing
opportunities for direct financing. They are also important in allowing many
different types of intermediaries, such as mutual funds and consumer finance
companies, to operate. Banks' activities are also substantially affected by the
existence of financial markets because they can use them to manage their risk.

2.3. Comparison

The difference in the importance of banks and stock markets in the two
countries is illustrated by Table 3. The size of the extended banking system as
measured by assets relative to GDP is 189 percent in Germany but only 87 percent
in the U.S. The market value of publicly listed shares of domestic companies is
20.3 percent of GDP in Germany but in the U.S. is more than three times that
level at 77.3 percent. It can also be seen that the parties who own these listed
shares differ significantly. In Germany, households own only 16.8 percent of
shares directly whereas in the U.S. they own 53.5 percent. These figures suggest
that the financial assets acquired by German households are mostly debt instru-
ments and in fact this turns out to be the case. In 1990–91, German households
acquired a total of 211.9 billion DM of which 63.8 billion DM was placed with
banks, 55.5 billion DM with insurance enterprises and 78.5 billion DM was
invested in bonds.\footnote{Monthly Report of the Deutsche Bundesbank, April 1992, p. 15.}

Table 4 gives a comparison of the different features of the financial systems in
Germany and the U.S. This illustrates that the basic difference between the two
countries is the structure of the banking industry and the role of financial markets.
Germany has a system where the range of instruments available to investors is
controlled by a few banks and is limited. In contrast, in the U.S. competitive
financial markets ensure investors have a wide range of instruments available. The
way in which corporations are controlled also differs substantially between the two
countries. In Germany, banks have extensive representation on boards of directors,
but there is no market for corporate control, while in the U.S. the reverse is true.
Table 3
A comparison of holdings

<table>
<thead>
<tr>
<th>Country</th>
<th>Germany (percent)</th>
<th>U.S. (percent)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size of the extended banking systems measured by total balance sheet as a percentage of GDP in 1988 (^a)</td>
<td>189</td>
<td>87</td>
</tr>
<tr>
<td>Market value of shares of domestic companies as a percentage of GDP in 1992 (^b)</td>
<td>20.3</td>
<td>77.3</td>
</tr>
<tr>
<td>Ownership of publicly listed corporations 1990–1991 (^c)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Banks</td>
<td>8.9</td>
<td>0.3</td>
</tr>
<tr>
<td>Insurance companies</td>
<td>10.6</td>
<td>5.2</td>
</tr>
<tr>
<td>Pension funds</td>
<td>–</td>
<td>24.8</td>
</tr>
<tr>
<td>Investment companies</td>
<td>–</td>
<td>9.5</td>
</tr>
<tr>
<td>Non-financial businesses</td>
<td>39.2</td>
<td>–</td>
</tr>
<tr>
<td>Households</td>
<td>16.8</td>
<td>53.5</td>
</tr>
<tr>
<td>Government</td>
<td>6.8</td>
<td>0</td>
</tr>
<tr>
<td>Foreign</td>
<td>17.7</td>
<td>6.7</td>
</tr>
</tbody>
</table>

\(^a\) Source: Maccarinielli et al. (1993, Table 12.1, p. 303).  
\(^c\) Source: Kester (1993a, Table 4, p. 33).

3. The household side

In analyzing the welfare properties of the German and U.S. financial systems it is helpful to consider the provision of financial services to households separately from the provision of financial services to firms. In this section we are interested in looking at things from the perspective of the ultimate providers of funds, that is,

Table 4
A comparison of financial systems

<table>
<thead>
<tr>
<th>Country</th>
<th>Germany</th>
<th>U.S.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Universal banking</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Number of important banks</td>
<td>Small</td>
<td>Large</td>
</tr>
<tr>
<td>Long term relationships between banks and firms</td>
<td>Extensive</td>
<td>Limited</td>
</tr>
<tr>
<td>Competition between banks and financial markets</td>
<td>Little</td>
<td>Considerable</td>
</tr>
<tr>
<td>Interaction between intermediaries and financial markets</td>
<td>Limited</td>
<td>Extensive</td>
</tr>
<tr>
<td>Number of publicly listed firms</td>
<td>Small</td>
<td>Large</td>
</tr>
<tr>
<td>Futures and options markets</td>
<td>Illiquid</td>
<td>Liquid</td>
</tr>
<tr>
<td>Information available about publicly listed firms</td>
<td>Limited</td>
<td>Extensive</td>
</tr>
<tr>
<td>Market for corporate control</td>
<td>No</td>
<td>Yes</td>
</tr>
</tbody>
</table>
households. We focus on the provision of risk sharing and intertemporal smoothing, information, and the variety of banking services.

3.1. Cross-sectional risk sharing

It has long been recognized that one of the major functions of financial markets is to provide opportunities for risk sharing (Arrow, 1964). Markets allow individuals to diversify portfolios, hedge idiosyncratic risks, and adjust the riskiness of portfolios to suit their risk tolerances. We call this cross-sectional risk sharing, because different individuals are exchanging risks at a given point in time.

As stressed in the previous section, one of the salient characteristics of the U.S. financial system is the enormous variety of financial products available to the average investor. The diversity of instruments and markets in the U.S. does provide many opportunities for cross-sectional risk sharing.

In Germany, the possibilities for cross-sectional risk sharing are more limited. Relatively few stocks are quoted on the stock exchanges and there are few mutual funds or other intermediaries which can provide direct ownership of stocks without high transaction costs. Trading futures and options is not a practical possibility for most investors. In short, investors have restricted opportunities to share risk cross-sectionally through markets. Most save in bank accounts which do not provide opportunities for hedging.

From the point of view of cross-sectional risk sharing, the U.S. model appears to offer a much richer menu of choices than the German model and it is tempting to conclude that a market-based system provides superior risk sharing opportunities to an intermediary-based system. However, markets have their own limitations and if markets are incomplete or if participation in financial markets is incomplete, intermediaries may have some advantages in providing risk sharing or intertemporal smoothing.

The Diamond-Dybvig (1983) model provides an example of cross-sectional risk sharing by an intermediary which may not be provided by the market. Long-term (illiquid) investments pay a higher return than short-term (liquid) investments, but individuals may not take advantage of the higher rates of return on long-term investments because of uncertainty about their need for liquidity in the short term. Pooling large numbers of investors who have uncertain needs for liquidity, an intermediary can take advantage of the law of large numbers to offer liquidity and at the same time share the higher returns from long-term investments with investors who have to liquidate their claims early. The market does not have the ability to provide insurance against liquidity shocks because it cannot distinguish investors with genuine liquidity needs from investors who are trying to make an arbitrage profit. Here asymmetric information gives the intermediary an advantage in providing cross-sectional risk sharing in the form of insurance against liquidity shocks.
This example points out the importance of incomplete markets. If markets were complete, investors who wanted to take advantage of higher returns could always hold securities backed by long-term assets and sell them at the market price when they needed liquidity. They would face uncertainty about the price at which their claims can be liquidated, but this risk too can be hedged in a world of complete markets. In reality, it is expensive to hedge market risk, that is, the risk associated with fluctuations in the market price. Intermediaries may be able to provide a better hedge, or provide a reasonable hedge at lower cost, than the market.

3.2. Intertemporal forms of risk sharing

When markets are incomplete or when market participation is incomplete, there may be a role for intermediaries to share risks that are too expensive to hedge through the market. However, it is not clear that investors will actually be worse off in an economy with a highly developed set of financial markets. That is, one might expect that a larger set of alternatives, markets plus financial intermediaries, would make individuals better off than intermediaries alone. One could use markets to achieve optimal cross-sectional risk sharing and use intermediaries for other forms of risk sharing. But this argument relies on a very broad \textit{ceteris paribus} assumption and overlooks the fact that many other things will be different in the two economies.

An illustration of the differences between the two financial systems in terms of their ability to smooth risk is provided by the experience of the 1970s and 1980s. In the U.S., the real value of the stock market approximately halved after the oil shock in the early 1970s and stayed at this level for the rest of the decade. Households that had provided for retirement by investing in the stock market and needed to liquidate shares in order to pay for consumption were forced to reduce their standard of living substantially. By contrast, in the 1980s the stock market approximately doubled in real value and the process was reversed; households whose savings were invested in the stock market were able to increase their consumption substantially. The important point is that these U.S. households bore substantial consumption risk over the two decades.

The U.S. experience can be contrasted with that of Germany over the same period. As stressed in Section 2, German households save for retirement and other purposes primarily in bank accounts and other debt-like instruments. Although Germany also experienced an oil shock, the value of these savings was not halved. German investors were able to consume the amount they had planned as banks drew on reserves to maintain payouts. In the 1980s there was a sustained boom in Germany as in the U.S. During this period the value of households' savings did not increase, since they were held in the form of fixed claims on the intermediaries. The intermediaries, however, were able to build up reserves. In contrast to the U.S. case, we could argue, households did not bear as much risk from their savings because of \textit{intertemporal smoothing} by intermediaries.
The theoretically interesting question is how this intertemporal smoothing is to be achieved. One possibility is that it arises from *intergenerational risk sharing*.\(^{13}\) An intermediary can provide insurance against swings in asset prices by averaging gains and losses over time. The market cannot provide this insurance because the different ‘generations’ in this story participate in the market at different points in time. This is an example of incomplete participation. In order for one generation to liquidate its holdings of assets, another generation must be willing to buy. The price at which this exchange takes place may introduce substantial consumption risk. Take the simplest case of interest rate risk. Overlapping generations are two-period lived and consist of a single representative agent who has an endowment when young and consumes only when old. There is a long-term asset in fixed supply and a short-term asset in variable supply, which we can represent as a storage technology. The return on the storage technology is known when an investment is made but is random before this. The effect of the random return on storage is to introduce random revaluations of the long-term asset. Without some institution to bridge the gap between successive generations, the market does not provide any mechanism for sharing these risks. Under certain circumstances, a long-lived intermediary, which owns all the assets and offers a deposit contract to each generation in exchange for its endowment, can make almost everyone better off by a uniform amount, that is, an *almost uniform Pareto improvement*.

Another means by which intermediaries can achieve intertemporal smoothing is *asset accumulation*. A formal model is provided by Allen and Gale (1994a). They contrast a market economy, in which individuals invest directly in a safe asset and a risky asset, with an intermediated economy in which a long-lived intermediary holds all the assets and offers deposit contracts to each generation. Because of the overlapping generations structure of the model, the price of the risky asset in the market economy is always low enough that its return dominates the safe asset, which is never held. As a result, each generation bears the full dividend risk on the risky asset. In the intermediated economy, on the other hand, intertemporal smoothing is provided to individual investors, who do better according to almost all welfare indicators, by accumulating reserves in the form of the safe asset. In fact, in a long-run-average sense, the intermediary can eliminate risk altogether. This is a form of intertemporal risk pooling, analogous to the risk pooling that markets perform when they allow investors to diversify risks across many assets. However, unlike the cross-sectional risk sharing allowed by markets, intertemporal risk pooling requires the accumulation of large reserves of the safe asset. It may seem odd that holding a dominated asset can improve welfare, but this is simply a

\(^{13}\) For a further discussion of the issues involved in intergenerational risk sharing, the reader is referred to Gale (1994) and the references cited there. A model of intermediation in which the risk sharing occurs sharing occurs between generations is provided by Qi (1994), who extends the Diamond–Dybvig model to an intertemporal setting.
reflection of the market's mispricing of the safe asset. The market does not value the asset's contribution to future generations' welfare through risk reduction. 14

The importance of this example is that it shows that financial markets and intermediaries are not simply veils thrown over a fixed set of assets. They actually determine, in conjunction with other factors, the set of assets accumulated by the agents in the economy. By adopting one or another set of institutions, the economy is placed on a different trajectory, with important implications for the aggregate risks to be shared.

At a theoretical level it seems that an intermediated financial system can achieve a higher level of welfare than a market-based system. Whether these insights can be applied usefully to a comparison of the U.S. and German financial systems depends on a number of practical considerations, which we briefly review here. First among them is the question of the objective that German intermediaries pursue in practice. This is, of course, an empirical issue. It can, however, be argued that German intermediaries are innately cautious, perhaps because of the regulations imposed by the Bundesbank. Another possibility is that asymmetric information makes it optimal for German banks to develop a reputation for financial stability. Whatever the reason, German banks are generally believed to hold high levels of hidden reserves which they draw down in bad times and build up in good ones. So even if their performance is less than optimal in the sense used here, it may nevertheless be a significant improvement over the market in terms of intertemporal risk smoothing.

It should also be noted that risk sharing of this kind always implies some form of arbitrage opportunity. So it will be easier to perform this feat in an economy which does not have active markets. Taking advantage of arbitrage opportunities is rational for the individual, but it undermines the insurance offered by the intermediary. This is why the U.S. financial system cannot provide intertemporal risk smoothing of the type described, although it provides a tremendous variety of financial instruments. Increased openness to competition may have a similar impact on the German system. This possibility has been highlighted by Allen and Gale (1994a). The intermediated system in their example allows almost everybody to be better off, but this is not the same as a Pareto improvement. In fact, the market equilibrium in the example is Pareto optimal. Some generations will be called upon to have a lower consumption in the intermediated solution than in the market solution in order to build up reserves. If output is high, some will be put aside for reserves, whereas in the market system the current generation would have been able to consume it. However, once the system is up and running and reserves

14 Fulghieri and Rovelli (1994) and Bhattacharya and Padilla (1994) also compare the performance of markets and intermediaries in achieving efficient intertemporal allocation of resources but they assume there is no aggregate uncertainty in consumption.
have been built up, subsequent generations are better off, provided reserves remain adequate.

The fact that some generations are made worse off raises the question of whether a value-maximizing intermediary would have an incentive to provide this kind of intertemporal smoothing. We shall have something to say on the subject of the intermediary’s objective function at the end of this section. For the moment, it is simply assumed that the German banks and intermediaries have already acquired the reserves and thus are able to provide a higher level of expected utility.

Another question is how we are to interpret the ‘generations’ in the story of intertemporal smoothing. Does it mean that the time period over which such smoothing must take place is extremely long? We would argue that problems of transaction costs, moral hazard and adverse selection limit the extent to which agents participate in many markets. For many households, the desire to purchase a house and provide an education for their children means that they do not start saving for retirement until fairly late in life. For both reasons, only a few ‘generations’ are active in financial markets at any particular time. This incompleteness of market participation limits the effectiveness of markets in alleviating risk.

Incomplete market participation may not be a problem when agents have a bequest motive that causes successive generations to act like a single infinitely-lived individual. However, since all the empirical literature we know suggests that bequest motives are either incomplete or absent, this remains a purely theoretical possibility.  

Given the systemic perspective that we stressed in the introduction, another important issue is the extent to which institutions such as governments can alleviate the effects of risk. They could, for example, provide intertemporal smoothing by investing in safe assets directly. However, in recent years, responding to the argument that the private sector is better able to make investment decisions, governments in a number of countries have reduced their direct investment and have privatised their existing holdings of assets. If there are government failures which limit the effectiveness of governments in investing directly, intermediaries may be able to smooth risk more effectively.

Other methods of alleviating risk available to the government are social security schemes and budget deficits. Pay-as-you-go social security schemes and budget deficits are concerned with reallocations at a given point in time. They are methods of sharing risks between and within generations; they do not achieve intertemporal smoothing through asset accumulation. Funded social security systems can provide intertemporal smoothing through asset accumulation, but only if the fund is invested in real assets rather than paper claims. The government may

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15 See Altonji et al. (1992) and the references cited therein.
play an important role in this respect if it is interested in the long-run welfare of its citizens. Similar considerations apply to occupational pension schemes provided by industrial groups or large employers.

3.3. Can superbanks achieve the best of both worlds?

An interesting issue is whether it is possible to have a financial system which simultaneously obtains the benefits of cross-sectional risk sharing and intertemporal risk smoothing. One problem has already been alluded to: there is a fundamental tension between intertemporal risk smoothing and the existence of financial markets. This suggests that if cross-sectional risk sharing and intertemporal risk smoothing are to be achieved simultaneously, it does not seem likely that this can be done by a combination of traditional bank accounts and financial markets. One possibility is to create a superbank, which offers a menu of bank accounts with different risk characteristics, combining the best features of both the market and traditional intermediaries.

One barrier to implementing superbanking is the problem of maintaining liquidity, without undermining intertemporal smoothing. One of the chief rationales for having a variety of products is that customers can use their private information (about risk preferences, liquidity needs and so forth) to construct tailor-made portfolios. Since new information is continually arriving, the customer will want to rearrange his affairs as time goes on. The only practicable means of allowing customers to make use of this information is to offer them the opportunity of reallocating their wealth among the different funds. But this threatens to wreck whatever intertemporal smoothing schemes the bank has managed to set up.

Another barrier comes from the difficulty of finding variables to which the returns of the various accounts could be indexed. Ideally, these variables should be observable, verifiable and non-manipulable. One possibility is to have the bank set up a mutual fund, the assets of which are owned by shareholders and held by a trustee, so that the returns to each investor's account are tied to the performance of the fund's portfolio. But once this is done, it effectively rules out the possibility of intertemporal risk smoothing. The depositors are the legal owners of the fund and the bank cannot infringe their ownership rights by making transfers into and out of the fund. On the other hand, if the deposits are invested in the general assets of the bank, it is not clear how the rate of return will be determined. Because the bank's assets are not marked-to-market, any measure that one might choose is manipulable. In fact, to the extent that intertemporal smoothing is offered by the bank, we want the return to be manipulable rather than being tied to an index that is beyond the bank's control. Deposit contracts do not suffer from this problem, because they either specify a fixed rate of return or allow the rate of return to be set at the discretion of the bank.

For all these reasons, it may be difficult to improve on the range of products that German banks offer without undermining the potential for intertemporal
smoothing. There is thus a trade-off in deciding on the structure of a financial system. If investors are fairly homogeneous there is little advantage to cross-sectional risk sharing and little cost to adopting the German model which allows intertemporal risk smoothing. On the other hand, if there is enough heterogeneity that the benefits from cross-sectional risk sharing outweigh the benefits from intertemporal risk smoothing, the U.S. model may be preferable.

3.4. Noise suppression

There is considerable evidence that U.S. stock prices are very volatile. The traditional explanation for this volatility is the arrival of new information about payoff streams and discount rates (see Fama, 1970; Merton, 1987). One of the differences between the German and U.S. financial systems described in Section 2 was the amount of information provided to the public. The large number of publicly listed firms in the U.S., together with extensive disclosure requirements, means that a great deal of information is released to the public. In Germany, however, relatively few companies are listed and disclosure requirements are limited, so very little information is available. In Section 4 the implications of the availability of information for the allocation of investment are discussed. The impact of information revelation on price volatility is also important, however. In a well-known paper Hirshleifer (1971) pointed out that the release of information could destroy valuable risk sharing opportunities. Allen (1983) and Laffont (1985) investigated this idea in the context of security markets and showed that more information could make everybody worse off because the added price volatility increases consumption variability. Jacklin and Bhattacharya (1988) showed that bank deposits can be more desirable than equity mutual funds for similar reasons. In comparing the German and U.S. models, the absence of information about firms in the German model may actually be desirable. Because of the reduction in price volatility, investors who have liquidity needs may be better off. In effect, the universal banking system allows noise suppression.

The question of whether information is the only major cause of asset price volatility has been hotly debated. Leroy and Porter (1981) and Shiller (1981) have provided evidence that there is excess volatility: asset prices are more volatile than changes in payoff streams and discount rates can account for. The econometric methods used in these original studies have been extensively criticized, but recent work which avoids these problems still finds there is excess volatility (see Campbell and Shiller, 1988a,b; West, 1988a,b; Leroy and Parke, 1992). A number of theories have been put forward to explain excess volatility. These include fads (Shiller, 1984; Summers, 1986), noise traders (DeLong et al., 1990), asymmetric information (Gennaioli and Leland, 1990; Allen and Gorton, 1993; Allen et al., 1993) and limited market participation (Allen and Gale, 1994b). To the extent that such excess volatility occurs and has negative implications for welfare, the noise suppression associated with the German financial system will be advantageous.
3.5. Provision of services

A striking difference between the two countries is the fact that Germany has many more bank branches per capita than the U.S. Care must be taken in interpreting this observation, since universal banks in Germany perform more services than commercial banks in the U.S. Nevertheless the difference in bank branches per capita is an impressive statistic. How can it be explained? Vives (1990) and others have pointed out that location models can explain branch proliferation. Chiappori et al. (1992) have developed a formal model of spatial competition among banks. Among other things, they show that regulation of deposit rates of the type undertaken in France and, prior to 1987, in Spain can lead to overbranching. Instead of competing by price, banks compete in terms of the level of services provided. They suggest that the oligopolistic nature of the German banking industry means their analysis is applicable there too. Schmid (1994) uses a Hotelling-type model to investigate differences in branching in Finland, Germany, Norway and Spain and finds that fewer branches would have been socially undesirable in the sense that the loss in consumers’ surplus would have outweighed the increase in bank profits.

Given the large number of banks that are operated in the public interest in Germany (not to mention the bureaucratic nature of large organizations everywhere) it is not obvious that the standard assumption of profit maximization is appropriate. Rather than think of the bank as a profit- or value-maximizing entity, an alternative is to think of it as a rent-seeking institution. Rents, such as informational rents, efficiency wages and so forth, are to all intents and purposes like other costs. They are part of the organizational structure of the institution; any other institution will be constrained to pay the same rents to its employees and managers. They are thus harder to eliminate than excess profits which can potentially be regulated or competed away. This again raises the question of the bank’s objective function; perhaps the management of the bank behaves like a ‘team’ that maximizes the aggregate rents its members earn. In any case, it behaves quite differently from a profit-maximizing firm. In particular, it has an incentive to increase services to its customers beyond what a profit-maximizing firm might choose. A large number of branches is one example. At one level, this represents a higher degree of convenience and service. At another level, it represents a stream of rents for the management ‘team’. Every branch needs a manager, who will be paid an efficiency wage which is higher than his transfer wage (the amount he could earn in his next most attractive occupation). Another bank even if it is privately owned cannot offer the same level of service without incurring the same costs, in the form of rents, as well as the more usual costs of buildings, labor, and so forth. The existence of a government-owned sector which seeks rents may therefore force the rest of the industry which is privately owned to follow suit.

The tendency of management to take its remuneration in the form of rents has a
number of implications. The shareholders' interests are clearly not going to be served. Likewise, the interests of the customers may not be served. To the extent that rents are generated by services provided to customers, there will be a tendency to expand the range of services provided beyond what customers would choose if they faced the true cost function. Customers benefit from good service, but welfare is lower because the cost is high. It does not follow that services are always maximized. There may be some services that do not generate large rents or generate insufficient rents relative to the effort required; management will not have an incentive to provide these services.

Of course, it may be argued that similar kinds of behavior could be explained by imperfectly competitive profit or value maximization. One example that seems to be inconsistent with profit or value maximization, is the tendency to favor the welfare of the institution over the interests of the current shareholders. For example, the accumulation of hidden reserves may be good both for the survival of the institution and the welfare of future generations of customers, but it may not be reflected in the market value of the intermediary and hence will not benefit current shareholders.

3.6. What do intermediaries maximize?

As we have seen in a variety of places, it is not easy to say what the objective function of an intermediary is or should be. Neoclassical economics tends to take a dichotomous view of the world according to which some organizations maximize a narrowly defined measure of corporate self-interest and others, such as the state or regulatory authorities, maximize some measure of the public welfare. Yet in practice there are many institutions, particularly financial institutions, for whom neither of these extremes seems particularly appropriate: there are savings banks, cooperative banks, mutual funds and mutual insurance companies, non-profit organizations and so forth. Even in cases where it may be possible to identify the organization’s motives as self interested, it is not clear how to define the objective function. It is well known that when markets are incomplete, there may be no unambiguous measure of profit or value to maximize. Also, there may be a variety of claimants whose needs have to be taken into account in making decisions: depositors, employees, borrowers, regulators, the ‘public interest’ and so on. In some circumstances, competition among banks may lead to profit maximization through the force of evolution. However, the lack of competition in many areas and the large number of banks that are operated in the public interest in Germany, suggest that even this defense of profit maximization may not be adequate.

In the discussion of risk sharing, we argued that intermediaries may be able to increase social welfare, for example, by providing intertemporal smoothing of returns which the market has no incentive to provide, but at the expense of certain ‘generations’ of depositors and shareholders. The traditional assumption of short-
term profit maximization suggests that intermediaries will not provide these services either. There are a number of reasons why intermediaries may act this way. First, the corporate culture of the management may cause management to have a lower discount rate than shareholders. This is not necessarily irrational. The desire to provide employment for its members into the indefinite future is a natural instinct of many managers. This desire to safeguard the future of the bank may lead the bank to consider the welfare of its future customers at the expense of its current shareholders. Second, regulators may impose on financial institutions a longer term horizon than management would have chosen on its own. Third, the bank may want to maintain a reputation for stability that requires it to act this way. This may be an implicit contract between the bank and the public or it may be part of a repeated-game equilibrium among a small number of oligopolistic banks.

Elsewhere we argued that it may be appropriate to view a bank as a rent seeking institution. The causes of rent-seeking behavior are not unique to financial institutions, but there are reasons for thinking that rent seeking may be more prevalent there than elsewhere in the economy. The lack of competition is a contributory factor. Also, the existence of rents may contribute to the solution of moral hazard problems which would otherwise undermine the bank’s reputation. The fact that the output of individuals within a bank is difficult to measure and that many of them have responsibility for making decisions that could cause heavy losses makes informational and other rents an important element of the organizational structure.

Even if individuals are rent seekers, it is not clear that the objective of the bank will be to maximize rents. However, one can imagine a corporate culture which leads to this outcome. This does not imply any irrationality on the part of senior managers. A repeated-game equilibrium may sustain this behavior within the institution, in the same way that trigger strategies support profit-maximizing collusion among oligopolists in an industry. For the usual reasons, there will be lots of other equilibria as well.

We stress these issues not because we have a fixed idea of how intermediaries' motives should be modeled, but rather because these modeling decisions have important implications. Given the complexity of financial institutions and the limitations of our knowledge, we want to keep an open mind on these issues.

4. The firm side

The previous section has focused on the household side of financial systems. The other important aspect is the allocation of resources to investment by firms. The form of a country's financial system can have an important impact on the types of investments firms undertake and the efficiency with which they are carried through.
4.1. Information

One of the main differences between financial systems is the way that information is generated and used. Different financial systems assign different roles to the price system in conveying information for the efficient use of resources. They also provide different incentives for investors and creditors to monitor firms. Each of these questions is considered in turn.

As stressed in Section 2, an important difference between the U.S. and Germany is the amount of information that is publicly available. In the U.S., the large number of firms that are publicly listed and the SEC requirements that they release extensive accounting reports mean that there is a great deal of information available. This has implications for the allocation of investment. The wide availability of information helps firms to make good investment decisions. Firms can also make better decisions about whether to enter an industry or not. This allocational role of the stock market has traditionally been viewed as one of its most important attributes.

In contrast to the U.S., few companies in Germany are publicly listed and those that are do not release much useful accounting information. As suggested in Section 3, this noise suppression can be advantageous, in that it may reduce the risk born by investors. On the other hand, it raises the issue of how investment is allocated. Without the price signals and other information available to U.S. firms, German firms would appear to be at a significant disadvantage in making investment and entry decisions. However, it can be argued that a German type of financial system, where a small number of large banks play a prominent role, may permit some substitute mechanisms. If banks have a large amount of information about the profitability of firms, they can use this information either directly by advising firms or indirectly when they decide whether or not to grant loans to finance investments. Although substitute mechanisms allow duplication of many functions of the market, there remain some apparent disadvantages to reliance on intermediaries. Most importantly, without an active stock market it may be difficult to decide on appropriate risk adjusted discount rates.

Because of the separation of ownership and control, monitoring managers is an important function of markets and intermediaries. How well each of these institutions performs its monitoring role is debatable. Diamond (1984) has proposed that an important role of banks is to act as delegated monitors. The shareholders of a firm need to check what the managers are doing, but when there are many shareholders it is not worthwhile for any individual shareholder to bear the costs of monitoring. Shareholders could hire a manager to do the monitoring for them but then that person would also need to be monitored. Diamond argues that this problem can be solved by the use of an intermediary. Suppose that a bank provides all the finance to a large number of firms. By diversifying across firms, the bank is able to eliminate risk and offer a fixed return to depositors. There is no need for depositors to monitor the bank, since they are promised a fixed return. The bank
cannot repay the rate promised to depositors without monitoring, so it will have an
incentive to monitor. And since each firm is only monitored once (by the bank),
monitoring costs are minimized.

As Edwards and Fischer (1994) document, it has been widely suggested that
this type of argument, based on the fixed costs of information acquisition, is
particularly applicable to Germany. The close relationships between German banks
and firms and the equity votes that German banks are able to exercise mean they
have the potential to be effective delegated monitors. However, Edwards and
Fischer argue that the evidence suggests that bank monitoring is of limited
importance. The three major banks and some of the other commercial banks do
appear to act in this way, but they constitute a relatively small part of the banking
system.

The question of whether banks and other intermediaries act as effective
monitors in Germany is not yet settled. There are few formal tests of this
hypothesis. The results of Cable (1985) provide limited support and those of
Gorton and Schmid (1994) provide more extensive support that bank involvement
improves corporate performance. It is clear that more empirical work on this
question is highly desirable, given the importance of the welfare issues involved.

4.2. Financing

A number of papers have suggested that firms have a strong preference for
internal finance. Using aggregate data, Mayer (1988, 1990) has provided evidence
which suggests that in Germany and the U.S., as well as in other countries, most
investment is financed with internally generated funds. Table 5 shows that, at least
in the U.S., the disaggregated data based on companies’ balance sheets provides a
somewhat different perspective. Large firms do predominantly use internal fi-
nance. However, smaller firms, which may have the greatest potential for growth,
use a significant amount of external finance; their internal funds are not sufficient
for their needs. The transactions costs of internal funds are significantly lower than
the transactions costs of external funds. Table 6 shows the costs of issuing equity,
preferred stock and convertibles and bonds. 16 These costs are significant for all
firms but are particularly high for small firms. Myers (1984) and Myers and
Majluf (1984) have provided theories based on asymmetric information which also
suggest that internal funds are likely to be preferred to external sources of funds.

These observations suggest that neither markets nor intermediaries may be
playing an effective role in allocating resources for investment in the economy. If
external sources of funds, either markets or intermediaries, are very costly because
of transaction costs and asymmetric information, firms will prefer to rely on
internally generated funds. However, there is no reason to think that each firm will

Table 5
Sources of financing in the U.S. for 1988

<table>
<thead>
<tr>
<th>Decile</th>
<th>Ret. earn.</th>
<th>Debt</th>
<th>Equity</th>
<th>Other</th>
<th>Depr.</th>
<th>Avg. assets</th>
</tr>
</thead>
<tbody>
<tr>
<td>All</td>
<td>0.9819</td>
<td>0.4364</td>
<td>-0.1200</td>
<td>-0.2238</td>
<td>0.5918</td>
<td>1971</td>
</tr>
<tr>
<td>1</td>
<td>-0.0596</td>
<td>0.3577</td>
<td>0.5946</td>
<td>0.1056</td>
<td>0.3819</td>
<td>11</td>
</tr>
<tr>
<td>2</td>
<td>0.3834</td>
<td>0.6951</td>
<td>0.2700</td>
<td>-0.3449</td>
<td>0.6929</td>
<td>35</td>
</tr>
<tr>
<td>3</td>
<td>0.3341</td>
<td>0.4564</td>
<td>0.3219</td>
<td>-0.1126</td>
<td>0.3379</td>
<td>67</td>
</tr>
<tr>
<td>4</td>
<td>0.6368</td>
<td>0.4296</td>
<td>0.1201</td>
<td>-0.1864</td>
<td>0.4473</td>
<td>116</td>
</tr>
<tr>
<td>5</td>
<td>0.4727</td>
<td>0.5104</td>
<td>0.0343</td>
<td>-0.0153</td>
<td>0.5336</td>
<td>190</td>
</tr>
<tr>
<td>6</td>
<td>0.5194</td>
<td>0.5508</td>
<td>0.0415</td>
<td>-0.1108</td>
<td>0.4230</td>
<td>307</td>
</tr>
<tr>
<td>7</td>
<td>0.5481</td>
<td>0.4516</td>
<td>-0.0772</td>
<td>0.0806</td>
<td>0.4578</td>
<td>547</td>
</tr>
<tr>
<td>8</td>
<td>0.7353</td>
<td>0.2061</td>
<td>-0.0715</td>
<td>0.1392</td>
<td>0.4824</td>
<td>1069</td>
</tr>
<tr>
<td>9</td>
<td>0.8399</td>
<td>0.3117</td>
<td>-0.1326</td>
<td>-0.0138</td>
<td>0.4727</td>
<td>2467</td>
</tr>
<tr>
<td>10</td>
<td>10.0076</td>
<td>0.4832</td>
<td>-0.1407</td>
<td>-0.3503</td>
<td>0.6489</td>
<td>15758</td>
</tr>
</tbody>
</table>

Sources are written as a proportion of net real investment (net capital expenditures + acquisitions). Retained earnings is operating cash flow-dividends, debt is net cash from debt, equity is net new equity including preferred, other is mainly cash and short-term securities. Firms are sorted into deciles based on 1987’s book value of assets. Individual accounts are aggregated over the entire decile and then normalized by total investment for that decile. All data is from the Compustat industrial tape. Not included in the sample are firms missing a data item, firms incorporated outside the U.S., limited partnerships, banks, utilities, and insurance companies. The total number of firms is 1,677.

generate precisely the amount of funds that it requires in order to finance the first-best level of investment. Typically, some firms will generate more funds than they can invest while others will lack the resources they need. If the external

Table 6
Underwriting spread and issuance expenses as percentage of offering price for U.S. registered public offerings, 1973–1989

<table>
<thead>
<tr>
<th>Issue size (millions of dollars)</th>
<th>Common stock Total (%)</th>
<th>Preferred stock Total (%)</th>
<th>Convertible preferred and convertible debt Total (%)</th>
<th>Bonds Total (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Under 10.0</td>
<td>14.84</td>
<td>11.48</td>
<td>11.91</td>
<td>6.18</td>
</tr>
<tr>
<td>10.0 to 24.9</td>
<td>8.60</td>
<td>6.77</td>
<td>5.93</td>
<td>2.45</td>
</tr>
<tr>
<td>25.0 to 49.9</td>
<td>6.88</td>
<td>3.45</td>
<td>3.79</td>
<td>2.76</td>
</tr>
<tr>
<td>50.0 to 99.9</td>
<td>6.01</td>
<td>2.26</td>
<td>3.06</td>
<td>1.74</td>
</tr>
<tr>
<td>100.0 to 199.9</td>
<td>5.31</td>
<td>2.96</td>
<td>2.47</td>
<td>1.26</td>
</tr>
<tr>
<td>200.0 to 500</td>
<td>5.04</td>
<td>3.45</td>
<td>2.29</td>
<td>1.19</td>
</tr>
<tr>
<td>Over 500</td>
<td>6.10</td>
<td>3.80</td>
<td>2.98</td>
<td>1.94</td>
</tr>
<tr>
<td>Average</td>
<td>7.54</td>
<td>4.88</td>
<td>4.63</td>
<td>2.50</td>
</tr>
</tbody>
</table>

channel for allocating investment funds is too expensive, there may be an alternative efficiency gain from mergers and acquisitions. Rather than returning excess internally generated funds to the market or to intermediaries, firms will have an incentive to merge. In effect, the mergers and acquisitions channel constitutes an informal *market for internal funds*.

In a world of incomplete information this may be the best way to ensure an efficient allocation of resources: ‘cash cows’ take over ‘growth prospects’ and provide them with the necessary funds for their investments. The fixed costs of information are only expensed once (by the acquiring firm) and significant transaction costs are avoided. This provides a different rationale for mergers and acquisitions from the standard one. The raider in this scenario is not disciplining poor management, but rather providing finance to a growing company. There is a potential cost, however. Since takeovers typically change management, this method of providing finance may substitute a less effective management for the management that originally created the ‘growth prospect’. For this reason, once the benefits of the infusion of finance have been realized, there may good reason to reverse the process and ‘spin off’ the acquired company.

Dewatripont and Maskin (1990) have argued that a German style system can be associated with ‘centralized’ financing and that a U.S. style system can be associated with ‘decentralized’ financing. They argue that each has advantages and disadvantages. Consider a ‘bad’ project which requires investments at two dates and suppose that it is unprofitable when viewed from an ex ante perspective. Once the initial cost has been sunk it may be optimal to continue it, because the present value of the final payoff exceeds the interim cost. Next suppose that there are also ‘good’ projects which are ex ante profitable. The proportion of good and bad projects are such that they are all worth doing on average. Entrepreneurs know the types of their projects, but lenders do not. With a centralized system, all projects will be undertaken and completed because lenders will not identify project quality until the intermediate stage and they are all worth continuing. Dewatripont and Maskin suggest decentralized systems have the advantage that they effectively allow lenders to precommit not to refinance bad projects at the interim date. As a result, entrepreneurs will not undertake them and so only good projects are financed. The reason decentralization allows precommitment is that new lenders must be brought in. The original lenders are assumed to have acquired soft information which cannot be transferred easily and which is needed for profitably continuing the project. In order for the new lenders to obtain the cooperation of the old lenders they must share informational rents with the old lenders; but this makes continuation of bad projects unprofitable. In another scenario, however, it is shown that decentralization may prevent the continuation of good projects which have low interim payoffs but high final payoffs. The reason is that they will be pooled with bad projects which have low payoffs at both dates. Dewatripont and Maskin’s theory thus provides an interesting contrast between the differing long- and short-term incentives provided by the German and U.S. financial systems.
4.3. The market for corporate control

Manne (1965) has argued that an important aspect of U.S.-style economies is the ability of different management teams to compete for the control of assets. In principle, the process of takeovers and acquisitions allows the most able teams to gain control of assets and to make investment decisions. In addition, it provides a mechanism for disciplining managements that squander the resources of their companies.

A large number of studies have indicated that takeovers in the 1970s and 1980s increased shareholder wealth substantially. Jensen (1993) gives the total increase in value of target firms from 1976–80 as $750 billion. There has been an extensive debate as to what caused this increase in value. A number of studies using accounting data, such as Ravenscraft and Scherer (1987) and Herman and Lowenstein (1988), have found little evidence that operating performance improves after mergers. Other studies such as Healy et al. (1992) do find some increases in asset productivities after mergers. Kaplan (1989) has found evidence of improved operating performance after management buyouts.

An alternative view of the market for corporate control has been provided by Mayer (1988) and Shleifer and Summers (1988). They have stressed that intermediated systems allow implicit contracts and long-term relationships to be formed more easily than when hostile takeovers are possible. When contracting possibilities are incomplete, implicit contracts and long-term relationships may allow significant ex ante gains to be made. For example, workers and suppliers may be willing to acquire firm specific skills and capital, whereas without an implicit contract or long-term relationship they would not be willing to do so. Ex post a firm may be required to make payments to fulfill its obligations even though it is not legally required to. Banks are likely to encourage this type of arrangement ex ante in order to be able to share in the gains. Ex post, a desire to maintain their reputation will ensure the banks do not pressure firms to break their implicit contracts. 17

In contrast, for a firm that is listed on a stock exchange, there is an incentive for somebody to take it over and cease making the payments required under the implicit contract. Shleifer and Summers (1988) have suggested that the increase in stock value observed in the empirical studies of takeovers mentioned above could be due to wealth transfers from employees, suppliers and others but there appears to be little empirical evidence that this is the case. 18

In Germany, an active market for corporate control does not exist. This is

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17 An important question, of course, is why banks and firms should be different in this respect. It may be that banks are less subject to takeover and hence to sudden changes in management. Also, banks may have a longer time horizon. Banks are less likely than firms to experience sudden shocks that increase their costs or reduce the market or reduce the market for their services.

18 See, for example, Asquith and Wizman (1990), Pontiff et al. (1990) and Rosett (1990).
perhaps not surprising given the concentrated ownership of many firms and the fact that relatively few German firms are publicly listed and the information is sparse for those that are. Based on case studies of the few hostile takeovers that have occurred in Germany, Franks and Mayer (1993) argue that concentration of ownership is the single most important factor that makes it difficult for outsiders to obtain control and prevents a proper market from developing.

Without an active market for corporate control, German firms would at first sight appear to be at a disadvantage because of the absence of a mechanism for removing incompetent management. However, it has been argued by Franks and Mayer (1992), Jenkinson and Mayer (1993), Kester (1993a,b), Schneider-Lenné (1993) and others, that a German type of financial system permits substitute mechanisms. One important factor is concentrated shareholdings since this provides incentives for shareholders to monitor. Franks and Mayer (1992) found that in the largest 200 companies in Germany, 90 percent have at least one shareholder with a share of 25 percent or more of the equity. While concentrated ownership may overcome the free-rider problem, by giving owners adequate incentives to monitor, it remains to be seen whether their monitoring is effective. In particular, there may be gains from having many monitors in cases where there is diversity of opinion, as we discuss below.

Another factor is the ability of German banks to appoint directors to a large number of firms. This means they are in a position to influence the appointment of management teams, although Edwards and Fischer (1994) discount the influence of banks on supervisory boards. However, given the banks' extensive inside knowledge of other firms, it seems likely their views are weighed heavily in board discussions. They will have substantial power to remove or otherwise discipline ineffective managers. Kaplan (1994) has found that poor stock returns and earnings increase the likelihood of top management turnover in Germany by about the same amount as in the U.S. This could be explained by the monitoring of banks or concentrated ownership.

The operation of the market for corporate control and the substitute mechanisms for disciplining firms that exist in Germany are complex. Edwards and Fischer (1994) suggest that the existing evidence for the superiority of either system is not overwhelming. Empirical comparisons of actual systems are inherently difficult and care must be taken not to draw simplistic conclusions about complicated phenomena on the basis of limited data. In particular, it seems that little can be learned about the influence of financial systems from the casual analysis of aggregate data. Flow of funds data may be dominated by one class of firms. Also, the cancellation of offsetting flows that occurs when flow-of-funds data are aggregated discards a large amount of information. Similarly, an analysis of shareholdings or loan sizes tells us relatively little about the incentives of intermediaries or markets to monitor firms or whether they are actually performing this task effectively. We can only repeat the common refrain that much remains to be done.
4.4. Diversity of opinion

A standard assumption of traditional economic analysis is that production technologies are well known and managers are aware of the consequences of the actions they take. In traditional industries, such as agriculture, this is a reasonable assumption. In many modern, high-technology industries, it is not. An example would be the biotechnology industry, where there is very little experience of the consequences of different managerial strategies.

Allen (1993) argues that bank-based systems, such as that of Germany, are much more suited to traditional industries, where there is consensus about policies, and financial-market-based systems are more suited to dynamic industries where wide agreement is lacking. Stock markets provide an incentive for a wide range of people to undertake research and to check managerial actions. Some investors keep their information and views private. They buy and sell shares on the basis of this information and the profits they make compensate them for the expenses incurred in undertaking the research. Grossman and Stiglitz (1980) have shown how this information can be reflected in the firm’s stock price. Firms that adopt managerial policies that are widely regarded to be good have a high stock price on average; firms which adopt policies that are thought to be bad have a low stock price on average. In addition to investors who keep their information to themselves and trade on the basis of it, there are also people who do research that is published in newsletters and distributed to clients in various other ways. This process encourages debate about how firms should be run. In general, the diversity of views and the process of debate can play an important role in checking the actions of managers. Even in industries where there are few firms and little previous experience to go on, this checking process leads to consensus strategies being favored and helps to reduce risk.

In contrast, when banks are responsible for monitoring firms, there is no equivalent to this broad-based checking process. The bank officers overseeing the loan will check what the firm managers are doing. When there is a well established consensus concerning how the firm in question needs to be run, monitoring by a limited number of bank officers may be adequate. In other cases, where new departures are being made, monitoring by a limited number of outsiders may not be an adequate review of the activities of the firm’s management. In the absence of disclosure associated with U.S.-style stock markets, there is no public debate as to the appropriateness of various managerial strategies. In these circumstances, intermediaries may be a poor substitute for the market.

5. Concluding remarks

A welfare comparison of financial systems in Germany and the U.S. is a complex exercise. Which type of system is desirable depends on a wide range of
factors both on the household and on the firm side. As a country's circumstances change, it may be optimal for it to change its financial system. In discussing the recent financial deregulation in France, Melitz (1990, p. 397) remarks as follows.

"As one contemplates the panoply of measures that took effect in France from late 1984 to the end of 1986, there is no doubt that the changes were inspired by a general vision. This was no mere lifting of controls: new instruments were created; new markets were added, including markets in futures; and the importance of permitting every individual agent to hedge his risks was clearly recognized. The whole program smacks of a close acquaintance with the principles of the theory of finance."

In undertaking its reforms France may well gain some of the advantages associated with the U.S. financial system that were discussed above. In particular, the quotation stresses the cross-sectional risk sharing advantages. What is not entirely clear is that these benefits outweigh some of the losses associated with the change. One example is the loss of opportunities for intertemporal smoothing of returns, because the introduction of financial markets provides arbitrage opportunities which will undermine insurance arrangements implicit in the old system. But there are many other factors to be considered.

The principles of the traditional theory of finance that Melitz refers to apply to a perfect world with complete markets. In an imperfect world, with transaction costs and incentive problems of all sorts, it is much less clear that financial markets offer a panacea. On the other hand, intermediaries are beset by their own agency problems and perhaps the most serious is the X-inefficiency or rent-seeking behavior that leads many to believe that German financial institutions are simply inefficient.

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