

# Comparative Financial Systems: A Survey

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# 1 What is a Financial System?

The purpose of a financial system is to channel funds from agents with surpluses to agents with deficits. In the traditional literature there have been two approaches to analyzing this process. The first is to consider how agents interact through financial markets. The second looks at the operation of financial intermediaries such as banks and insurance companies. Fifty years ago, the financial system could be neatly bifurcated in this way. Rich households and large firms used the equity and bond markets, while less wealthy households and medium and small firms used banks, insurance companies and other financial institutions. Table 1, for example, shows the ownership of corporate equities in 1950. Households owned over 90 percent. By 2000 it can be seen that the situation had changed dramatically. By then households held less than 40 percent, nonbank intermediaries, primarily pension funds and mutual funds, held over 40 percent. This change illustrates why it is no longer possible to consider the role of financial markets and financial institutions separately. Rather than intermediating directly between households and firms, financial institutions have increasingly come to intermediate between households and markets, on the one hand, and between firms and markets, on the other. This makes it necessary to consider the financial system as an irreducible whole.

The notion that a financial system transfers resources between households and firms is, of course, a simplification. Governments usually play a significant role in the financial system. They are major borrowers, particularly during times of war, recession, or when large infrastructure projects are being undertaken. They sometimes also save significant amounts of funds. For example, when countries such as Norway and many Middle Eastern States have access to large amounts of natural resources (oil), the government may acquire large trust funds on behalf of the population.

In addition to their roles as borrowers or savers, governments usually play a number of other important roles. Central banks typically issue fiat money and are extensively involved in the payments system. Financial systems with unregulated markets and intermediaries, such as the US in the late nineteenth century, often experience financial crises (Gorton (1988) and Calomiris and Gorton (1991)). The desire to eliminate these crises led many governments to intervene in a significant way in the financial system. Central banks or some other regulatory authority are charged with regulating the banking system and other intermediaries, such as insurance companies. So in most

countries governments play an important role in the operation of financial systems. This intervention means that the political system, which determines the government and its policies, is also relevant for the financial system.

There are some historical instances where financial markets and institutions have operated in the absence of a well-defined legal system, relying instead on reputation and other implicit mechanisms. However, in most financial systems the law plays an important role. It determines what kinds of contracts are feasible, what kinds of governance mechanisms can be used for corporations, the restrictions that can be placed on securities and so forth. Hence, the legal system is an important component of a financial system.

A financial system is much more than all of this, however. An important pre-requisite of the ability to write contracts and enforce rights of various kinds is a system of accounting. In addition to allowing contracts to be written, an accounting system allows investors to value a company more easily and to assess how much it would be prudent to lend to it. Accounting information is only one type of information (albeit the most important) required by financial systems. The incentives to generate and disseminate information are crucial features of a financial system.

Without significant amounts of human capital it will not be possible for any of these components of a financial system to operate effectively. Well-trained lawyers, accountants and financial professionals such as bankers are crucial for an effective financial system, as the experience of Eastern Europe demonstrates.

The literature on comparative financial systems is at an early stage. Our survey builds on previous overviews by Allen (1993), Allen and Gale (1995) and Thakor (1996). These overviews have focused on two sets of issues.

1. Normative: How effective are different types of financial system at various functions?

2. Positive: What drives the evolution of the financial system?

The first set of issues is considered in Sections 2-6, which focus on issues of investment and saving, growth, risk sharing, information provision and corporate governance, respectively. Section 7 considers the influence of law and politics on the financial system while Section 8 looks at the role financial crises have had in shaping the financial system. Section 9 contains concluding remarks.

## 2 Investment and Saving

One of the primary purposes of the financial system is to allow savings to be invested in firms. In a series of important papers, Mayer (1988, 1990) documents how firms obtained funds and financed investment in a number of different countries. Table 2 shows the results from the most recent set of studies, based on data from 1970-1989, using Mayer's methodology. The figures use data obtained from sources-and-uses-of-funds statements. For France, the data are from Bertero (1994), while for the US, UK, Japan and Germany they are from Corbett and Jenkinson (1996). It can be seen that internal finance is by far the most important source of funds in all countries. Bank finance is moderately important in most countries and particularly important in Japan and France. Bond finance is only important in the US and equity finance is either unimportant or negative (i.e., shares are being repurchased in aggregate) in all countries. Mayer's studies and those using his methodology have had an important impact because they have raised the question of how important financial markets are in terms of providing funds for investment. It seems that, at least in the aggregate, equity markets are unimportant while bond markets are important only in the US. These findings contrast strongly with the emphasis on equity and bond markets in the traditional finance literature. Bank finance is important in all countries, but not as important as internal finance.

Another perspective on how the financial system operates is obtained by looking at savings and the holding of financial assets. Table 3 shows the relative importance of banks and markets in the US, UK, Japan, France and Germany. It can be seen that the US is at one extreme and Germany at the other. In the US, banks are relatively unimportant: the ratio of assets to GDP is only 53%, about a third the German ratio of 152%. On the other hand, the US ratio of equity market capitalization to GDP is 82%, three times the German ratio of 24%. Japan and the UK are interesting intermediate cases where banks and markets are both important. In France, banks are important and markets less so. The US and UK are often referred to as market-based systems while Germany, Japan and France are often referred to as bank-based systems. Table 4 shows the total portfolio allocation of assets ultimately owned by the household sector. In the US and UK, equity is a much more important component of household assets than in Japan, Germany and France. For cash and cash equivalents (which includes bank accounts), the reverse is true.

Tables 3 and 4 provide an interesting contrast to Table 2. One would expect that, in the long run, household portfolios would reflect the financing patterns of firms. Since internal finance accrues to equity holders, one might expect that equity would be much more important in Japan, France and Germany. There are, of course, differences in the data sets underlying the different tables. For example, household portfolios consist of financial assets and exclude privately held firms, whereas the sources-and-uses-of-funds data include all firms. Nevertheless, it seems unlikely that these differences could cause such huge discrepancies. It is puzzling that these different ways of viewing the financial system produce such radically different results.<sup>1</sup>

Another puzzle concerning internal versus external finance is the difference between the developed world and emerging countries. Although it is true for the US, UK, Japan, France, Germany and for most other developed countries that internal finance dominates external finance, this is not the case for emerging countries. Singh and Hamid (1992) and Singh (1995) show that, for a range of emerging economies, external finance is more important than internal finance. Moreover, equity is the most important financing instrument and dominates debt. This difference between the industrialized nations and the emerging countries has so far received little attention.

There is a large theoretical literature on the operation of and rationale for internal capital markets. Internal capital markets differ from external capital markets because of asymmetric information, investment incentives, asset specificity, control rights, transaction costs or incomplete markets (see, for example, Williamson (1975), Grossman and Hart (1986), Gertner, Scharfstein and Stein (1994), Stein (1997) and Allen and Gale (2000a, Chapters 11 and 12)). There has also been considerable debate on the relationship between liquidity and investment (see, for example, Fazzari, Hubbard and Petersen (1988), Hoshi, Kashyap and Scharfstein (1991), Whited (1992), Kaplan and Zingales (1997), Lamont (1997) and Shin and Stulz (1998)).

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<sup>1</sup>There is no widely accepted resolution to this puzzle. However, Hackethal and Schmidt (1999) argue that it results from an apparently innocuous assumption in the methodology used in the studies based on sources and uses of funds. This is that the proceeds from new bank finance are first used to repay old loans and then are used for funding investment. It is similar for other sources of funds such as bonds and equity. The only exception is internal finance where there is nothing to be repaid. This distorts the measurement of the sources of finance toward internal finance and makes it seem more important than it is. When they correct for this distortion they find figures more in line with the portfolio data here.

Internal capital markets are an extreme case in which the allocation of resources is achieved entirely within the firm. The other extreme is arm's length (external) finance. An intermediate case is a long-term relationship finance, say, between a firm and an investment bank. Much of the debate on comparative financial systems has associated arm's length finance with market-based systems like the US and UK and relationship finance with bank-based systems like Japan, France and Germany. The extensive use of the main bank system in Japan and the hausbank system in Germany means that long-lived relationships between large firms and banks are commonplace. In the US, large firms have much more limited long-term relationships with banks. There is a growing literature that analyzes the advantages and disadvantages of relationships in banking (for theoretical analyses see Diamond (1991), Boot, Greenbaum and Thakor (1993), von Thadden (1995), Yosha (1995), Dinç (1996) and Aoki and Dinç (1997) and for empirical analyses see Berger and Udell (1992), Petersen and Rajan (1994; 1995), Berlin and Mester (1997; 1998) and Elsas and Krahn (1998), Boot and Thakor (2000)).

It is often argued that long-term relationships promote cooperative behavior. Stiglitz and Weiss (1983) have argued, in the context of credit markets with incomplete information, that inefficiencies associated with adverse selection and moral hazard are mitigated if lenders can threaten borrowers with punishment in the event of default or poor performance. For example, a firm that defaults on a bank loan may be refused credit in the future. However, such arguments are undermined by the possibility of renegotiation.

In analyzing the optimal use of threats, it is assumed that the lender can commit itself to a particular course of action in advance. From a purely economic perspective, the assumption of commitment is problematical. Although it is optimal to threaten to terminate the availability of credit in advance, once the borrower has defaulted, the first loan becomes a "sunk cost". As such, it should not affect future decisions. If the firm has another project which offers positive net present value, there exists an incentive-compatible contract that finances the project and makes the borrower and the lender both better off. In that case it would be irrational not to take advantage of this opportunity. Thus, we should expect that the lender will continue to extend credit, even if the borrower defaults.

Renegotiation thus creates a time-consistency problem. The threat to terminate credit creates good incentives for the borrower to avoid the risk of default. Termination of credit is not Pareto-efficient *ex post*, but the incentive effect makes both parties better off. However, if the borrower anticipates

that the lender will not carry out the threat in practice, the incentive effect disappears. Although the lender's behavior is now ex post optimal, both parties may be worse off ex ante.

The time inconsistency of commitments that are optimal ex ante and sub-optimal ex post is typical in contracting problems. The contract commits one to certain courses of action in order to influence the behavior of the other party. Then once that party's behavior has been determined, the benefit of the commitment disappears and there is now an incentive to depart from it. Whatever agreements have been entered into are subject to revision because both parties can typically be made better off by "renegotiating" the original agreement. The possibility of renegotiation puts additional restrictions on the kind of contract or agreement that is feasible (we are referring here to the contract or agreement as executed, rather than the contract as originally written or conceived) and, to that extent, tends to reduce the welfare of both parties ex ante. Anything that gives the parties a greater power to commit themselves to the terms of the contract will, conversely, be welfare-enhancing.

Dewatripont and Maskin (1995) (included as a chapter in this section) have suggested that financial markets have an advantage over financial intermediaries in maintaining commitments to refuse further funding. If the firm obtains its funding from the bond market, then, in the event that it needs additional investment, it will have to go back to the bond market. Because the bonds are widely held, however, the firm will find it difficult to renegotiate with the bond holders. Apart from the transaction costs involved in negotiating with a large number of bond holders, there is a free-rider problem. Each bond holder would like to maintain his original claim over the returns to the project, while allowing the others to renegotiate their claims in order to finance the additional investment. The free-rider problem, which is often thought of as the curse of cooperative enterprises, turns out to be a virtue in disguise when it comes to maintaining commitments.

From a theoretical point of view, there are many ways of maintaining a commitment. Financial institutions may develop a valuable reputation for maintaining commitments. In any one case, it is worth incurring the small cost of a sub-optimal action in order to maintain the value of the reputation. Incomplete information about the borrower's type may lead to a similar outcome. If default causes the institution to change its beliefs about the defaulter's type, then it may be optimal to refuse to deal with a firm after it has defaulted. Institutional strategies such as delegating decisions to agents who are given no discretion to renegotiate may also be an effective

commitment device.

Several authors (Huberman and Kahn (1988), Hart and Moore (1988), Gale (1991) and Allen and Gale (2000a, Chapter 10)) have argued that, under certain circumstances, renegotiation is welfare-improving. In that case, the Dewatripont-Maskin argument is turned on its head. Intermediaries that establish long-term relationships with clients may have an advantage over financial markets precisely because it is easier for them to renegotiate contracts.

The crucial assumption is that contracts are incomplete. Because of the high transaction costs of writing complete contracts, some potentially Pareto-improving contingencies are left out of contracts and securities. This incompleteness of contracts may make renegotiation desirable. The missing contingencies can be replaced by contract adjustments that are negotiated by the parties *ex post*, after they observe the realization of variables on which the contingencies would have been based. The incomplete contract determines the status quo for the *ex post* bargaining game (i.e., renegotiation) that determines the final outcome.

An important question in this whole area is “How important are these relationships empirically?” Here there does not seem to be a lot of evidence. As far as the importance of renegotiation in the sense of Dewatripont and Maskin (1995), the work of Asquith, Gertner and Scharfstein (1994) suggests that little renegotiation occurs in the case of financially distressed firms. Conventional wisdom holds that banks are so well secured that they can and do “pull the plug” as soon as a borrower becomes distressed, leaving the unsecured creditors and other claimants holding the bag.

Petersen and Rajan (1994) suggest that firms that have a longer relationship with a bank do have greater access to credit, controlling for a number of features of the borrowers’ history. It is not clear from their work exactly what lies behind the value of the relationship. For example, the increased access to credit could be an incentive device or it could be the result of greater information or the relationship itself could make the borrower more credit worthy. Berger and Udell (1992) find that banks smooth loan rates in response to interest rate shocks. Petersen and Rajan (1995) and Berlin and Mester (1997) find that smoothing occurs as a firm’s credit risk changes. Berlin and Mester (1998) find that loan rate smoothing is associated with lower bank profits. They argue that this suggests the smoothing does not arise as part of an optimal relationship.

This section has pointed to a number of issues for future research.

- What is the relationship between the sources of funds for investment, as revealed by Mayer (1988, 1990), and the portfolio choices of investors and institutions? The answer to this question may shed some light on the relative importance of external and internal finance.
- Why are financing patterns so different in developing and developed economies?
- What is the empirical importance of long-term relationships? Is renegotiation important is it a good thing or a bad thing?
- Do long-term relationships constitute an important advantage of bank-based systems over market-based systems?

### 3 Growth and financial structure

The relationship between the growth rate of an economy and its financial structure is a long-debated issue. On the one hand, Bagehot (1873) and Hicks (1969) argue that the UK's financial system played an important role in the Industrial Revolution. On the other hand, Robinson (1952) suggests that the causation goes the other way and that the financial system developed as a result of economic growth. In his survey of development economics, Stern (1989) does not even mention finance (not even under 'omitted topics'). Levine (1997) provides an excellent overview of the literature on economic growth and financial development.

In a pioneering study using cross-country data, Goldsmith (1969) found a relationship between growth and financial development. However, his study was based on limited data and did not control in a satisfactory way for other factors affecting growth. In a series of studies King and Levine (1993a, b, c) consider data for 80 countries over the period 1960-1989 and carefully control for other factors affecting growth. They find a strong relationship between growth and financial development and also find evidence that the level of financial development is a good predictor of future economic growth. In an innovative study Rajan and Zingales (1998) use data from the US to find which industries rely on external finance and investigate whether these industries grow faster in countries with better developed financial systems. They find a positive correlation between growth rates and financial development, suggesting that finance is important for growth. Demirgüç-Kunt and

Maksimovic (1996) consider firm-level data from 30 countries and argue that access to stock markets leads to faster growth. In an influential contribution, McKinnon (1973) did case studies of Argentina, Brazil, Chile, Germany, Korea, Indonesia and Taiwan in the period after the Second World War. His conclusion from these cases is that better financial systems support faster economic growth. Taken together these studies provide considerable support for a relationship between finance and growth.

A large number of theoretical studies consider the growth-finance relationship. Hicks (1969) and Bencivenga, Smith and Starr (1995) argue that the liquidity provided by capital markets was key in allowing growth in the UK Industrial Revolution. Many of the products produced early in the Industrial Revolution had been invented some time before but lack of long-term finance delayed their manufacture. Liquid capital markets allowed the projects to be financed by savers with short time horizons and/or uncertain liquidity needs. Similarly, Bencivenga and Smith (1991) argue that intermediaries may be able to enhance liquidity, while at the same time funding long-lived projects. Greenwood and Jovanovic (1990) point out that intermediaries that can effectively process information about entrepreneurs and projects can induce a higher rate of growth. King and Levine (1993c) suggest that intermediaries can also do a better job of choosing innovations. Another avenue for increasing growth is the higher expected returns that can be achieved if risk is reduced through diversification (Saint-Paul (1982)). Boyd and Smith (1996, 1998) suggest that banks are important at low levels of development while markets become more important as income rises. Rajan and Zingales (1999) suggest that banks are less dependent than markets on legal system. Hence, banks can do better when the legal system is weak and markets do better when the legal system is more developed.

Another important element of the debate concerns the relative contributions of banks and financial markets in spurring growth. This debate was originally conducted in the context of German and UK growth in the late nineteenth and early twentieth centuries. Gerschenkron (1962) argues that the bank-based system in Germany allowed a closer relationship between bankers providing the finance and industrial firms than was possible in the market-based system in the UK. Goldsmith (1969) pointed out that although manufacturing industry grew much faster in Germany than the UK in the late nineteenth and early twentieth centuries the overall growth rates were fairly similar. More recently Levine (2000) uses a broad data base covering 48 countries over the period 1980-1995. He finds that the distinction

between bank-based and market-based systems is not an interesting one for explaining the finance-growth nexus. Rather, elements of a country's legal environment and the quality of its financial services are most important for fostering general economic growth. In contrast, in a study of 36 countries from 1980-1995 Tadesse (2000) does find a difference between bank-based and market-based financial systems. For underdeveloped financial sectors, bank-based systems outperform market-based systems, while for developed financial sectors market-based systems outperform bank-based systems. Levine and Zervos (1998) show that higher stock market liquidity or greater bank development lead to higher growth, irrespective of the development of the other. There is some evidence that financial markets and banks are complements rather substitutes. Demirguç-Kunt and Maksimovic (1998) show that more developed stock markets tend to be associated with increased use of bank finance in developing countries.

There is a large theoretical literature on the relative merits of bank-based and market-based systems. Many of these papers are covered in the other sections of this survey. Here we focus on the contributions concerned with innovation and growth. Bhattacharya and Chiesa (1995) (included as a chapter in this section) consider a model of R&D incentives and financing. Two regimes are considered. Under multilateral financing, each bank lends to each firm and finances only part of its project. This can be thought of as a metaphor for a financial market. The lenders learn the value of each firm's R&D at the interim stage after R&D has been undertaken but before production takes place. The lenders can share the information among the firms and will do so if it is in their interest. Bhattacharya and Chiesa show that their incentives to do this correspond to maximizing the aggregate value of the firms' R&D projects. Also, a collusive agreement can be structured so that only one firm actually produces at the production stage. However, this collusion creates a free-rider problem and reduces incentives to undertake the R&D at the first stage. If this incentive problem is severe enough, bilateral financing may be preferable. Under this arrangement, each firm is financed by one bank and there is no scope for information sharing. As a result, each firm's R&D information remains proprietary.

A related model is developed by Yosha (1995). In his model firms differ in the quality of proprietary information at the interim stage. He focuses on the signalling effect of choosing bilateral versus multilateral financing. With multilateral financing in a public financial market, the proprietary information must be disclosed. With bilateral financing, the information does not

have to be revealed. In equilibrium, firms with high quality proprietary information use bilateral financing. Product market competitors deduce this relationship and take appropriate actions to offset it.

Allen and Gale (1999, 2000a, Chapter 13) ask whether financial markets or banks are better at providing finance for projects where there is diversity of opinion, for example, in the development of new technologies. Diversity of opinion arises from differences in prior beliefs, rather than differences in information. The advantage of financial markets is that they allow people with similar views to join together to finance projects. This will be optimal provided the costs necessary for each investor to form an opinion before investment decisions are made are sufficiently low. Finance can be provided by the market even when there is great diversity of opinion among investors. Intermediated finance involves delegating the financing decision to a manager who expends the cost necessary to form an opinion. There is an agency problem in that the manager may not have the same prior as the investor. This type of delegation turns out to be optimal when the costs of forming an opinion are high and there is likely to be considerable agreement in any case. The analysis suggests that market-based systems will lead to more innovation than bank-based systems.

There are a number of important open questions about the relationship between growth and financial structure.

- There appears to be a wide range of empirical evidence that growth and financial structure are positively correlated. There is little agreement as to the direction of causation and the channels by which each influences the other.
- The empirical evidence on the effectiveness of bank-based and market-based systems is mixed.

In both cases, we are a long way from being able to make welfare-based recommendations.

## 4 Risk sharing

One of the most important functions of the financial system is to share risk and it is often argued that financial markets are well suited to achieve this aim. However, market-based financial systems can actually create risk

through changes in asset values. Table 4 illustrates the degree of exposure to this kind of risk. It shows the differences in total assets ultimately owned by households, including both directly and indirectly owned assets, in five countries. In the US, only 19% is held in the form of cash and cash equivalents which includes bank deposits. A significant proportion, 31%, is held in the form of relatively safe, fixed-income assets, including domestic and foreign bonds, loans and mortgages. The largest proportion, 46%, is held in risky assets, including domestic and foreign equity and real estate. The UK is similar with slightly more in cash and cash equivalents at 24%, significantly less in fixed income assets at 13% and substantially more in risky equity and real estate assets at 52%. In both countries households are exposed to substantial amounts of risk through their holdings of assets.

At the other extreme, households in Japan are shielded from risk because of the composition of the portfolio of assets they ultimately hold. In Japan, 52% of assets are held in cash and cash equivalents, 19% are held in fixed income assets and only 13% are held in risky equity and real estate. Although not quite as safe as in Japan, households' asset holdings in France and Germany are much safer than in the US and UK. Cash and cash equivalents are lower than Japan at 38% and 36%, respectively, while fixed-income assets are substantially higher at 33% and 40%, respectively. The amount of risky assets is comparable to Japan, 16% for both countries.

It can be seen from these statistics that the proportions of risky assets held by households in the US and UK are much higher than in Japan, France and Germany. This does not necessarily mean that the absolute amount of risk borne by households is greater because the amount invested in financial assets could be greater in the latter countries. Figure 1 shows the gross financial assets ultimately owned by the household sector in the five countries in 1994. In the US, the value of financial assets relative to GDP is the highest at 3 but the UK and Japan are broadly similar. To normalize for the size of each country's GDP, Figure 2 reports financial assets as a percentage of GDP. France and Germany have a significantly lower amount of financial assets with ratios less than 2 for Germany and 1.5 for France. Combining the results illustrated in Table 4 and Figures 1 and 2 shows that taking into account the amount of wealth held in financial assets increases the differences in the amount of risk borne by households in the different countries, rather than reduces it. Not only do households hold much higher proportions in risky securities in the US and UK, they also hold more financial assets, particularly relative to France and Germany.

How can one explain these differences in the amount of risk households are apparently exposed to in different financial systems? Standard financial theory suggests that the main purpose of financial markets is to improve risk sharing. Financial markets in the US and UK are more developed by most measures than in Japan and France and much more developed than in Germany. How can it be that households are exposed to more risk in the US and UK than in Japan, France and Germany?

Allen and Gale (1997; 2000a, Chapter 6) (included as a chapter in this section) have provided a resolution to this paradox. They point out that traditional financial theory has little to say about hedging non-diversifiable risks. It assumes that the set of assets is given and theory focuses on the efficient sharing of these risks through exchange. For example, the standard diversification argument requires individuals to exchange assets so that each investor holds a relatively small amount of any one risk. Risks will also be traded so that more risk-averse people bear less risk than people who are less risk-averse. This kind of risk sharing is termed cross-sectional risk sharing, because it is achieved through exchanges of risk among individuals at a given point in time. However, importantly, these strategies do not eliminate macroeconomic shocks that affect all assets in a similar way.

Departing from the traditional approach, Allen and Gale focus on the intertemporal smoothing of risks that cannot be diversified at a given point in time. They argue that such risks can be averaged over time in a way that reduces their impact on individual welfare. One hedging strategy for non-diversifiable risks is intergenerational risk sharing. This spreads the risks associated with a given stock of assets across generations with heterogeneous experiences. Another strategy involves asset accumulation in order to reduce fluctuations in consumption over time. Both are examples of the intertemporal smoothing of asset returns.

Allen and Gale show that the opportunities for engaging in intertemporal smoothing are very different in market-based and bank-based financial systems. They demonstrate that incomplete financial markets, on the one hand, may not allow effective intertemporal smoothing. Long-lived financial institutions, such as banks, on the other hand, can achieve intertemporal smoothing, as long they as are not subject to substantial competition from financial markets. In fact, competition from financial markets can lead to disintermediation and the unraveling of intertemporal smoothing provided by long-lived institutions. In good times, individuals would rather opt out of the banking system and invest in the market, thus avoiding the accumu-

lation of reserves from which they may not benefit. Therefore, in the long run, intertemporal smoothing by banks is not viable in the presence of direct competition from markets.

This theory provides a framework for thinking about the role of risk management in different financial systems. In bank-based systems, such as those in Japan, France and Germany, risk management could be achieved through intertemporal smoothing, in which financial intermediaries eliminate risk by accumulating low risk, liquid assets. Cross sectional risk sharing through markets is less important, and the importance of other forms of risk management is reduced correspondingly.

In market-based financial systems, on the other hand, intertemporal smoothing by intermediaries is ruled out by competition from financial markets. Here, cross-sectional risk sharing becomes correspondingly more important. As a result, individuals and institutions acting on their behalf need to trade and manage risk in a very different way. They need to ensure that those who are most tolerant of risk end up bearing most of the risk. The Allen-Gale theory thus predicts that as financial systems become more market-oriented, risk management through the use of derivatives and other similar techniques will become more important. The theory is thus consistent with the fact that these particular forms of risk management are much more important in the US and UK than they are in less market-oriented economies such as Japan, France and Germany.

The Allen-Gale theory points to clear opportunities for improving welfare through intertemporal risk sharing when markets are incomplete, but it leaves open the question of whether financial institutions will have the right incentives to offer this kind of risk sharing. In fact, there is as yet no adequate theory of long-lived financial institutions. In some cases, we can obviate this gap in the theory by assuming that competitive institutions maximize the welfare of their depositors. However, when depositors are heterogeneous as, for example, in an overlapping generations economy, this device breaks down. One of the important questions posed by the behavior of financial institutions in different countries is, what is the objective function of a financial institution? At the moment, we do not know.

The risks associated with holding stocks, bonds and other financial assets are only some of the risks that individuals face. There are many other risks, such as the risk of unemployment, illness, changes in the value of one's home, and changes in the value of one's human capital, to name a few. Despite the enormous pace of financial innovation in the 1980s and 1990s, there are

very few ways in which these risks can be shared. Shiller (1993) has argued that there is scope for creating securities for hedging risks such as changes in the value of real estate, or changes in the level of national, regional, or occupational incomes. However, in many cases there are good reasons why such markets do not exist. These include moral hazard, adverse selection and transaction costs. In many cases, these market failures have led to government intervention. For example, governments in most countries are heavily involved in the provision of unemployment insurance, health care, disability insurance and so forth. Thus, the public sector plays an important role in the sharing of risks. The tax system itself can also be thought of as a risk sharing vehicle. The fact that gains can be set against losses and so forth also helps to share risks.

Perhaps one of the most important areas in which the government intervenes to share risks is the public provision of pensions. Because of problems of adverse selection and moral hazard, the market for annuities is inefficient. This market failure provides a rationale for government provision of pensions. Other reasons include the fact that agents cannot trade before they are born and hence cannot insure against “accidents of birth”. This “market failure” and the resulting overlapping generations structure means that a Pareto improvement can be achieved with a pay as you go public pension system. In addition to the public provision of pensions, many countries provide tax advantages for private pensions.

In practice, the extent to which countries provide public pensions differs substantially (see Davis (1992, 1996) for an account and Miles (1996) for asset holdings or Allen and Gale (2000a, Chapter 3) for a summary of both). For example, in the UK public pensions are rather meagre. The basic component is small. There is also an earnings-related component to supplement the basic rate. However, it is possible to contract out of this earnings-related part and replace it with a private pension scheme. As a result of the limited public pension scheme, private pensions are popular in the UK. The contributions and asset returns are untaxed and only the benefits are taxed. Coverage is high with 50 percent of the work force participating in company schemes. The proportion of assets ultimately owned by the household sector and held by public and private pension funds is 24%. Over 75% of these assets are equities. Clearly, the importance of private pensions in the UK has contributed to the growth of the stock market there.

In Germany the structure of pensions is quite different. The social security system provides pensions to all workers. These state pensions are linked

to average earnings during working life. The replacement ratio is high. In addition to the public pension system, there is also an extensive private pension system. Private plans are usually defined-benefit and provide a flat benefit. Inflation indexing is mandatory. One special feature of German pensions is how they are taxed at the corporate level. Pensions funded by book reserves are given special advantages. Firms are allowed discretionary use of the funds accumulated on the firm's balance sheet, free of tax. As a result, very few funds in Germany are invested in anything other than book reserves of the firm. In addition, benefits booked this way are insured by the Pension Guarantee Association. Very few assets are held by pension funds. Just 4% of household assets are held by public and private pension funds. For those funds which are held externally, there are guidelines on how they can be invested. There are maximum limits of 20% in equity, 5% in property and 4% in foreign securities. Equities in fact only constitute 6.6% of pension assets. Bonds represent 42.8% and loans and mortgages are 29.5%. The lack of externally invested funds in private pension funds contributes to the relatively small size of the German stock market.

Finally, no discussion of risk sharing would be complete without including the role of the insurance industry. The property and casualty part of the industry allows many everyday risks such as property damage and theft, accidents and so forth to be shared. The life insurance part of the industry provides not only life insurance but also long term savings vehicles which in some countries are tax-advantaged. The fact that premiums are paid in advance and that the life insurance industry provides savings vehicles means that insurance companies are usually holders of a significant proportion of a country's financial assets. The degree of regulation and the way in which the industry operates vary significantly across countries. The UK and Germany again illustrate the range of possibilities.

In the UK, the insurance industry is fairly lightly regulated. It is not dominated by a few large players and is quite competitive. Like the pension funds, insurance companies represent a large proportion, 27%, of household assets. They also invest significantly in equities, with 59.8% of their assets being in this form. The insurance industry in Germany is more regulated. The Insurance Supervisory Office requires funds be invested according to the requirements of security, profitability, mixing and spreading, with liquidity assured at all times. More than 80% of the insurance companies' assets are placed with the banks. Although insurance companies can invest in equities, this type of investment plays a very small role in their portfolios. An

important feature of the German insurance industry is the legal requirement that life insurance be separate from other forms of insurance. The supervisory authority has extended this requirement to other insurance lines. As a result, insurance tends to be offered by groups with many consolidated subsidiaries. The assets held by insurance companies represent 20% of household assets. The proportion of these investments in bonds is 66.3% while only 12.6% are in equities.

As this section indicates, there are many different institutions for sharing risk in a modern economy. When we think about the financial system as encompassing all of these different risk sharing mechanisms, a number of new questions are suggested.

- How important are different types of risk sharing (e.g., cross-sectional versus intertemporal risk sharing)?
- How do different mechanisms for sharing risk interact? For example, what is the interaction between the public provision of pensions and the development of the capital markets.

## 5 Information provision

The acquisition and use of information to allocate resources efficiently is one of the most important functions of a financial system. In market-based systems, such as the US, the large number of publicly listed firms, together with extensive disclosure requirements, means that a great deal of information about firms' activities is released. In addition to this publicly available information, there are many analysts working for mutual funds, pension funds and other intermediaries who gather private information. The empirical evidence on efficient markets suggests that much of this information is reflected in stock prices. On the other hand, in some countries with bank-based systems, such as Germany and other continental European countries, relatively few companies are listed and accounting disclosure requirements are limited, so very little information is publicly available. In addition, the number of analysts who follow stocks is small, so only limited private information is incorporated into stock prices. Although the financial markets have more information available in market-based financial systems like the US than in bank-based systems like Germany the reverse is true for intermediaries. The greater prevalence of long term relationships in bank-based systems means

that the banks are able to acquire considerable amounts of information about the firms they lend to, more than is released to the market. This can be used to allocate resources more efficiently.

Corresponding to these two perspectives are two traditional approaches to the role of information in financial systems. The first comes from the general equilibrium and rational expectations literatures on the role of prices in resource allocation. The second comes from the intermediation literature and is concerned with the role of banks as delegated monitors. We consider each in turn. Based on the first approach, it is sometimes argued that since market-based financial systems have many more prices that are publicly observed they allocate resources better than bank-based systems. Similarly based on the second approach it is sometimes argued that bank-based systems do better. As will be seen these simplistic arguments ignore many important factors.

#### *Prices and information*

The standard neoclassical view of prices, which originated with Adam Smith's "invisible hand", is that they are indicators of scarcity and value. The modern version of this theory is captured in the Arrow-Debreu-Mackenzie (ADM) model and the fundamental theorems of welfare economics. If markets are complete and certain other restrictions are satisfied, markets allow a Pareto efficient allocation of resources.

The neoclassical theory of resource allocation, which culminated in the ADM theory, was initially developed under the assumption of *certainty*. Under these conditions, decision-making is relatively simple. How firms should make investment decisions to maximize their value is the subject of capital budgeting. Over the years, it has become a mainstay of the curriculum in most business schools. It has been expounded in numerous textbooks. Current examples in wide use are Brealey and Myers (2000) and Ross, Westerfield and Jaffe (2001). According to the methodology outlined in these books, managers first need to derive the stream of cash flows that will accrue to shareholders over time, including the initial cost of the investment. This is done using various types of information. Projections based on accounting data generated within the firm usually play an important part. Once the cash flows have been calculated, they are discounted at the opportunity cost of capital for each period. NPV is obviously maximized by accepting positive NPV projects and rejecting negative NPV projects. There are a number of other capital budgeting methods such as internal rate of return (IRR) and profitability index (PI) which are widely used and are equivalent to NPV if

correctly applied. We will focus on NPV below.

The discount rates that should be used are found from the term structure of interest rates. Since there is no uncertainty, markets are complete if every agent can borrow and lend at these rates. Then there is unanimous agreement among the shareholders about the optimal policy for the firm. Shareholders should simply tell the managers to follow the NPV rule (or an equivalent). If all managers follow this rule, the allocation of resources within the economy will be Pareto efficient. Furthermore, the actual mechanics of decentralizing decisions from shareholders to managers are particularly simple. The information that shareholders need to convey to managers is minimal. The shareholders do not need to tell the managers anything except ‘Maximize NPV’. In particular, they do not need to tell the managers their preferences or the discount rates that should be used. The managers can observe the term structure of interest rates themselves.

The assumption of certainty on which this whole theory is based is, of course, unrealistic. However, all the important elements of the theory carry through with *uncertainty* provided markets are complete. In other words, provided there are markets at the initial date for all goods and services contingent on every possible state of nature, the introduction of uncertainty has no effect as far as firms are concerned. A firm buys all its inputs and sells all its outputs on a contingent basis, before any uncertainty is resolved. Consequently, the firm’s profits and market value are known for sure at the initial date when all decisions are made.

In the case of certainty the main informational role of financial markets is to provide the term structure of interest rates. Stock markets are informationally redundant since the value of the firm can easily be calculated from the prices of inputs and outputs and interest rates. Since both market-based and bank-based financial systems have a term structure of interest rates that can be publicly observed by all agents, there is essentially no difference between them. The fact that bank-based systems do not have stock market prices available is of no consequence for resource allocation. A similar argument can be made in the case where there is uncertainty and markets are complete.

The glaring weakness of this argument is that, in practice, markets are not complete. How can firms make decisions in this case? Corporate finance textbook expositions of capital budgeting techniques suggest a simple method of calculating the effect of an investment decision on the value of the firm in this situation. The stream of certain cash flows is replaced with a stream

of *expected* cash flows and the present value is calculated using a discount rate from an asset pricing model estimated from historical price data. The model that is typically used is the capital asset pricing model (CAPM). In order to calculate the discount rate using the CAPM, it is necessary to have historical data from the stock market on the covariance of returns for the firm's stock with the market portfolio (a value weighted portfolio consisting of all the stocks in the market). It is possible to show that if firms adopt this method, there will be an efficient allocation of resources in a stock-market economy provided some firms are listed in every industry (see, e.g., Allen and Gale (2000a, Chapter 7)). Thus, a stock market provides the information that is necessary for efficient decentralization. Stock market prices provide information in the sense that they allow the asset pricing model to be estimated. They are no longer redundant.

Even though the CAPM is based on very special assumptions and has limited empirical support, this result revives the argument that market-based financial systems are superior to bank-based systems because of the availability of stock-price information. If the financial system is bank-based, it would appear that this kind of decentralization is not possible. However, Allen and Gale (2000a, Chapter 7) suggest that if the institutional structure is similar to the US in the nineteenth century or some European economies in the twentieth century, decentralization will still be possible in an intermediated economy. Suppose finance is provided by intermediaries such as banks and insurance companies. There is a stock exchange, but only the intermediaries are listed. They make loans to firms and have equity investments in them. Since the intermediaries are listed and hold equity in all the firms in the economy, a portfolio consisting of the intermediaries is like the market portfolio in a full stock market economy. Provided firms can use accounting data to calculate the returns on a firm they will then be able to calculate the covariance with the market and hence be able to use the CAPM to find a discount rate. In this case, bank-based systems will not be at a disadvantage compared to market-based systems in terms of the information available to allocate resources.

In the frameworks discussed so far, information is public. An important issue in the literature has been the process by which private information becomes reflected in prices; in other words, their role as aggregators of information. One of the questions that received considerable attention in the 1960's and 1970's is the extent to which stock markets are informationally efficient and reflect all the available information. The notion implicit in much

of this research is that if stock prices are informationally efficient, they would provide a good mechanism for allocating investment resources. This view is well expounded by Fama (1976, p.133) who wrote:

“An efficient capital market is an important component of a capitalist system. In such a system, the ideal is a market where prices are accurate signals for capital allocation. That is, when firms issue securities to finance their activities they can expect to get ‘fair’ prices, and when investors choose among the securities that represent ownership of firms’ activities, they can do so under the assumption they are paying ‘fair’ prices. In short, if the capital market is to function smoothly in allocating resources, prices of securities must be good indicators of value.”

Extensive evidence was provided during the 1960’s and 1970’s that markets are efficient in the sense that investors pay “fair” prices and it is not possible to make excess returns above the reward for bearing risk using information that is publicly available. This is termed *semi-strong form efficiency*. There was some evidence that even using apparently private information, it is not possible to make excess returns. This is termed *strong-form efficiency*. More recently studies have been less supportive. For surveys of the empirical literature on efficient markets see Fama (1970; 1991) and Hawawini and Keim (1995).

Grossman (1976) developed a theoretical model based on rational expectations to show how private signals obtained by investors could become incorporated in prices, so that apparently private information became public. If an investor has favorable information, she will buy the security and bid up its price while if she has unfavorable information she will sell and bid down the price. Grossman was able to show that, under certain conditions, prices aggregate all the economically relevant private information. This result provides a theoretical underpinning for the notion of prices as aggregators of information and led to a large literature on information revelation, including Grossman and Stiglitz (1976; 1980), Hellwig (1980) and Diamond and Verrecchia (1981). For surveys see Grossman (1981) and Admati (1989).

An important point, which is often disregarded in discussions of financial systems, is that informational efficiency and welfare (Pareto) efficiency are different things (see, e.g., Dow and Gorton (1997) and Allen and Gale (2000a, Chapter 7)). In special cases, full revelation of information through market

prices or in some other way can lead to the first best, as the above quote from Fama suggests. In other words, informational efficiency is equivalent to Pareto-efficiency. However, this need not be true in general. For example, in order to reveal information, prices have to fluctuate with changes in underlying information; but price fluctuations themselves are costly to the extent that they impose risk of uninsured changes in wealth on investors. There is therefore a trade-off between allocative efficiency and risk sharing. This is similar to the point made by Hirshleifer (1971) that the public release of information can destroy valuable risk sharing opportunities.

There is a large literature on the welfare analysis of rational expectations models. Allen (1983) and Laffont (1985) showed that more information could make people 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. Much of this literature is concerned with the desirability of allowing insider trading. One view is that insider trading involves the informed benefiting at the expense of the uninformed. Another view is that insider trading is desirable because it leads to prices being more informative, which improves the allocation of investment. For a variety of positions on and analyses of insider trading see Glosten (1989), Manove (1989), Ausubel (1990), Fishman and Hagerty (1992), Leland (1992), Bernhardt, Hollifield and Hughson (1995) and Bhattacharya and Nicodano (1995).

Another set of papers analyzes what happens when one group of traders is simply better informed than another, either because they have paid to acquire information or because they are endowed with superior information. Bernardo and Judd (1997) analyze a version of the Grossman and Stiglitz (1980) model with pure exchange using numerical techniques and show that everybody would be better off without information. Dow and Rahi (1997) analyze a parametric model with investment in productive assets by firms. They are able to derive closed-form solutions for all agents' utilities and this allows a nice characterization of the trade-off between risk sharing and investment.

A third strand of the literature takes a security-design approach to analyze the relationship between incomplete markets and information revelation. This literature has identified three effects of security design on welfare when agents are asymmetrically informed: spanning, adverse selection and insurance destruction (i.e., the Hirshleifer effect). In general, welfare improves with spanning and is reduced with adverse selection and insurance destruc-

tion. Taking the number of assets as given, Rahi (1995) finds that it is constrained Pareto-efficient to issue information-free securities as a way to minimize the adverse selection problem. Marín and Rahi (1999) generalize the analysis of the previous paper and show that under certain conditions its main conclusion is reversed. In particular, they identify conditions on the primitives of the economy for which it is Pareto-efficient to issue “speculative securities”. These are securities whose payoff explicitly depends on private information sunspots (i.e. a random shock unrelated to endowments and preferences about which some agents have private information). Finally, Marín and Rahi (2000) consider the effect of endogenizing the number of assets in this type of model and build a theory of (endogenous) market incompleteness. They find that, under certain conditions, the introduction of a new security makes all agents worse off because it provides new information that destroys insurance opportunities. In the last two papers, the incorporation of asymmetric information, sunspots, and the reduction of the number of tradable securities inject noise into the price system so that less information is revealed and, consequently, fewer insurance opportunities are destroyed.

A number of papers consider the feedback role of stock prices in providing incentives when there is an agency problem between shareholders and managers. Diamond and Verrecchia (1982) and Holmstrom and Tirole (1993) consider how compensation contracts can be conditioned on stock prices to give incentives to make an effort. Dow and Gorton (1997) consider how good investment incentives can be provided to managers when stock prices contain information managers do not have.

The trade-off between allocative efficiency and risk sharing has important implications for the structure of financial systems. Although there may be allocational advantages, the mere existence of more price data from stock markets in the US may not be a decisive point in favor of a market-oriented system. In financial systems like Germany’s, few companies are publicly quoted and little information is revealed by the companies that are. This lack of information, which may be bad from the point of view of efficient decision-making, may be a good thing from the point of view of risk sharing. There is no theoretical presumption that more information leads to a better outcome, even if that information is useful for productive efficiency. This suggests that countries such as Germany and France, where accounting information about companies is not freely available and few analysts follow companies, are not necessarily at a disadvantage compared to countries such as the US and UK, where the reverse is true. Allocative efficiency is offset by the fact

that investors bear a lot of risk.

*Delegated monitoring and banks*

One of the arguments that is often put forward in favor of bank-based systems is that banks form long term relationships with firms and thus allow various informational problems to be solved. In Japan, this is called the main bank system while in Germany it is called the hausbank system. The problem that is of particular interest here is that borrowers must take some action to make proper use of the funds they have borrowed. This action could be the level of effort or choice of project from among various different risky alternatives. The borrower can always claim that a low outcome is due to bad luck rather than from not taking the correct action. Lenders cannot observe the borrower's action unless he pays a fixed cost to monitor the borrower. In a financial market with many lenders, there is a free-rider problem. Each lender is small, so it is not worth paying the fixed cost. Everybody would like to free-ride, leaving it to someone else to bear the monitoring cost. As a result, no monitoring will be done.

A possible solution is to hire a single monitor to check what the borrower is doing. The problem then becomes one of monitoring the monitor, to make sure she actually monitors the borrowers. Diamond (1984) develops a model of delegated monitoring to solve this problem. Intermediaries have a diversified portfolio of projects for which they provide finance. They precommit to monitor borrowers by promising lenders a fixed return. If the intermediary does not monitor, then it will be unable to pay the promised return to lenders. Diamond's model thus illustrates how intermediaries and, in particular, banks have an incentive to act as a delegated monitor and produce the information necessary for an efficient allocation of resources.

Boot and Thakor (1997a) (included as a chapter in this section) develop a model of financial system architecture that builds on this view of banks as delegated monitors. They assume there are three types of information problem. The first is that there is incomplete information about the future projects a firm has available to it. Outside investors can gather information about this type of information. The second problem is that lenders cannot observe whether borrowers invest the funds in a risky or safe project. The third problem is the likelihood that borrowers will have the opportunity to invest in a risky project. Boot and Thakor are able to show that the first problem can best be solved by a financial market and the second and third problems can best be solved by intermediaries. They argue that banks will predominate in an emerging financial system, while the informational advan-

tages of markets may allow them to develop in a mature financial system.

Boot and Thakor (1997b) compare various aspects of different financial systems. The important characteristic of financial markets in their models is that prices reveal information. This is what differentiates financial markets from financial institutions. They show that financial innovation occurs more often in a system where commercial and investment banking are separated than in a system with universal banking.

Subrahmanyam and Titman (1997) are also interested in the development of financial systems. In their theory stock markets are characterized by information revealing prices. There can be interesting interactions between information that is acquired fortuitously by investors and information that is paid for. Similarly to Pagano (1993), they show that, with a fixed cost for investors to participate in primary equity markets, there may exist multiple equilibria, specifically, a high participation equilibrium with many new issues and a low participation equilibrium with few new issues.

#### *Open questions*

Although there has been considerable theoretical work on the relationship between information provision and the form of the financial system, relatively little empirical work has been done in this area. In particular, a number of questions remain unanswered.

- Is the information available in bank-based systems sufficient to enable firms to correctly assess the risk return trade-off?
- What is the nature of the trade-off between allocative efficiency and risk sharing in practice?

## **6 Corporate governance**

In most countries, including the US, the UK, Japan, and France, managers of corporations are ultimately responsible to the shareholders. However, the details of corporation law differ across countries. The common origins of company law in the US and UK have led to a similar structure. In both countries, managers have a fiduciary duty, that is, they have a strong legal requirement to act in the interests of shareholders. The official channel through which shareholders influence company affairs is the board of directors, elected by the shareholders, typically on the basis of one share, one vote. The board of directors is a mixture of outside and inside directors, the latter being the top

executives in the firm. The role of management is to implement the policies determined by the board. Shareholders have very little say beyond electing directors. For example, it is the directors who decide their own compensation without any input from shareholders. A committee of outside directors determines the senior management's compensation. Except in unusual circumstances, such as a proxy fight, the outside directors are nominated by the incumbent management and thus typically owe their allegiance to the CEO. Table 5 shows the total number of directors for a typical sample of large firms in each of the countries. For the US, UK and Japan, the number of outside directors is given in parentheses. The size of boards is roughly the same in the US and the UK, usually around 10-15 people. In the US, a majority are typically from outside the firm; in the UK, a minority are from outside the firm.

Japan resembles the US in terms of the legal form of corporations because of the heavy influence of the US Occupation Forces on the legal system and the structure of institutions after the Second World War. Some important differences do exist, however. In the past, nonfinancial corporations faced elaborate restrictions that prevented them from establishing holding companies. The rights of Japanese shareholders are in theory greater than those of shareholders in the US and UK. For example, in Japan it is easier for shareholders to nominate and elect directors. Also management remuneration must be decided at general meetings of shareholders. Despite these differences in shareholders' rights, the structure of Japanese boards is such that shareholders do not in fact have much influence. It can be seen from Table 5 that Japanese boards are much larger than those of other countries. There are a handful of outside directors, but they have very little influence. The overwhelming majority of directors are from inside the company and they include many people in addition to the most senior members of management. The nominations of individuals for positions as a director are essentially controlled by the company's CEO. This together with the unwieldy size of the board and its composition means CEOs hold tremendous power. As long as the financial position of a Japanese corporation is sound, the CEO and those closest to him control the company's affairs.

Germany has a very different type of governance structure than the US, UK or Japan. The system of *co-determination*, which has a long history, arose in the late nineteenth century from an attempt to overcome the contradiction between the reality of industrialization and liberal ideas about the self-determination and the rights of individuals (Pistor (1996)). Cur-

rently the most important legislation governing it is the Co-determination Act (*Mitbestimmungsgesetz*) of 1976. This generally applies to companies with more than 2,000 employees.

Firms to which it applies have two boards, the supervisory board and the management board. The supervisory board is the controlling body. As outlined in Schneider-Lenné (1992) and Prowse (1995), one half of the representatives are elected by shareholders and the other half by the employees. The shareholders' general meeting elects the shareholder representatives. Two-thirds of the employee representatives work for the company, while the other third are trade union representatives. The supervisory board elects a chairman and deputy chairman from its members. The chairman is usually from the shareholder side, while the deputy chairman is from the employee side. In the event of a tie in the voting of the supervisory board, the chairman has a casting vote. It is in this sense that shareholders have ultimate control. However, members of the supervisory board legally represent the interests of the company as a whole and not just the groups they represent. It can be seen from Table 5 that supervisory boards have typically just over 20 members and so are slightly bigger than boards in the US and UK but smaller than those in Japan. The management board is appointed by the supervisory board. Nobody can be a member of both boards and cross-company board memberships are restricted. The management board is responsible for the operation of the company while the supervisory board supervises the management board's activities. Table 5 shows that the management board is usually fairly small, smaller than the supervisory board and the boards in other countries.

The German system provides an interesting contrast to the Anglo-American and Japanese systems. It is often argued that the dual board system better represents outside shareholders and ensures management must take account of their views. In addition, employees' views are also represented and their bias is presumably to ensure the long run viability of the firm.

France has a system which contains elements of both the Anglo-American and the German systems. Firms can choose between two types of boards of director. The first type, which is more common, is single-tiered as in the Anglo-American system. The board elects the *président directeur-général* (PDG) who is like a CEO but more powerful. He or she has the sole right to 'represent' the company and is the only person who can delegate this power. Single-tiered boards mostly consist of outside directors who are shareholders and representatives from financial institutions with which the firm has trans-

actional relationships. As in the Anglo-American model the board determines business policies which are then carried out by the PDG and management.

The second type of board has two tiers, as in Germany. The *conseil de surveillance* is like the German supervisory board except that employees do not have the right to representation. However, one unique feature of the French system which makes it more akin to the German one is that with single-tiered and two-tiered boards workers' representatives have the right to attend board meetings as observers in all companies with at least 50 employees. The *conseil de surveillance* appoints the *directoire* who have responsibility for the management of the company. One of the members of the *directoire* is designated *président de directoire* by the others.

It can be seen from Table 5 that the size of boards in France is roughly similar to the US. Complete or partial government ownership of corporations is more prevalent than in other countries and as Table 5 indicates in some cases this translates into government representation on boards (figures in parentheses are directors from the government).

In addition to having different legal structures for the firm, the countries also place differing restrictions on the holding of shares by financial institutions and nonfinancial corporations. Table 6 summarizes these. These restrictions have had important implications for the countries' patterns of share ownership, which are shown in Table 7.

Restrictions on institutional holdings of shares are one area where the US differs significantly from the UK. In the US, the Glass-Steagall Act used to prevent banks from holding equity stakes in companies except in unusual circumstances, such as when the firm has gone bankrupt. Insurance companies are regulated by state laws. The most significant regulations are those of New York State, which affect a large proportion of companies not only because many companies are based there but also because other states tend to follow their lead. Historically, New York regulations prevented insurers from holding any equity. However, in more recent times, life insurance companies have been able to hold a limited amount of equity. Mutual and pension funds are also restricted in the amount of any single stock they can own to ensure diversification. It can be seen from Table 7 that these regulations have meant that the pattern of share ownership in the US is significantly different from the pattern in other countries. Only a small amount of equity, 6%, is held by financial institutions, whereas in the other countries the average holding is 29%. Instead, the proportion owned by individuals is much higher than elsewhere and the proportion owned by mutual and pension funds is higher

than in Japan, Germany and France. The main restriction on the holding of shares by nonfinancial corporations in other firms is the requirement that this not restrict competition in any way. The US's 14% ownership of shares by nonfinancial corporations is much lower than in Japan, Germany and France, but is comparable to the UK's.

It can be seen from Table 6 that the UK has far fewer formal regulations than the US does. Banks can hold equity if they wish and need only obtain permission from the Bank of England to purchase large blocks of equity. Insurance companies are only limited by the (self-imposed) need to diversify. With regard to holdings of nonfinancial corporations, the only limitation is that firms must not mutually hold each other's shares to prevent a transfer of control. The relative lack of regulation creates different ownership patterns. Compared to the US, financial institutions hold more and individuals less. Compared to Japan, Germany and France, the holding of shares by nonfinancial corporations is much less and the holdings of pension funds much greater.

As Tables 2 and 3 indicate, Japan, Germany and France are all somewhat similar in terms of the regulatory restrictions on holding shares and the patterns of ownership. In all three countries banks can hold the equity of companies. There are regulations on the proportions of the equity of firms that banks can hold in Japan. In Germany and France there are restrictions on holdings of equity relative to bank capital. As mentioned above, holding companies were traditionally not permitted in Japan. In Germany and France there are limitations on the percentages of firms that can be owned. Complex interactions of holding companies occur in both Germany and France. Van Hulle (1998) contains an account of European holding groups. In Japan the interactions in terms of crossholdings are relatively simple.

In their seminal book, Berle and Means (1932) argued that, in practice, managers pursued their own interests rather than the interests of shareholders. The contractual aspect of the firm together with the problem highlighted by Berle and Means led to the development of the agency approach to corporate governance by, among others, Coase (1937), Jensen and Meckling (1976), Fama and Jensen (1983a,b) and Hart (1995). Excellent surveys are contained in Shleifer and Vishny (1997) and Becht, Bolton and Röell (2001). Vives (2000) contains a number of recent papers that provide good coverage of the literature. The main focus of the agency approach is the question:

“How can shareholders ensure that managers pursue their interests.”

The literature describes a number of corporate governance mechanisms that encourage managers to act in the interests of the shareholders.

*The board of directors*

The board of directors is, in theory at least, the first mechanism shareholders have to control managers and ensure the company is run in their interest. As discussed above, the way that boards are chosen and structured differs significantly across countries. Although the structure of boards is different across countries, the limited empirical evidence available suggests that they are equally effective (or ineffective) at disciplining management. Mace (1971), Weisbach (1988) and Jensen (1989) document the weakness of US boards in disciplining managers. Bhagat and Black (1998) survey the literature on the relationship between board composition and firm performance. The evidence indicates that boards with a majority of independent directors do not perform better than firms without such boards. However, it does seem that having a moderate number of inside directors is associated with greater profitability. Kaplan (1994a, b) has conducted studies of the relationship between management turnover and various performance measures in Japan, Germany and the US. His findings indicate a similar relationship in each of the countries. Kang and Shivdasani (1995) confirm these results for Japan and also provide evidence on the effectiveness of different types of governance mechanisms. Among other things, they find that the presence of outside directors on the board has no effect on the sensitivity of top executive turnover to either earnings or stock-price performance. In contrast, concentrated equity ownership and ties to a main bank do have a positive effect. For Germany, Franks and Mayer (1997) find a strong relationship between poorly performing companies and turnover on management boards but not with turnover on supervisory boards. Gibson (1999) considers the relationship between CEO turnover and firm performance in eight emerging countries. The results are fairly similar to those obtained in studies of the US.

*Executive compensation.*

An additional method of ensuring that managers pursue the interests of shareholders is to structure compensation appropriately. Diamond and Verrecchia (1982), Holmstrom and Tirole (1993) and Dow and Gorton (1997) have developed models where compensation is conditioned on the firm's stock

price and this reflects information gathered by analysts. Stock prices are not the only contingency that can be used to motivate managers. Accounting based performance measures are also frequently used. Managers who perform extremely well may be bid away at higher compensation levels to other companies. The managerial labor market thus also plays an important part in providing incentives to managers. There has been some debate about the optimal sensitivity of executive compensation to stock price in practice. Jensen and Murphy (1990) confirm previous findings of a positive relationship between executive pay and performance in the US and estimate CEO compensation varies by about \$3 for every \$1,000 change in firm value. They suggest that this figure is much too small. Haubrich (1994) has calibrated an appropriately designed principal agent model which takes into account risk aversion and argues that a small sensitivity is optimal for reasonable parameter values. For other countries, the number of empirical studies is small. Kaplan (1994a,b) considers the sensitivity of pay and dismissal to performance in Germany and Japan. He finds that they are similar to the US in this respect.

*The market for corporate control*

Manne (1965) has argued that an active market for corporate control is essential for the efficient operation of capitalist economies. It allows able management teams to gain control of large amounts of resources in a small amount of time. Inefficient managers are removed and replaced with people who are better able to do the job. The existence of a market for corporate control also provides one means of disciplining managers. If a firm is pursuing policies which do not maximize shareholders' wealth it can be taken over and the managers replaced.

The market for corporate control can operate through proxy contests, friendly mergers and hostile takeovers. Recent theoretical analyses of proxy fights, which throw some light on why they do not work well, are contained in Bhattacharya (1997), Yilmaz (1997) and Maug (1998).

Friendly mergers occur when both firms agree that combining them would be value creating. Friendly mergers and takeovers occur in all countries and account for most of the transaction volume that occurs. Prowse (1995) reports that in the US friendly transactions constituted 82.2% of transactions, in the UK 62.9% and in the rest of Europe 90.4%.

The third way in which the market for corporate control can operate is through hostile takeovers. This mechanism is potentially very important in ensuring an efficient allocation of resources in the way Manne (1965) sug-

gested. However, Grossman and Hart (1980) have pointed to a problem with the operation of this mechanism of corporate governance. Existing shareholders will have a strong incentive to free ride on raiders who plan to increase the value of the firm. On the one hand, if the price offered by the raider is below the price that the new policies will justify and the shareholder believes the offer will succeed, then there is no point in tendering. However, in that case the offer will not succeed. On the other hand, if the raider offers a price above the current value and the shareholder believes that the offer will not succeed, then it will be worth tendering his shares. But then the offer will succeed. In both cases, the shareholder's beliefs are inconsistent with equilibrium. The only equilibrium is one in which the raider's offer price is equal to the price the new policies will justify. In that case, the raider's profit will be zero, before allowing for any costs incurred in undertaking the bid. If these costs are included, the profit will be negative and there will be no incentive to attempt a takeover.

A number of solutions to the free-rider problem have been suggested. Grossman and Hart's (1980) solution is that corporate charters should be structured so that raiders can dilute minority shareholders' interests after the takeover occurs. This means the raider can offer a price below the post-takeover value of the firm to him and the bid still succeeds. Existing shareholders will know that if they retain their shares the raider will dilute their interest. Shleifer and Vishny (1986) pointed out that if the raider can acquire a block of stock before attempting a takeover at the low pre-takeover price there will be a profit on this block even if all the remaining shares are purchased at the full price justified by the raider's plans. Burkart (1995) shows that it is privately optimal for a large shareholder to overbid and this can lead to possible losses and inefficiencies.

In addition to the Grossman and Hart free rider-problem there are a number of other problems with the operation of the market for corporate control. One is that once a takeover bid is announced other raiders will realize it is an attractive target and will bid. This will mean it is not possible for the initial firm to recoup any fixed costs from identifying the target in the first place. The third problem in the operation of the market for corporate control is the possibility of management entrenchment. Managers may be incompetent and want to prevent a takeover to preserve their jobs.

Despite all these problems, hostile takeovers do occur fairly frequently in the US and UK. Prowse (1995) points out that in the US almost 10% of companies that belonged to the Fortune 500 in 1980 have since been acquired

in a transaction that was hostile or started off as hostile. For the UK, Franks and Mayer (1992) report that there were 35 successful hostile bids made over two years in the mid-1980's. This is much higher than in Germany, France or Japan. In Germany, Franks and Mayer (1998) report that there have only been three hostile takeovers between 1945 and 1994 and analyze them. Franks and Mayer (1997) document a substantial market in share stakes but their analysis suggests such sales do not perform a disciplinary function. In Japan Kester (1991) argues that there have been no hostile takeovers among large firms in that period. In France hostile takeovers were also rare until recently.

Why do these differences in the number of hostile takeovers between the US and UK and other countries exist? A standard explanation for the difference in the occurrence of takeovers across countries is the prevalence of cross shareholdings in Japan and the structure of holding companies and cross shareholdings in Germany and France that make it difficult to acquire the necessary number of shares.

Another important issue is the extent to which the market for corporate control leads to an improvement in efficiency in the way Manne's (1965) argument suggests it should. There have been numerous empirical studies of takeovers in an attempt to understand whether they create value. Jensen (1993) estimates the total increase in the stock market value of target firms in the US from 1976-90 as \$750 billion. In contrast, it seems that the increase in value for bidding firms was zero and possibly even negative. Overall, the stock market data suggests that total value (i.e., the sum of the targets' values and bidding firms' values) did increase significantly. There is an issue of whether this was caused by the mergers and takeovers or was simply a reflection of a previous undervaluation in the stock market. Another possibility, suggested by Shleifer and Summers (1988), is that gains from takeovers may be the result of violating implicit contracts with workers and other suppliers.

A number of studies have attempted to use accounting data to identify the reason why the value of the targets increased. For example, Ravenscraft and Scherer (1987) and Herman and Lowenstein (1988) have found little evidence that operating performance improves after takeovers. Franks and Mayer (1996) found for a sample of UK firms that hostile takeover targets did not underperform before acquisition, but were subject to the redeployment of assets afterwards. There are some studies, such as Kaplan (1989), Bhagat, Shleifer and Vishny (1990), Kaplan and Weisbach (1991) and Healy, Palepu and Ruback (1992; 1997), that do find changes and improvements in opera-

tions that can at least partially explain takeover premia, so the evidence is mixed.

*Concentrated holdings and monitoring by financial institutions*

Stiglitz (1985) has argued that one of the most important ways that value maximization by firms can be ensured is through concentrated ownership of the firm's shares. Shleifer and Vishny (1986), Huddart (1993) and Admati, Pfleiderer and Zechner (1994) all model equity financed firms which have one large shareholder and a fringe of smaller ones. In all these models, more wealth commitment by owners increases monitoring and firm performance. Shleifer and Vishny find that firm value increases with the large shareholder's holding but this needn't be true. In Huddart (1993) and Admati, Pfleiderer and Zechner (1994) the reverse can occur because the large shareholder is risk averse.

A number of recent theoretical analyses have re-considered important aspects of concentrated ownership. Burkart, Gromb and Panunzi (1997) consider the costs and benefits of monitoring by large shareholders. They show that such monitoring may restrict the misuse of resources ex post, but may also blunt ex ante managerial initiative. There is a trade-off between control and initiative. Bolton and von Thadden (1998a,b) develop a framework to analyze the trade-off between liquidity and control. Large blocks result in incentives to monitor but also lead to a lack of liquidity. Pagano and Röell (1998) consider the trade-off between public and private ownership and monitoring. With private ownership there is monitoring because of shareholder concentration but no liquidity. Going public is costly and public ownership results in less monitoring but greater liquidity.

The importance of equity ownership by financial institutions in Japan and Germany, shown in Table 7, and the lack of a market for corporate control in these countries have led to the suggestion that the agency problem in these countries is solved by financial institutions acting as outside monitors for large corporations. In Japan, this system of monitoring is known as the main bank system. The characteristics of this system are the long-term relationship between a bank and its client firm, the holding of both debt and equity by the bank, and the active intervention of the bank should its client become financially distressed. It has been widely argued that this main bank relationship ensures the bank acts as delegated monitor and helps to overcome the agency problem between managers and the firm. Hoshi, Kashyap and Scharfstein (1990a, 1990b, 1993) provide evidence that the main bank system helps firms by easing liquidity constraints and reduces

agency costs. They also document that firms reduced their bank ties in the 1980's as access to the bond market became easier. In contrast to Hoshi, Kashyap and Scharfstein, Hayashi (1997) finds no evidence that main bank ties ease liquidity constraints. He suggests their results are probably due to the poor quality of their capital stock estimate. Kang and Shivdasani (1997) find that companies restructure to a greater extent in response to adverse circumstances the greater the ownership of the main bank. Aoki and Patrick (1994) contains a number of studies suggesting that until recently the effectiveness of the main bank system has been high. A dissenting view is contained in a paper by Ramseyer (1994) who suggests that the traditional emphasis in the literature on the importance of this system in achieving effective corporate governance is too strong. He argues that, if the system really worked in the way described, explicit contracts should be used much more than they are in practice. Overall, the main bank system appears important in times of financial distress, but less important when a firm is doing well.

In Germany, the data on concentration of ownership probably understate the significance of the banks' effective position. The reason is that many bank customers keep their shares 'on deposit' at banks and allow banks to exercise proxies on their behalf. As a result banks control a higher proportion of voting equity and have more representation on boards of large industrial enterprises than their direct holdings suggest. A 1978 Monopoly Commission study found that, of the top 100 corporations, banks controlled the votes of nearly 40% of the equity and were represented on two thirds of the boards. German banks thus tend to have very close ties with industry and form long-run relationships with firms. This is the *hausbank* system. A number of studies have provided evidence on the effectiveness of the outside monitoring of German banks. Elston (1993) finds firms with strong ties to a bank are not as likely to be liquidity-constrained as firms with weaker ties. Cable (1985) and Gorton and Schmid (2000) find evidence that firms with a higher proportion of equity controlled by banks have better performance. This evidence is consistent with the hypothesis that bank involvement helps the performance of firms, but it is also consistent with the hypothesis that banks are good at picking winners.

A number of issues concerning the effectiveness of banks as outside monitors arise in the case of Japan and Germany. The first is that banks are themselves subject to the same agency problems as firms. Charkham (1994; p.36) points out that, in effect, the big three banks essentially control them-

selves: “At general meetings in recent years, Deutsche Bank held voting rights for 47.2 percent of its shares, Dresdner for 59.25 percent and Commerzbank for 30.29 percent”. In addition, other large shareholders are often widely held themselves. Schreyögg and Steinman (1981) compare a sample of 300 large German firms according to whether there is concentration in terms of direct ownership or ultimate ownership taking into account the holding company structure. They find that in terms of ultimate ownership there is significantly less concentration.

An early critic of the view that banks provide effective monitoring of firms in Germany was Hellwig (1991). Hellwig argued that close relationships between banks and firms involved costs as well as benefits for the firm. Banks acquire private information about the firm, which they can use to extract rents. Using historical sources, he argued that firms have an incentive to seek autonomy from banks as quickly as possible. In more recent work, Hellwig (1998) argues that intermediaries and firms are often involved in a collusive relationship whose aim is to limit the power of outsiders. In this model, firms and intermediaries cooperate to share control, and not necessarily to promote effective management of the firm.

In an important book Edwards and Fischer (1994) have argued that in Germany the corporate governance role of banks has been overemphasized in the literature. They provide a variety of evidence that banks do not have the degree of influence as lenders, shareholders, or voters of proxies that is usually supposed. For example, they find that the number of votes controlled in a company is only weakly related to the number of representatives the bank has on the supervisory board. Wenger and Kaserer (1998) point to the examples of Metallgesellschaft and Daimler-Benz as extreme examples of the failure of the German corporate governance system.

#### *Debt*

An important strand of the corporate governance literature has focused on the role of debt as a means of disciplining managers. Grossman and Hart (1982) were the first to argue that managers could precommit to work hard by using debt rather than equity. Similarly, Jensen’s (1986) free cash flow theory suggested that debt could be used to prevent managers from squandering resources. In the late 1980’s and early 1990’s it was widely argued that leveraged buyouts (LBOs) whereby managers or other groups purchased firms using a large proportion of debt financing were a response to agency problems. However, debt can have undesirable as well as desirable effects on managers’ behavior. Jensen and Meckling (1976) pointed out managers

have an incentive to take risks and may even accept projects that destroy value if significant amounts of debt are used. Myers (1977) pointed to the debt overhang problem where firms may forego good projects if they have significant debt outstanding. The reason is that for a firm facing financial distress a large part of the returns to a good project go to bondholders.

Perhaps the most important weakness of the argument that debt is important for ensuring managerial discipline in corporations is the fact that retained earnings are the most important source of finance for corporations, as Table 6 indicates. In most countries, debt is much less important than retained earnings. Typically, large corporations can service their debt without difficulty, i.e., without constraining their operations or investment plans. Taggart (1985) has found that during the post-war period, long-term debt constituted about 35 percent of the market value of large US corporations, with most of the remainder being made up of equity. Although such firms have issued relatively little new equity, the significant level of internal finance through retained earnings has ensured outside equity is (indirectly) the most important financing instrument.

#### *Product market competition*

It has been argued (see, e.g., Alchian (1950) and Stigler (1958)) that competition in product markets is a very powerful force for solving the agency problem between owners and managers. If the managers of a firm waste or consume large amounts of resources, the firm will be unable to compete and will go bankrupt. There is little doubt that competition, particularly internationally, is a powerful force in ensuring effective corporate governance.

Competition between different organizational forms may be helpful in limiting efficiency losses. If a family owned business has the sole objective of maximizing share value, it may force all the corporations in that industry to do the same thing. Hart (1983) develops a model based on this idea. Unobservable effort leads to ‘managerial slack’. Using the assumption that managers are infinitely risk averse at a particular level of income, Hart is able to show that aggregate output is lower and price is higher than in the first best, where every action is contractible. Scharfstein (1988) shows that if the manager’s marginal utility of income is strictly positive, increased competition can increase rather than reduce managerial slack. Schmidt (1997) addresses a related question in a model without hidden information. He observes that increased competition may threaten the survival of a firm by forcing it into bankruptcy and asks what effect this may have on managerial slack. As in Scharfstein (1988), he demonstrates that increased competition

does not necessarily reduce managerial slack.

Allen and Gale (2000b) depart from the agency approach and argue that motivating managers is not the main problem in the modern corporation. They view the top management of firms as being “entrepreneurial” in that they choose the direction of the firm and assign crucial tasks to subordinates. Shareholders’ concern is not whether managers work hard but whether they have the “right stuff”. If product markets are competitive, then good firms can push out bad firms and capture the market. This contrasts with the standard story in which companies with underperforming managements are taken over by corporate raiders.

#### *Discussion*

The literature on corporate governance is vast, but much work remains to be done in this area. In our view, the focus on agency problems that dominates the literature is unnecessarily narrow. Many important issues remain to be explored.

- When is separation of ownership and control optimal? Burkart, Gromb and Panunzi (1997) and Allen and Gale (2000a, Chapter 11) have identified some special circumstances where separation is desirable. How robust is this result?
- What are the alternatives to modelling the firm as a profit maximizing entity? In countries such as Germany, the governance mechanism explicitly incorporates workers. In practice, stakeholders other than shareholders play an important role in other countries too. How should the firm be modelled in such cases? Aoki (1984a, 1984b, 1988, 1992) and Allen and Gale (2000a, Chapter 12) have made a start in this direction.

## **7 Law, politics and finance**

In an important contribution, Roe (1994) argues that political factors play a crucial role in the development of the legal and regulatory system and, hence, the structure of corporate governance in different countries. In particular, he argues that the US chose to have a financial system where the power of financial institutions such as banks and insurance companies is very limited. As a result, they cannot play a significant role in corporate governance. In

Germany and Japan, a different political climate allows financial institutions to become more deeply involved in corporate governance.

Political factors are important, without a doubt, but there is a question about the extent of their importance. Allen (1995) argues that the UK presents an interesting contrast to the US. It has a similar separation of ownership and control in corporations, but very different financial institutions. In particular, the banking system is concentrated and, although the Bank of England has wide powers of intervention, there are few explicit restrictions on the activities that banks may undertake, as Table 6 indicates. Nevertheless, banks have chosen not to become involved in corporate governance. Similarly, insurance companies have not been barred from playing an important governance role, but have chosen not to do so. If banks and insurance companies in the UK chose not to become involved in corporate governance, the same might have been true in the US even if they had the legal freedom to do so. This comparison is difficult to reconcile with the idea that it is politics and legal and regulatory constraints that is the sole determinant of differences in corporate governance across countries.

In an influential set of papers, La Porta, Lopez-de-Silanes, Shleifer and Vishny have developed an approach to comparative financial systems based on legal systems. They consider two basic issues. The first is the extent to which legal systems differ in the protection afforded to shareholders and creditors in different countries. The second is the impact that this has on corporations' financing, governance, payout and other policies. La Porta et al. (1998) examine how laws protecting investors differ across 49 countries. They identify two legal traditions for commercial law. The first is the common law tradition, which originated in England. The second is the civil law tradition. There are three branches of the civil law tradition, French, German and Scandinavian. Through a variety of means, such as conquest, imperialism, and imitation, the English, French and German systems have spread around the world. In general, La Porta et al. (1998) find that civil law systems give investors weaker legal rights than do common law systems. Common law countries give both shareholders and creditors the strongest protection. The quality of enforcement of legal rules is highest in Scandinavian and German civil-law countries, next highest in common-law countries and weakest in French civil-law countries. Given these differences in rights and enforcement, La Porta et al. (1998) investigate whether there are substitute mechanisms for corporate governance. One example is "bright-line" rules that specify mandatory dividends. They find that only French civil-

law countries have these. Another example is ownership concentration. It turns out that there is a negative correlation between the extent of minority shareholder protection and concentrated equity ownership. The implication is that the easiest way to prevent abuse of minority shareholders when legal protection is poor is to hold large blocks of stock.

La Porta et al. (1997) consider the relationship between the form of finance and the legal system. They find a relationship between investor protection and the importance of capital markets. Countries with stronger rights for shareholders and creditors have broader and deeper capital markets. French civil-law countries have the weakest rights and worst enforcement have the least developed capital markets. La Porta, Lopez-de-Silanes and Shleifer (1999) consider the incidence of widely held corporations in 27 wealthy economies. They find that with the exception of countries such as the US and UK, where minority investors are well protected, corporations are not widely held but instead are controlled by families or the State. Another exception is Germany, where banks play a significant role in the governance of some large corporations through their ownership of shares. La Porta et al. (2000a) consider the relationship between payout policies and investor protection in 33 countries. They distinguish between an “outcome model” where minority holders are able to pressure insiders to pay dividends and a “substitute model” where firms develop a reputation for paying out dividends. They find that firms in common law countries, which usually have better investment protection, pay more dividends than firms in civil law countries. This is interpreted as support for the outcome model. La Porta et al. (2000b) describe the differences in laws and enforcement across 49 countries, discuss the possible origins of these differences, and consider their consequences and potential strategies for corporate governance reform.

Rajan and Zingales (2000) argue that political factors are more important in determining the financial structure of a country than the origin of the legal system. They document the relative sizes of capital markets through the twentieth century. Contrary to the received wisdom, they find that continental European countries, such as France, Belgium and Germany, have had large capital markets in certain periods. When measured by the ratio of capitalization to GDP, they were not that much different in size from those in the UK and bigger than those in the US. The modern view that capital markets are not important for these countries is true for the period after the Second World War, but was not true at the start of the century. In recent years, markets have regained their importance in countries such as France

and are moving in that direction in countries such as Germany. Rajan and Zingales argue that understanding this reversal requires an analysis of political factors, including the openness of the country to outside influences and the centralization of the political system.

Another important legal aspect of comparative financial systems is the form of the bankruptcy code. The literature compares the bankruptcy codes in use in different countries and suggests reforms of these codes. One broad category of procedures comprises cash auctions, like the US Chapter 7 procedure. Another comprises structured auctions, like the US Chapter 11. Rajan and Zingales (1995) report that all the countries in their sample have cash auctions, while those with developed financial markets like Canada and the US have structured auctions. Stromberg (2000) finds that, in practice, cash auctions in Sweden work very like reorganization procedures.

In practice there is considerable evidence of deviations from absolute priority in bankruptcy (see Eberhart, Moore, and Roenfeldt (1990), Weiss (1990), Franks and Torous (1994) and Betker (1995)). Brown (1989), Bergman and Callen (1991), Gertner and Scharfstein (1991) provide arguments for deviations from absolute priority. Berkovitch, Israel and Zender (1998) and Berkovitch and Israel (1999) have argued that deviations from absolute priority can lead to efficient ex ante decisions.

Bebchuk (1988), Aghion, Hart and Moore (1992) and Shleifer and Vishny (1992) have argued that inefficiencies are likely to arise from transaction costs and illiquidity in cash auctions. Pulvino (1998, 1999) provides some evidence that market liquidity leads to low value users ending up in control. Bebhuk (1988) suggested an ingenious scheme of options to overcome the liquidity problems and different valuations by security holders. Aghion, Hart and Moore (1992) suggest a development of this type of plan that allows managers to remain in control when they are the highest valued claimants in the view of the residual claimants.

The intersection of law, finance, and politics contains many interesting topics for further research.

- Historically, financial activity has often taken place without an effective legal system or with a legal system that did not play an important role (see, e.g. Greif (2000)). Understanding the operation of such systems is an important complement to understanding the role of the law.
- Even in countries with sophisticated legal systems, reputations and implicit contracts play an important role. Gaining a fuller understanding

of the operation of these mechanisms is important (see, e.g., Diamond (1991) and Allen and Gale (2000a, Chapter 15)).

- More important than the details of bankruptcy codes and the design of optimal liquidation procedures is the relationship between bankruptcy codes and growth. Bankruptcy codes that impose penalties on default will discourage risk taking while leniency leads to moral hazard. Understanding this trade-off is important (see, e.g., Santos (1997)).

## 8 Financial crises

In addition to the legal system and political factors Allen and Gale (2000a) have argued that financial crises have had a significant impact on the historical development of financial systems. Prior to the twentieth century banking crises, currency crises and stock market crashes occurred frequently in Europe and the US. These crises were generally regarded as a bad thing. Over time one of the most important roles of central banks came to be to eliminate panics and ensure financial stability. The Bank of England played an especially important role in the development of effective stabilization policies in the eighteenth and nineteenth centuries. By the end of the nineteenth century, banking panics had been eliminated in Europe. The last true panic in England was the Overend, Gurney & Company Crisis of 1866.

The US took a different tack. Alexander Hamilton had been impressed by the example of the Bank of England and this led to the setting up of the First Bank of the United States and subsequently the Second Bank of the United States. However, after Andrew Jackson vetoed the renewal of the Second Bank's charter, the US ceased to have any form of central bank in 1836. It also had many crises during the nineteenth and early twentieth centuries. During the crisis of 1907 a French banker commented that the US was a "great financial nuisance". The comment reflects the fact that crises had to a large extent been eliminated in Europe and it seemed as though the US was suffering gratuitous crises that could have been prevented by setting up a central bank.

The Federal Reserve System was eventually established in 1914. In the beginning it had a decentralized structure, which meant that even this development was not very effective in eliminating crises. In fact, major banking panics continued to occur until the reforms enacted after the crisis of 1933. At

that point, the Federal Reserve was given broader powers and this together with the introduction of deposit insurance finally led to the elimination of periodic banking crises. Bordo (2000) contains an overview of the historical literature on crises.

The tight regulations that were imposed on banks in the US and other countries in response to the experience of the Great Depression meant that for the period between 1945 and the early 1970's there were no banking crises. The structure of the Bretton Woods fixed exchange rate system meant that there were currency crises when a country's macroeconomic policies were inconsistent with its exchange rate. Following the collapse of the Bretton Woods agreement in the early 1970's and the deregulation that followed in many countries financial crises reemerged. Lindgren, Garcia, and Saal (1996) find that about three quarters of the IMF's member countries suffered some form of banking crisis between 1980 and 1996. In many of these crises, panics in the traditional sense were avoided either by central bank intervention or by explicit or implicit government guarantees. In an important study Kamin-sky and Reinhart (1999) found that the advent of financial liberalization in many economies in the 1980's has led to "twin" banking and currency crises. Historical evidence provided by Bordo and Eichengreen (2000) suggests that twin crises both in recent decades and prior to the First World War have been fairly similar in a number of respects. In particular in both periods crises were particularly disruptive in terms of the depth of ensuing recessions. The recent experience with crises has meant that the susceptibility of different types of financial systems to crises has become one of the most important areas of comparative financial systems.

Although many crises have occurred in emerging economies many have also occurred in developed countries. Recent deregulation has often been associated with monetary expansion and lending booms and apparent bubbles in real estate and stocks. The subsequent bursting of these bubbles has led to financial crises. The idea that the amount of money and credit available is an important factor in the determination of asset prices is not new. In his description of historic bubbles Kindleberger (1978; p. 54) emphasizes the role of this factor: "Speculative manias gather speed through expansion of money and credit or perhaps, in some cases, get started because of an initial expansion of money and credit."

Perhaps the best known recent example of this type of phenomenon is the dramatic rise in real estate and stock prices that occurred in Japan in the late 1980's and their subsequent collapse in 1990. Financial liberalization

throughout the 1980's and the desire to support the United States dollar in the latter part of the decade led to an expansion in credit. During most of the 1980's asset prices rose steadily, eventually reaching very high levels. For example, the Nikkei 225 index was around 10,000 in 1985. On December 19, 1989 it reached a peak of 38,916. A new Governor of the Bank of Japan, less concerned with supporting the US dollar and more concerned with fighting inflation, tightened monetary policy and this led to a sharp increase in interest rates in early 1990 (see Frankel (1993) and Tschoegl (1993)). The bubble burst. The Nikkei 225 fell sharply during the first part of the year and by October 1, 1990 it had sunk to 20,222. Real estate prices followed a similar pattern. The next few years were marked by defaults and retrenchment in the financial system. The real economy was adversely affected by the aftermath of the bubble and growth rates during the 1990's have mostly been slightly positive or negative, in contrast to most of the post war period when they were much higher.

Similar events occurred in Norway, Finland and Sweden in the 1980's (see Heiskanen (1993) and Drees and Pazarbasioglu (1995)). In Norway the ratio of bank loans to nominal GDP went from 40 percent in 1984 to 68 percent in 1988. Asset prices soared while investment and consumption also increased significantly. The collapse in oil prices helped burst the bubble and caused the most severe banking crisis and recession since the war. In Finland an expansionary budget in 1987 resulted in massive credit expansion. The ratio of bank loans to nominal GDP increased from 55 percent in 1984 to 90 percent in 1990. Housing prices rose by a total of 68 percent in 1987 and 1988. In 1989 the central bank increased interest rates and imposed reserve requirements to moderate credit expansion. In 1990 and 1991 the economic situation was exacerbated by a fall in trade with the Soviet Union. Asset prices collapsed, banks had to be supported by the government and GDP shrank by 7 percent. In Sweden a steady credit expansion through the late 1980's led to a property boom. In the fall of 1990 credit was tightened and interest rates rose. In 1991 a number of banks had severe difficulties because of lending based on inflated asset values. The government had to intervene and a severe recession followed.

Mexico provides a dramatic illustration of an emerging economy affected by this type of problem. In the early 1990's the banks were privatized and a financial liberalization occurred. Perhaps most significantly, reserve requirements were eliminated. Mishkin (1997) documents how bank credit to private nonfinancial enterprises went from a level of around 10 percent of

GDP in the late 1980's to 40 percent of GDP in 1994. The stock market rose significantly during the early 1990's. In 1994 the Colosio assassination and the uprising in Chiapas triggered the collapse of the bubble. The prices of stocks and other assets fell and banking and foreign exchange crises occurred. These were followed by a severe recession.

These examples suggest a relationship between the occurrence of significant rises in asset prices or *positive* bubbles and monetary and credit policy. They also illustrate that the collapse in the bubble can lead to severe problems because the fall in asset prices leads to strains on the banking sector. Banks holding real estate and stocks with falling prices (or with loans to the owners of these assets) often come under severe pressure from withdrawals because their liabilities are fixed. This forces them to call in loans and liquidate their assets which in turn appears to exacerbate the problem of falling asset prices. In other words there may be *negative* asset price bubbles as well as positive ones. These negative bubbles, in which asset prices fall too far, can damage the banking system and unnecessarily exacerbate problems in the real economy. Just as monetary and credit policy can cause positive price bubbles, monetary policy may also have a role to play in preventing asset prices from falling too far. In the Scandinavian and Mexican examples, discussed above, asset prices quickly rebounded and the spillovers to the real economy were relatively short-lived. In Japan, asset prices did not rebound and the real economy has been much less robust.

#### *Theories of banking crises*

There are two traditional views of banking panics. One is that they are *random events*, unrelated to changes in the real economy. The classical form of this view suggests that panics are the result of “mob psychology” or “mass hysteria” (see, e.g., Kindleberger (1978)). The modern version, developed by Diamond and Dybvig (1983) and others, is that bank runs are self-fulfilling prophecies. Given the assumption of first-come, first-served and costly liquidation of some assets there are multiple equilibria. If everyone believes that a banking panic is about to occur, it is optimal for each individual to try to withdraw her funds. Since each bank has insufficient liquid assets to meet all of its commitments, it will have to liquidate some of its assets at a loss. Given first-come, first-served, those depositors who withdraw initially will receive more than those who wait. On the one hand, anticipating this, all depositors have an incentive to withdraw immediately. On the other hand, if no one believes a banking panic is about to occur, only those with immediate needs for liquidity will withdraw their funds. Assuming that banks

have sufficient liquid assets to meet these legitimate demands, there will be no panic. Which of these two equilibria occurs depends on extraneous variables or “sunspots”. Although “sunspots” have no effect on the real data of the economy, they affect depositors’ beliefs in a way that turns out to be self-fulfilling. (Postlewaite and Vives (1987) have shown how runs can be generated in a model with a unique equilibrium).

An alternative to the “sunspot” view is that banking panics are a natural outgrowth of the *business cycle*. An economic downturn will reduce the value of bank assets, raising the possibility that banks are unable to meet their commitments. If depositors receive information about an impending downturn in the cycle, they will anticipate financial difficulties in the banking sector and try to withdraw their funds. This attempt will precipitate the crisis. According to this interpretation, panics are not random events but a response to unfolding economic circumstances.

A number of authors have developed models of banking panics caused by aggregate risk. Wallace (1988; 1990), Chari (1989) and Champ, Smith, and Williamson (1996) extend Diamond and Dybvig (1983) by assuming the fraction of the population requiring liquidity is random. Chari and Jagannathan (1988), Jacklin and Bhattacharya (1988), Hellwig (1994), and Alonso (1996) introduce aggregate uncertainty which can be interpreted as business cycle risk. Chari and Jagannathan (1988) focus on a signal extraction problem where part of the population observes a signal about future returns. Others must then try to deduce from observed withdrawals whether an unfavorable signal was received by this group or whether liquidity needs happen to be high. Chari and Jagannathan are able to show panics occur not only when the outlook is poor but also when liquidity needs turn out to be high. Jacklin and Bhattacharya (1988) also consider a model where some depositors receive an interim signal about risk. They show that the optimality of bank deposits compared to equities depends on the characteristics of the risky investment.

Hellwig (1994) considers a model where the reinvestment rate is random and shows that the risk should be born both by early and late withdrawers. Alonso (1996) demonstrates using numerical examples that contracts where runs occur may be better than contracts which ensure runs do not occur because they improve risk sharing.

Building on the empirical work of Gorton (1988) and Calomiris and Gorton (1991) that nineteenth century banking crises were predicted by leading economic indicators, Allen and Gale (1998) develop a model that is consistent with the business cycle view of the origins of banking panics. In their model,

crises can improve risk sharing but they also involve deadweight costs if they cause projects to be prematurely liquidated. A central bank can avoid these deadweight costs and implement an optimal allocation of resources through an appropriate monetary policy. By creating fiat money and lending it to banks, the central bank can prevent the inefficient liquidation of investments while at the same time allowing optimal sharing of risks.

*Theories of currency crises and twin crises*

The large movements in exchange rates that occurred in many East Asian countries in 1997 have revived interest in the topic of currency crises. In many of the early models of currency crises, such as Krugman (1979), currency crises occur because of inconsistent and unsustainable government policies (see Flood and Marion (1998) for a survey of the literature on currency crises). These models were designed to explain the problems experienced by a number of Latin American countries in the 1970's and early 1980's. In the recent East Asian crises, by contrast, many of the countries which experienced problems had pursued macroeconomic policies that were consistent and sustainable. This characteristic of the recent crises has prompted a re-examination of theoretical models of currency crises.

The other characteristic of the South East Asian crises that has received considerable attention is that the banking systems of these countries also experienced crises. Kaminsky and Reinhart (1999) have investigated the relationship between banking crises and currency crises. They find that in the 1970's, when financial systems were highly regulated in many countries, currency crises were not accompanied by banking crises. However, after the financial liberalization that occurred during the 1980's, currency crises and banking crises became intertwined. The usual sequence of events is that initial problems in the banking sector are followed by a currency crisis and this in turn exacerbates and deepens the banking crisis. Although banking crises typically precede currency crises, the common cause of both is usually a fall in asset values due to a recession or a weak economy. Often the fall is part of a boom-bust cycle that follows financial liberalization. It appears to be rare that banking and currency crises occur when economic fundamentals are sound.

Despite the apparent inter-relationship between currency crises and banking crises in recent episodes, the literatures on the two topics have for the most part developed separately. Important exceptions are Chang and Velasco (1998, 2000). The first paper develops a model of currency and banking crises based on the Diamond and Dybvig (1983) model of bank runs. Chang and

Velasco introduce money as an argument in the utility function. A central bank controls the ratio of currency to consumption. Different exchange rate regimes correspond to different rules for regulating the currency-consumption ratio. There is no aggregate uncertainty in these models: banking and currency crises are “sunspot” phenomena. In other words, there are at least two equilibria, a “good” equilibrium in which early consumers receive the proceeds from short-term assets and late consumers receive the proceeds from long-term assets and a “bad” equilibrium in which everybody believes a crisis will occur and these beliefs are self-fulfilling. Chang and Velasco (2000) shows that the existence of the bad equilibrium depends on the exchange rate regime in force. In some regimes, only the good equilibrium exists; in other regimes there exists a bad equilibrium in addition to the good equilibrium. The selection of the good or the bad equilibrium is not modeled. In Chang and Velasco (1998) a similar model is used to consider recent crises in emerging markets. Again there is no aggregate uncertainty and crises are sunspot phenomena.

A number of other papers have focused on the possibility of multiple equilibria. These include Flood and Garber (1984), Obstfeld (1986; 1994) and Calvo (1988). In these models governments are unable to commit to policies and this lack of commitment can give rise to multiple equilibria, at least one of which is a self-fulfilling crisis. Again, the selection of equilibrium is problematic. An exception is Morris and Shin (1998) who show that traders’ lack of common knowledge about the state of the economy can lead to a unique equilibrium selection.

Corsetti, Pesenti and Roubini (1999) have developed a model of twin crises designed to explain the Asian meltdown in 1997. The basic reason that twin crises occur in their framework is because of moral hazard arising from government guarantees. Foreigners are willing to lend for unprofitable projects against the promise of future government bailouts. When the project payoffs turn out to be low there will be a banking crisis. The prospect of the government using seigniorage to finance the bailouts leads to the prospect of inflation and so the currency also collapses.

Kaminsky and Reinhart’s (1999) finding that crises are related to economic fundamentals is consistent with work on US financial crises in the nineteenth and early twentieth centuries. Gorton (1988) and Calomiris and Gorton (1991) argue that the evidence is consistent with the hypothesis that banking crises are an essential part of the business cycle rather than a sunspot phenomenon. Allen and Gale (2000c) extend the model of Allen and Gale

(1998) to consider twin crises. A model is developed where the “twin” crises result from low asset returns. Large movements in exchange rates are desirable to the extent that they allow better risk sharing between a country’s bank depositors and the international bond market.

#### *Bubbles and crises*

As the historical summary at the beginning of the section indicated, crises often follow apparent bubbles in asset prices. Allen and Gale (2000d) provide a theory of bubbles and ensuing crises based on the existence of an agency problem. Many investors in real estate and stock markets obtain their investment funds from external sources. If the ultimate providers of funds are unable to observe the characteristics of the investment, there is a classic risk shifting problem. Risk shifting increases the return to investment in the assets and causes investors to bid up the asset price above its fundamental value. A crucial determinant of asset prices is the amount of credit that is provided for speculative investment. Financial liberalization, by expanding the volume of credit for speculative investments, can interact with the agency problem and lead to a bubble in asset prices.

An alternative theory of financial crises has been suggested by McKinnon and Pill (1997) and Krugman (1998). They suggest that government guarantees are the fundamental cause of crises. Because deposits are guaranteed by the government, banks are not subject to the usual discipline of the market. This allows banks to engage in speculative investment, which bids up asset prices and creates a bubble that eventually bursts. It can be argued that while government guarantees can certainly exacerbate the situation, they are neither necessary nor sufficient for the occurrence of a crisis. Many crises occurred when there was no prospect of a government guarantee for banks. The US in the late 1920’s and early 1930’s witnessed a dramatic rise in asset prices and a subsequent crisis when no government guarantees existed. The US in the 1950’s and 1960’s provides an example where government guarantees of the banking system existed but no crisis occurred.

#### *Contagion and financial fragility*

The prevalence of financial crises has led many to conclude that the financial sector is unusually susceptible to shocks. One theory is that small shocks can have a large impact. A shock that initially affects only a particular region or sector or perhaps even a few institutions can spread by contagion to the rest of the financial sector and then infect the larger economy. There are a number of different types of contagion that have been suggested in the literature. The first is contagion through interlinkages between banks and

financial institutions. The second is contagion of currency crises. The third is contagion through financial markets. De Bandt and Hartmann (2000) contains a survey of this literature.

Banks are linked in several ways including payments systems and inter-bank markets. These linkages can lead to a problem of contagion. We start by considering models of payment system contagion. Building on a locational model of payment systems developed by McAndrews and Roberds (1995), Freixas and Parigi (1998) have considered contagion in net and gross payment systems. In a net payment system banks extend credit to each other within the day and at the end of the day settle their net position. This exposes banks to the possibility of contagion if the failure of one institution triggers a chain reaction. In a gross system transactions are settled on a one-to-one basis with central bank money. There is no risk of contagion but banks have to hold large reserve balances. A net payment system is preferred when the probability of banks having low returns is small, the opportunity cost of holding central bank money reserves is high, and the proportion of consumers that have to consume at another location is high. Freixas, Parigi and Rochet (1999) use this model to examine the conditions under which gridlock occurs. They show that there can be gridlock when the depositors in one bank withdraw their funds, anticipating that other banks cannot meet their netting obligations if all their depositors have also withdrawn their funds. Rochet and Tirole (1996a) consider the role of the too-big-to-fail policy in preventing contagion.

Allen and Gale (2000e) focus on a channel of contagion that arises from the overlapping claims that different regions or sectors of the banking system have on one another through interbank markets. When one region suffers a banking crisis, the other regions suffer a loss because their claims on the troubled region fall in value. If this spillover effect is strong enough, it can cause a crisis in the adjacent regions. In extreme cases, the crisis passes from region to region and becomes a contagion. Aghion, Bolton and Dewatripont (1999) also consider a model of contagion through interbank markets. In their model there are multiple equilibria. In one equilibrium there are self-confirming beliefs that a bank failure is an idiosyncratic event and in the other there are self-fulfilling beliefs that a bank failure signals a global shortage of liquidity. Lagunoff and Schreft (1998) study the spread of crises in a probabilistic model. Financial linkages are modeled by assuming that each project requires two participants and each participant requires two projects. When the probability that one's partner will withdraw becomes too large, all

participants simultaneously withdraw and this is interpreted as a financial crisis. Van Rijckeghem and Weber (2000) document linkages through banking centers empirically. Rochet and Tirole (1996b) use monitoring as a means of triggering correlated crises: if one bank fails, it is assumed that other banks have not been properly monitored and a general collapse occurs.

There is a growing literature on contagious currency crises. Masson (1999) provides a good overview of the basic issues. He distinguishes between “monsoonal” effects, spillovers and pure contagion. Monsoonal effects occur when there are major economic shifts in industrial countries that impact emerging economies. Spillovers occur when there are links between regions. Pure contagion is when there is a change in expectations that is not related to fundamentals and is associated with multiple equilibria. Eichengreen, Rose and Wyplosz (1996) and Glick and Rose (1999) provide evidence that trade linkages are important factors in the spread of many currency crises.

There are a number of papers that consider contagion through financial markets. King and Wadwhani (1990) considered a situation where information is correlated between markets. Price changes in one market are perceived to have implications for asset values in other markets. Calvo (1999) and Yuan (2000) consider correlated liquidity shocks as a channel for contagion. When some investors need to obtain cash to, for example, meet a margin call they may liquidate in a number of markets so the shock is spread. Kodres and Pritsker (2000) use a multi-asset rational expectations model to show how macroeconomic risk factors and country-specific asymmetric information can combine to produce contagion. Kyle and Xiong (2000) present a model of contagion in financial markets due to the existence of a wealth effect.

The notion of financial fragility is closely related to that of contagion. When a financial system is fragile a small shock can have a big effect. The shock may be spread by contagion. A financial crisis may rage out of control and bring down the entire economic edifice. The memory of the Great Depression and earlier crises is still with us and it powerfully reinforces belief in financial fragility. Financial multipliers are modeled by Kiyotaki and Moore (1997). In their model, the impact of illiquidity at one link in the credit chain travels down the chain and has a big impact. Chari and Kehoe (2000) show that herding behavior can cause a small information shock to have a large effect on capital flows.

#### *Discussion*

The literature on financial crises is still at an early stage. Many important questions remain.

- Conventional wisdom holds that financial crises are undesirable and should be eliminated. However, the theoretical underpinnings of this idea are sparse. It is not entirely clear what the market failure is. Allen and Gale (2000f), for example, show that in some cases crises are constrained efficient.
- What exactly is the link between the financial sector and the real sector? Why do financial crises have such quick and important effects on real activity?
- What precisely is the role of the central bank with regard to crises and what should its policy be?

## 9 Concluding remarks

The field of comparative financial systems is relatively new. Despite its youth, there is already a large literature, as this survey demonstrates. The transformation of the formerly communist economies in Eastern Europe, the development of a single economy in the European Union, and the continuing process of globalization of financial markets underline the importance of this field. Much work remains to be done before the advantages and disadvantages of rival financial systems are fully understood.

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**Table 1**  
**Holdings of Corporate Equities in the U.S. (in percent)**

Sector	1950	1970	1990	2000
Private Pension funds	0.8	8.0	16.8	12.9
State & local pension funds	0.0	1.2	7.6	10.3
Life insurance companies	1.5	1.7	2.3	5.4
Other insurance companies	1.8	1.6	2.3	1.1
Mutual funds	2.0	4.7	6.6	19.0
Closed-end funds	1.1	0.5	0.5	0.3
Bank personal trusts	0.0	10.4	5.4	1.9
Foreign sector	2.0	3.2	6.9	8.9
Household sector	90.2	68.0	51.0	39.1
Other	0.6	0.6	0.7	1.2
Total equities outstanding	142.7	841.4	3,542.6	19,047.1

(billions of dollars)

Source: Federal Reserve Board “Flow of Funds,” [www.bog.frb.fed.us](http://www.bog.frb.fed.us). Figures are for the end of period except for 2000, where the figures are for the third quarter.

**Table 2****Unweighted Average Gross Financing of Nonfinancial Enterprises 1970-1989 (% of total)**

	<i>US</i>	<i>UK</i>	<i>Japan</i>	<i>France</i>	<i>Germany</i>
Internal	91.3	97.3	69.3	60.6	80.6
Bank Finance	16.6	19.5	30.5	40.6	11
Bonds	17.1	3.5	4.7	1.3	-0.6
New Equity	-8.8	-10.4	3.7	6	0.9
Trade Credit	-3.7	-1.4	-8.1	-2.8	-1.9
Capital Transfers	-	2.5	-	1.9	8.5
Other	-3.8	-2.9	-0.1	-6.5	1.5
Statistical Adjustment	-8.7	-8	0	2.5	0

Source: Bertero (1994) and Corbett and Jenkinson (1996)

**Table 3**

An International Comparison of Banks and Markets in 1993

(All figures in billions of dollars)

	GDP	Banking Assets (BA)	BA/GDP	Equity Market Capitalisation (EMC)	EMC/GDP
U.S.	\$6,301	\$3,319	53%	\$5,136	82%
U.K.	\$824	\$2,131	259%	\$1,152	140%
Japan	\$4,242	\$6,374	150%	\$2,999	71%
France	\$1,261	\$1,904	151%	\$457	36%
Germany	\$1,924	\$2,919	152%	\$464	24%

Source: Based on Table 1 of Barth, Nolle and Rice (1997)

**Table 4**

Total Gross Financial Assets Ultimately Owned by the Household Sector

Country	\$ billion	Value relative to GDP	% held directly by households	% held by pension funds (public and private)	% held by insurance companies	% held in mutual funds, etc.
U.S.	20,815	3.00	58	17	13	10
U.K.	3,107	2.97	40	24	27	7
Japan	12,936	2.71	71	10	16	3
France	2,689	1.90	62	2	17	19
Germany	2,900	1.46	67	4	20	5

Note: 1. Aggregation of direct asset holdings, pension fund assets, assets of insurance companies and assets in mutual funds and other collective investment schemes at the end of 1994.

Source: Miles (1996), Table 4, p.21.

**Table 5**

Number of Members on Boards of Directors

	U.S. <sup>1</sup>		U.K. <sup>1</sup>		Japan <sup>1</sup>		France <sup>1</sup>		Germany <sup>2</sup>	
Ford	15 (10)	Glaxo	16 (7)	Toyota	60 (1)	Saint Gobain	16	Hoechst	21	11
IBM	14 (11)	Hanson	19 (8)	Hitachi	36 (3)	AGF	19 (5)	BASF	28	10
Exxon	12 (9)	Guinness	10 (6)	Matsushita	37 (6)	Usinor Sacilor	21 (5)	Robert Bosch	20	11
Mobil	16 (10)	British Airways	10 (6)	Nissan	49 (5)	Alcatel Alsthom	15	Krupp	22	7
Philip Morris	16 (4)	Allied Domecq	12 (4)	Toshiba	40 (3)	Elf Aquitaine	11	Bayer	22	11
RJR Nabisco	9 (6)	Grand Metropolitan	14 (1)	Honda	37 (3)	Renault	18	Daimler Benz	20	8
Texaco	13 (11)	BTR	10 (4)	Sony	41 (6)	Thomson	8	Volkswagen	20	7
Johnson & Johnson	14 (12)	Associated British Foods	7 (1)	NEC	42 (5)			Thyssen	23	27
GAP	11 (8)	British Steel	8 (0)	Fujitsu	36 (7)			Siemens	20	15
				Mitsubishi Electric	37 (3)					
				Mitsubishi Motors	43 (4)					
				Mitsubishi Heavy Industries	43 (3)					
				Nippon Steel	53 (1)					
				Mazda	45 (8)					
				Nippon Oil	22 (0)					

Notes: 1. Figures in parentheses:

U.S.: Outside directors

U.K.: Non-executive (outside) directors

Japan: Outside directors (including cross directorships)

France: Directors from the Government

2. For Germany the first column represents the members of the Supervisory Board and the second is the members of the Management Board.

Source: Institute of Fiscal and Monetary Policy (1996), Chart III-3-3, p.69.

**Table 6**

## Regulations on Shareholding of Financial Institutions and Nonfinancial Corporations

	U.S.	U.K.
Banks	Banks: Cannot hold shares of other corporations (Glass-Steagall Act). Bank holding companies: Holdings are limited to a maximum of 5% of the shares of nonfinancial corporations Trusts: Holdings are limited to a maximum of 10% of the fund's assets in any one company's shares.	No special regulations on holdings. However, in the case of large volume acquisitions of shares, advance permission of the bank of England is required. A report to the Bank of England is required when exposure (all claims including shares invested) exceeds 10% of a bank's total capital. (See note 1.)
Life Insurance Companies	Varies by state. For instance, under New York State Law (which applies to 60% of all insurance companies), investments must be less than 20% of assets or a maximum of 50% of surpluses. Holdings of the shares of any single company are limited to 2% of total assets.	Voluntary self-limitation of holding of stock in any single company (normally 2.5% of assets), for the purpose of portfolio diversification. A maximum (normally 5% of assets) is imposed on the amount of stock in any single company which a pension fund or insurance company can hold on its own.
Other Insurance Companies	Prohibition on holding a non-insurance company in its entirety.	Same as above
Mutual Funds	Tax penalty imposed on holdings in excess of 10% of the stock of any single company.	Under laws regulating financial services holding of stock for the purpose of controlling a company is prohibited.
Pension Funds	Under the Employee Retirement Income Securities Act, investment diversification is required. Holdings in excess of 10% of the pension fund's own stock are prohibited.	Same as for insurance companies.
Other	Holding of stock which results in restricting competition is prohibited.	Under "The City Code on Takeovers and Mergers," the mutual holding of shares the purpose of which is to prevent the transfer of control of stock is prohibited.

**Table 6 (cont.)**

	Japan	France	Germany
Banks	Under Article 11 of the Anti-Monopoly Law holdings are limited to 5% of the total number of issued shares of a domestic company.	The holding of shares of any single nonfinancial corporation is limited to a maximum of 15% of the bank's capital. Total holdings of all shares cannot exceed 60% of all the bank's capital.	Holdings greater than 10% are permitted, but only up to the value of the bank's capital. (See note 1).
Life Insurance Companies	Under the Anti-Monopoly Law, holdings are limited to a maximum of 10% of the total number of issued shares of any single company.		Holding of shares up to 20% of total assets is permitted.
Other Insurance Companies	Same as above.		No regulations.
Mutual Funds	No regulations.		No regulations.
Pension Funds			No regulations.
Other	Establishment of holding companies is prohibited (Article 9 of the Anti-Monopoly Law). A subsidiary whose parent company owns more than half of its stock cannot hold stock in its parent company (Commercial Code Article 211 [2]). When one company controls another through shareholdings the controlled company has no voting rights with respect to the controlling company's stock (Commercial Code, Article 241 [3]). A corporation which engages in nonfinancial business and has capital assets worth at least 10 billion yen, or net assets worth at least 30 billion yen, is prohibited from holding shares in domestic companies exceeding the value of its capital or net assets, whichever is greater (Anti-Monopoly Law, Article 9 [2]). (See note 2.)	A company can hold a maximum of 10% of the total number of issued shares of another company. Subsidiaries can also hold up to 10% of the stock of parent companies but cannot vote.	A subsidiary whose parent company owns more than half of its stock cannot hold stock in its parent company. Mutual holding of shares is possible, but voting rights are limited to 25% of all voting rights, even when a company owns more than 25% of the stock of another company. Establishment of holding companies is permitted (in the case of pure holding companies and management holding companies).

Notes: 1. The U.K. and Germany are scheduled to make modifications to their regulations as EU integration progresses.

2. Japan is scheduled to make changes to its laws on holding companies as part of the 'Big Bang' reform of its financial system.

Source: Institute of Fiscal and Monetary Policy (1996), Chart III-2-3, p. 60.

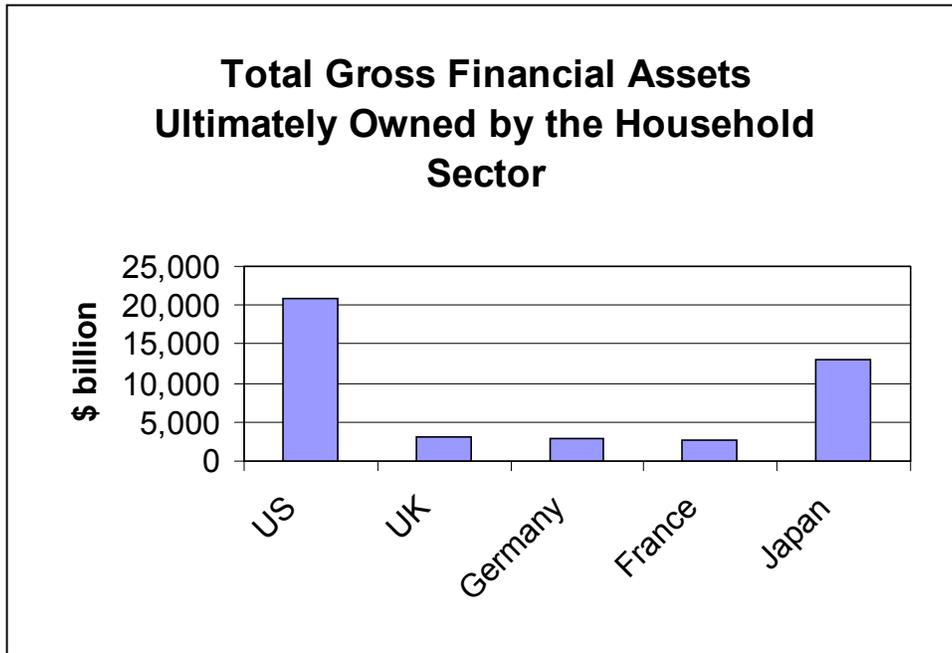
**Table 7**Comparison of Shareholders by Sector  
(% of Total)

	Individuals	Pension funds, etc.	Financial Institutions	Nonfinancial Corporations	Public sector	Foreign individuals and institutions	Other
U.S.	50	20	5	14	0	5	6
U.K.	20	31	30	3	4	12	
Japan	23		41	25	1	4	6
France	34		23	21	2	20	
Germany	17		22	42	5	14	

Notes: 1. Data is for 1990 except for France which is for 1992.

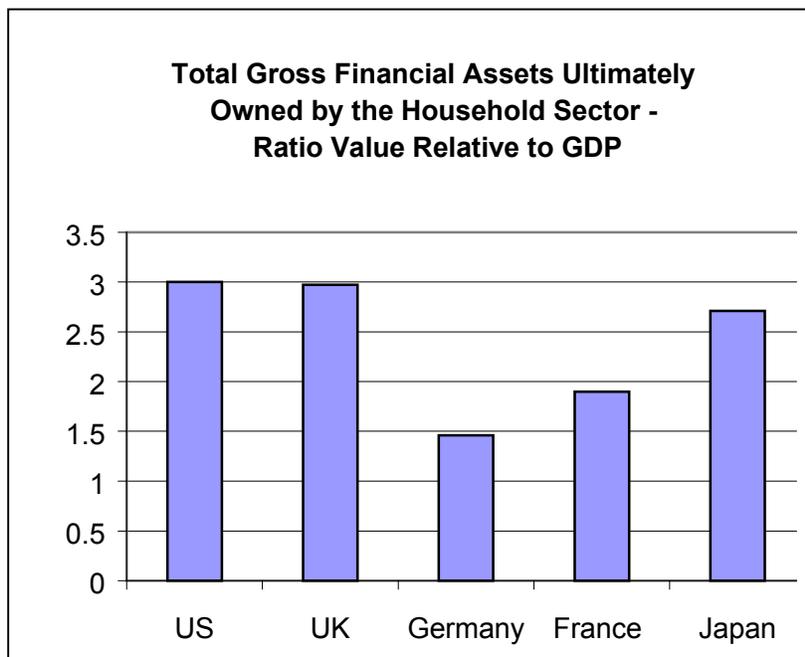
Source: Prowse (1995), Table 2, p. 13 for U.S. and Institute of Fiscal and Monetary Policy (1996), Chart III-2-1, p. 59 for the other countries.

Figure 1



Source: Miles (1996), Table 4, p. 21

Figure 2



Source: Miles (1996), Table 4, p. 21