1

Introduction

Securities markets are an increasingly important source of investment funds in the developed world. Corporations and entrepreneurs use the securities markets to raise capital by selling voting rights over their actions, and also future revenue streams resulting from these actions. Their counterparties are widely dispersed investors ranging from individual (retail) investors to large collective investment vehicles such as pension funds, insurance companies, and mutual funds. While this type of finance has always been important, capital market activity exploded worldwide during the last quarter of the twentieth century. Figure 1.1 illustrates trends for both securities issuance and mergers and acquisitions activity. The dollar value of securities offerings, both in the United States and worldwide, rose sharply beginning in the early 1980s. Mergers and acquisition activity is highly cyclical but the US merger wave during the 1980s was exceptionally strong by historical standards and it in turn was dwarfed by the merger wave of the late 1990s.

Broadly speaking, two types of securities are issued in public securities markets. *Debt* securities promise a fixed schedule of payments, but their holders receive voting rights only in the event that the payment schedule is violated. The holders of *equity* securities receive voting rights, but are entitled only to whatever income remains after debt obligations have been met. These rights can be sold easily in securities markets. As a result, corporations that rely upon security markets for their finance do not in general form close relationships with their investors. Arm's-length financing such as that raised in public equity markets has long been an important source of funding in the United States, the United Kingdom, and Japan, but it is significantly less important in other major economies like France and Germany. Nevertheless, the latter are increasingly shifting toward public market finance. Figure 1.2 illustrates the recent experience of these countries by reporting their equity market capitalization as a percentage of GDP

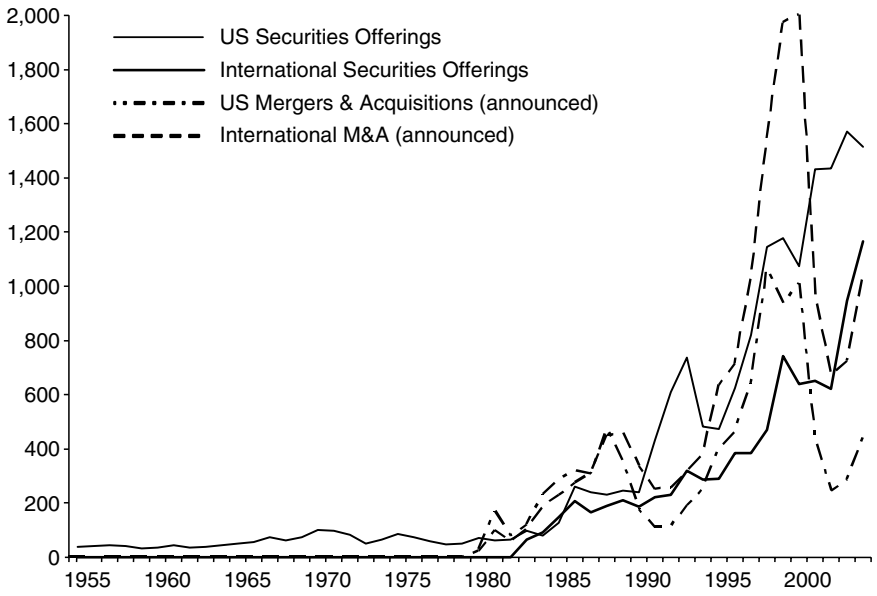

Figure 1.1. *US and global securities market activity (billions of US dollars, CPI-adjusted: 1983 dollars)*

Sources: Securities Industry Association (SIA), Securities Industry Factbook.

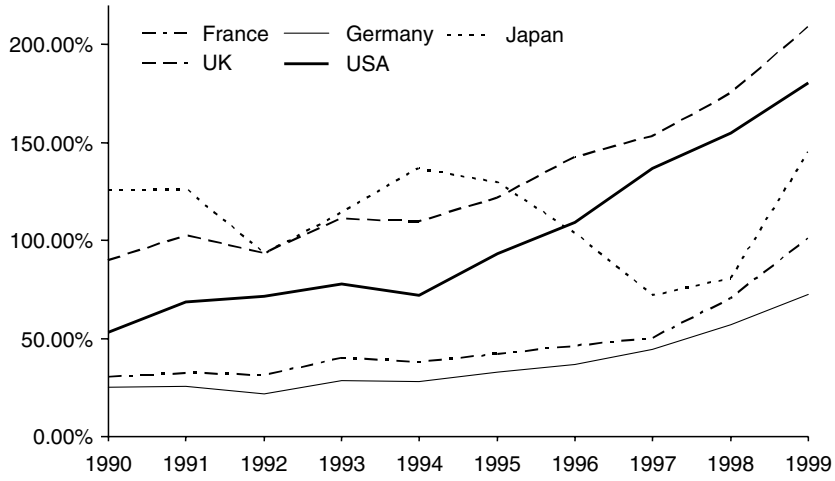

Figure 1.2. *Equity market capitalization as a percentage of GDP for major industrialized countries*

Sources: SIA, Securities Industry Factbook (2001).

during the 1990s. Germany and, especially, France are noteworthy examples of a broader shift away from a relatively modest reliance upon public equity financing. Nevertheless, bank financing remains an important source of short- and medium-term debt financing even in markets with traditionally strong public securities markets. See Allen and Gale (2000) for a comprehensive survey of the theory and evidence on this topic.

Securities markets are distinguished from other sources of finance, such as bank loans, by the importance that they place upon prices. Information relevant to a corporation's business is dispersed across many economic actors. When the corporation is publicly traded, this information is aggregated in the security's price through the competitive interplay of these self-interested actors. Relative prices provide information about resource constraints in the economy which helps corporations to plan and to evaluate their own activities.

In contrast, there is in general no market for the income from a bank loan, and hence the bank cannot rely upon prices to provide it with information about its counterparties. Instead, lenders form close relationships with their borrowers, as a result of which they acquire the information that they need to evaluate their investments. This information is not widely disseminated, and bank depositors therefore play no part in interpreting or gathering it. Bank lenders substitute for the price mechanism by intervening directly in the operations of the businesses to whom they lend money.

The intermediary role of the bank lender as a substitute for the price mechanism in generating information and reflecting it to the corporate borrower therefore distinguishes bank finance from security market finance, where investors generate information themselves and, when corporations fail to respond to price signals, intervene for themselves. Nevertheless, intermediaries play an important role in the security markets, and we call them *investment banks*.

The investment bank's most important role is in arranging the issuance of new securities by corporations and entrepreneurs in need of new capital. Their clients for this activity range from small operations raising public equity capital for the first time via an *initial public offering* (IPO), through to mature firms which return regularly to the capital markets to fund ongoing operations and new projects. Investment banks also act for governments and government agencies when they issue public debt securities. The securities markets for newly issued securities are generally referred to as *primary markets*. The term is slightly misleading in the sense that there is no separate

formal market for new securities: the issuance process involves the creation of a completely new market.

The markets in which securities trade after they are issued are known as *secondary markets*. The most visible example of a secondary securities market is the New York Stock Exchange (NYSE). We have emphasized the role of securities markets in aggregating widely dispersed information into a single price. For this to happen, securities must be easily transferred between traders. The ease with which secondary market trade can occur in a given security is known as its *liquidity*. Liquidity varies across securities and across market structures, which vary enormously, despite the recent and profound shift from human intermediation to electronic trading platforms.

In liquid securities markets agents have an incentive to gather information, and to trade upon it. This incentive does not exist when an intermediary, such as a loan-making bank, sits between the corporation and its depositor-investors. Hence the importance of investment bank intermediaries in the capital-raising process may at first sight appear rather strange. The purpose of this book is to explain their economic role.

Unlike loan-making, or *commercial*, banks, investment banks have traditionally committed little of their own capital to the firms for which they have arranged financing. Nor have investment banks routinely engaged in active, ongoing monitoring of their client firms: any attempt to do so would undermine the role of the security markets in generating and aggregating relevant information.[1] Nevertheless, we argue that, like the commercial bank, the investment bank's central activity is informational.

Investors are less willing to invest in securities issued by firms about whose future performance they have little information. Conversely, such firms may gain little market feedback concerning their business decisions when the investor segment to which they appeal is quite narrow or uninformed. These problems are at their most acute when securities are first issued. Investors at this time may have little understanding of the issuer's business, and firms are most in need of market feedback when they issue new securities. Both of these problems act as a drag on security issuance: uninformed investors are unwilling to

[1] Although we explain in chapter eight why Michael Milken did so with such great success in the early development of secondary markets for subinvestment grade debt, or *junk bonds*.

purchase securities, and firms are unwilling to raise capital, without a good idea of the likely market reaction.

Given the right data, some investors may be able to estimate demand information for new securities, and hence the right price for the issue. They could profit from this information if they used it to trade in the security after issuance. Persuading them to reveal it instead, so that the new issue can be more accurately priced, is therefore possible only if the issuer can promise to pay them adequately for their knowledge. But it is notoriously hard to write enforceable contracts over knowledge of this type. In many cases, the contracting problem is so severe that it could prevent the issuance of the security, and hence market-based information production.

We argue in this book that the core function of the investment bank is to overcome this problem. Of course, it can never create court-enforceable contracts over the price-relevant information that is essential to new security issuance. Instead, it creates a network of investors who trust the investment bank to stand as an intermediary between them and new security issuers, rewarding them for providing their, otherwise private, information, and using this information to establish market demand conditions and thus more accurately to price the issuer's securities. This network functions as a sort of informal market in price-relevant information. Participants engage with one another via a combination of explicit and implicit, or relational, contracts. The latter are enforced by the investment bank, rather than by the courts. We therefore refer to the investment bank's network as an *information marketplace*. The bank's ability to enforce implicit contracts in this marketplace rests on its reputation for balancing many counterparties' conflicting interests.

Its core function of managing an information marketplace provides an investment bank with a comparative advantage in other security market activities. For example, we have already noted that active intervention in under-performing corporations that rely upon security market finance is performed by investors, rather than by their financial intermediary. One mechanism for intervention is the market for corporate control. Investment banks are able to use their information marketplaces to acquire information which is of value to potential bidders, and hence merger and acquisition (M&A) advisory work is an important part of their business.

Given their expertise in the primary security markets, it is natural that investment banks should be active players in the secondary markets, too. For example, their willingness to buy and sell securities in

secondary markets reassures their investor client base that they will be able to exit their investments when they choose to do so. They also provide their corporate clients with market services which go beyond pure fund-raising. Investment banks actively advise corporations on their capital structure and how it might be altered better to serve the firm in its pursuit of business interests. In their modern capacity as *financial engineers*, investment bankers increasingly help to implement their advice through the design and placement of derivative contracts that lower funding costs, reduce the threat of financial distress, or sharpen performance incentives within the firm. In many instances, the bank serves as the original counterpart to derivative contracts, but it generally seeks to lay off the associated risk by making offsetting trades in liquid secondary markets for related securities.

Finally, investment banks increasingly use their security market skills in the asset management business, both directly and indirectly. Investment banks have sharply increased their direct participation by managing and marketing mutual funds and hedge funds. As recently as 1980, the ten largest NYSE member firms (measured by capitalization), all large investment banking concerns, earned less than one percent of their total revenues from asset management fees. By 1990, this figure had risen to 4.17 percent, or about two-thirds of the share of revenue generated by underwriting fees. In 2004, asset management fees accounted for 7.5 percent of revenues for the ten largest member firms, or about 60 percent of the share accounted for by underwriting fees.[2] Banks also serve this market segment indirectly through their provision of *prime brokerage* services that address the trading concerns of institutional investors, most of whom trade more frequently and in larger quantity than their retail investor counterparts.

Later in the book we develop a theoretical model of investment banking, and we bring it to bear upon the historical evolution of the industry from its early origins in the eighteenth-century Atlantic trade to the present day. This chapter sets the scene for our discussion by describing the modern investment bank. We start by examining important trends in securities markets, and exploring their implications for the operation of investment banks. We argue that for some investment banks, technological advances in the last quarter of

[2] Securities Industry Association, Securities Industry DataBank.

the twentieth century served to increase the importance of financial capital relative to tacit human skill. These changes have had a profound effect upon the structure of the investment banking industry: some institutions have concentrated upon activities where the human element remains paramount; others have embraced new technologies, and have created the economies of scale and scope needed to succeed in those business lines that rely increasingly upon large amounts of financial capital.

We close the chapter by examining more closely two investment banks that typify this industry division. Morgan Stanley is an exemplar of the large-scale investment bank. It has grown rapidly in the last two decades since shifting from private partnership to public ownership, combining with the retail brokerage operations of Dean Witter, and moving into a wide range of businesses from its narrowly focused origins in corporate advisory services. This transition has led to a dramatically increased emphasis on financial capital relative to human capital in Morgan Stanley's production process. Within the last year, the rising tension between human and financial capital came to a head as the firm's CEO, Phillip Purcell, whose roots lie in the financial capital-intensive side of the business, was forced out in favor of John Mack, who more nearly represents the traditional, human capital-intensive side of the business.

In contrast, until very recently Lazard Freres remained a small private partnership, focused almost exclusively on the advisory businesses in which human agency remains critical. Lazard's recent IPO marked both the culmination of the steady demise of private partnerships within the top tier of the industry, and also exemplified the ongoing experiment in public ownership of boutique advisory firms whose key assets remain people over whom shareholders have only very weak property rights. The tension between human capital and financial capital will be a recurring theme throughout the book, as we attempt to explain the industry's various idiosyncratic, and long-lived, characteristics.

MARKET TRENDS

We argue in chapter three that the core function of the investment bank is creating an environment in which information production will occur. It accomplishes this by creating an information marketplace, in which a small coterie of investors provide the bank with information. Agreements over information production cannot be enforced

in court, but repeated interaction between the parties in the marketplace builds trust between them, which underpins their market relationships.

The core information-creation activity of investment banks has scarcely changed since the inception of securities markets (see chapters four to seven). However, the way in which it has been prosecuted has changed constantly in response to technological, political, legal, and demographic changes. In recent years the investment banking landscape has been transformed by the information technology revolution, and by the simultaneous explosion in financial engineering techniques and derivatives trading. These changes increased the efficient operating scale for investment banks, and hence increased the importance of financial capital; they simultaneously reduced the importance in trading rooms of human experience and judgment, as opposed to technical prowess.

The impact that these factors have had upon secondary market trading over the last forty years is illustrated in figure 1.3. The NYSE's average daily trading volume increased fourfold in the 1960s from slightly more than three million shares to a maximum in 1968 of about 13 million. At this stage problems with antiquated back-office

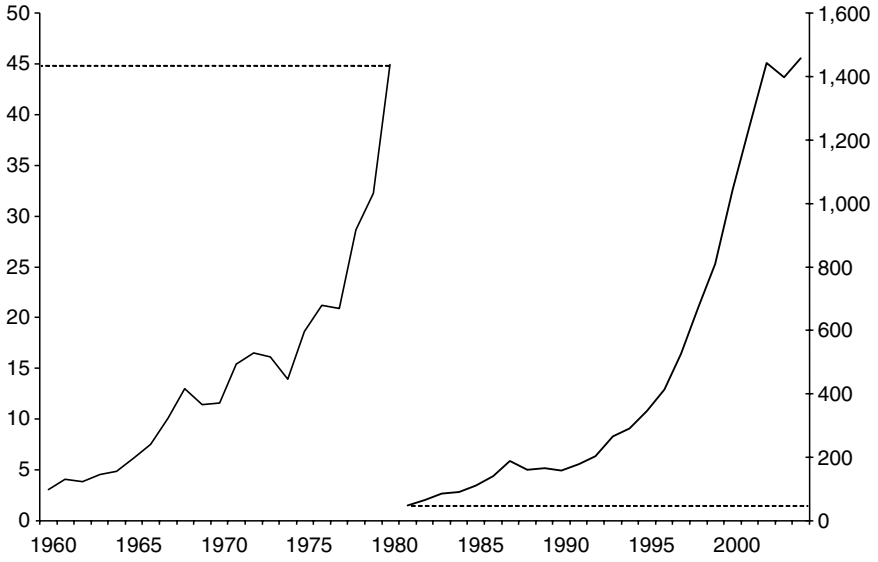

Figure 1.3. *New York Stock Exchange average daily trading volume, 1960–2004 (millions of shares)*

Source: New York Stock Exchange.

systems forced the computerization of firms like Merrill Lynch whose primary business was retail trading. They could achieve the necessary operating scale only through an injection of financial capital, and the Exchange recognized this in 1971 when it allowed member firms to operate as publicly traded corporations.

Trading volume continued to grow. By 1980, it had increased by a further factor of four from its 1970 level, forcing the Exchange to introduce (in 1976) the designated order turnaround (DOT) system for electronic routing and execution of small orders against quotes provided by floor specialists. A further fourfold expansion of trading volumes in the 1980s reached its peak at the time of the October 1987 market crash. Following a brief period of retrenchment and continued heavy investment in trading technology, average daily trading volume grew by a factor of nearly ten between 1990 and 2004.

Market developments in the 1980s were driven by both demographic and technological changes. As we have already noted, security ownership patterns changed. Moreover, cheaper computer power and developments in financial theory enabled investment banks to implement sophisticated pricing and risk-management algorithms for the first time. As a result, the computers that supported the growth in secondary market activity also to some extent substituted for human agency in matching buyers and sellers. For example, computer-managed trading books are important in the markets for foreign exchange and for financial futures. Nevertheless, while market-making operations demand significant financial capital and face narrowing margins, they remain an important source for information to the largest investment banks. As of October 31, 2004, only seven specialist firms coordinated trading in the 2,609 NYSE-listed stocks, and three of these firms were controlled by banks with significant investment banking interests.

Computerization in the 1980s also enabled the development of the derivatives markets, whose recent growth is documented in tables 1.1–1.3. Derivatives contracts allow corporations to adopt very specific risk positions, which they can use strategically to manage their total exposures. An important example is the option. An option purchaser has the right to perform a specific trade on a particular date. So a corporate wishing to reduce its exposure to the level of the Japanese yen could buy an option to purchase a specific quantity of yen at a given price, thereby protecting itself against price rises beyond this level.

Table 1.1. *Global derivatives market*

Year	Exchange traded	OTC	Total
1988	1,304	1,654	2,958
1989	1,767	2,475	4,242
1990	2,290	3,450	5,740
1991	3,519	4,449	7,968
1992	4,633	5,346	9,979
1993	7,761	8,475	16,236
1994	8,898	11,303	20,201
1995	9,283	17,713	26,996
1996	10,018	25,453	35,471
1997	12,403	29,035	41,438
1998	13,932	80,318	94,250
1999	13,522	88,202	101,724
2000	14,156	95,199	109,355

Note: Notional principal amount outstanding in billions of US dollars. OTC data after 1998 is not strictly comparable with prior years.

Sources: Bank for International Settlements (http://www.bis.org) and International Swaps and Derivatives Association, Inc. (http://www.isda.org)

Derivatives markets are an increasingly important part of the relationship between an investment bank and its clients. By trading in non-standardized, or 'over-the-counter' (OTC) derivatives, investment banks can provide tailor-made solutions to their clients' investment and risk-management problems: the growth of OTC markets is illustrated in table 1.1. They provide a particularly striking example of the trends that have shaped investment banking in recent years. As in the secondary security markets, participation in the derivatives markets requires investment banks to commit their own capital. Moreover, the skills that they need are more akin to engineering than to the judgment- and relationship-based knowledge of the traditional investment banker.

The increasing importance of financial capital for investment banking has raised the minimum operating scale for investment banks. This trend is illustrated in figure 1.4. As recently as 1980, the ten largest investment banks by capitalization averaged about $600 million in capital (CPI-adjusted to 1983 dollars). By 2000, the figure had risen

Table 1.2. *Markets for derivative financial instruments: notional principal amounts outstanding, 1986–96 (billions of US dollars)*

	1986	**1987**	**1988**	**1989**	**1990**	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**
Interest rate futures	370.0	487.7	895.4	1,200.8	1,454.5	2,156.7	2,913.0	4,958.7	5,777.6	5,863.4	5,931.1
Interest rate options	146.5	122.6	2792	387.9	599.5	1,072.6	1,385.4	2,362.4	2,623.6	2,741.8	3,277.8
Currency futures	10.2	14.6	12.1	16.0	17.0	18.3	26.5	34.7	40.1	38.3	50.3
Currency options	39.2	59.5	48.0	50.2	56.5	62.9	71.1	75.6	55.6	43.2	46.5
Stock market index futures	14.5	17.8	27.1	41.3	69.1	76.0	79.8	110.0	127.3	172.2	198.6
Stock market index options	37.8	27.7	42.9	70.7	93.7	132.8	158.6	229.7	238.3	329.3	380.2
Total	618.3	729.9	1,304.8	1,766.9	2,290.4	3,519.3	4,634.4	7,771.1	8,862.5	9,188.2	9,884.6
North America	518.1	578.1	951.7	1,155.8	1,268.5	2,151.7	2,694.7	4,358.6	4,819.5	4,849.6	4,839.7
Europe	13.1	13.3	177.7	251.0	461.2	710.1	1,114.3	1,777.9	1,831.7	2,241.6	2,831.7
Asia-Pacific	87.0	138.5	175.4	360.0	560.5	657.0	823.5	1,606.0	2,171.8	1,990.1	2,154.0
Other	0.0	0.0	0.0	0.1	0.2	0.5	1.8	28.7	39.5	106.8	59.3

Source: Scholes (1998: 362, table 1).

Table 1.3. *Notional principal value of outstanding interest rate and currency swaps of the members of the International Swaps and Derivatives Association, 1987–June 1996 (billions of US dollars)*

	1987	1988	1989	1990	1991	1992	1993	1994	1995	June 1996
Interest rate swaps										
All counterparties	682.9	1,101.2	1,502.6	2,311.5	3,065.1	3,850.8	6,177.3	8,815.6	12,810.7	15,584.2
Interbank (ISDA member)	206.6	341.3	547.1	909.5	1,342.3	1,880.8	2,967.9	4,533.9	7,100.6	—
Financial institutions	300.0	421.3	579.2	817.1	985.7	1,061.1	1,715.7	2,144.4	3,435.0	—
Governments	47.6	63.2	76.2	136.9	165.5	242.8	327.1	307.6	500.9	—
Corporations	128.6	168.9	295.2	447.9	571.7	666.2	1,166.6	1,829.8	1,774.2	—
Currency swaps										
All counterparties (adjusted for reporting of both sides)	182.8	319.6	449.1	577.5	807.2	860.4	899.6	914.8	1,197.4	1,294.7
Interest rate options	0.0	327.3	537.3	561.3	577.2	634.5	1,397.6	1,572.8	3,704.5	4,190.1
Total	865.6	1,657.1	2,489.0	3,450.3	4,449.5	5,345.7	8,474.5	11,303.2	17,712.6	21,068.9

Source: Scholes (1998: 363, table 2).

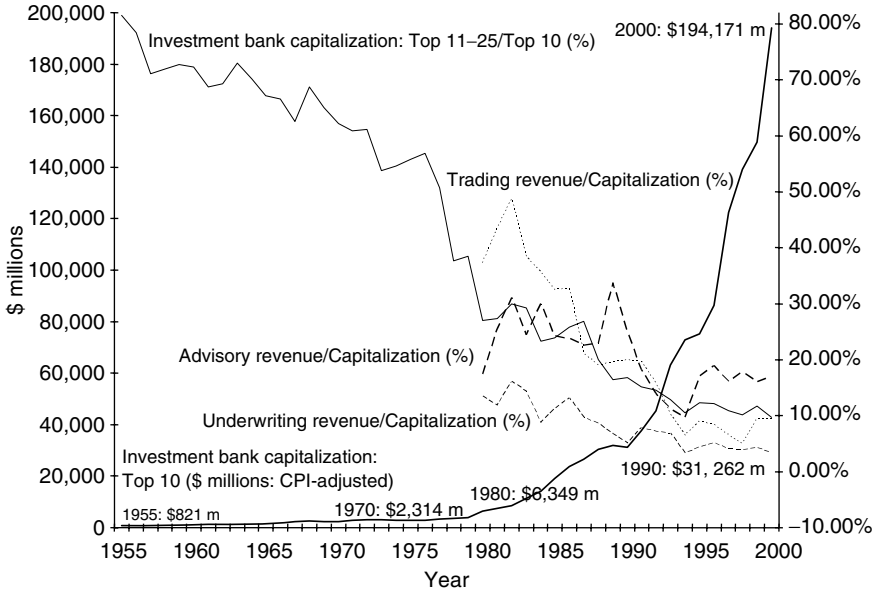

Figure 1.4. *The US investment banking industry, 1955–2000*

Note: The advisory revenue data series is the 'other' revenue category reported by the SIA. The most important component of this category is fees from OTC derivatives and M&A advisory work.

Sources: SIA, Securities Industry Databank and Factbook.

to nearly $20 billion. Over the same period, the capitalization of these banks nearly doubled relative to the 15 next largest banks. The pattern of increasing capitalization and concentration of capital is even more pronounced when traced back to 1955.

The increased requirement for capital arose alongside a sharp rise in the number of investment bank employees (see figure 1.5). In 1979, the five largest banks by capitalization employed about 56,000 people in total, with the employee rolls of individual firms ranging from about 2,000 to 27,000 people. By 2000, the top five banks employed about 205,000 people, with individual bank employees ranging from 12,000 to 72,000.

Notwithstanding the rise in employee numbers, the importance in investment banking of human capital relative to financial capital fell over the period under consideration. The quadrupling of employee numbers was swamped by the increase in capitalization. In 1979 (CPI-adjusted) capitalization per employee ranged from $27,000 to

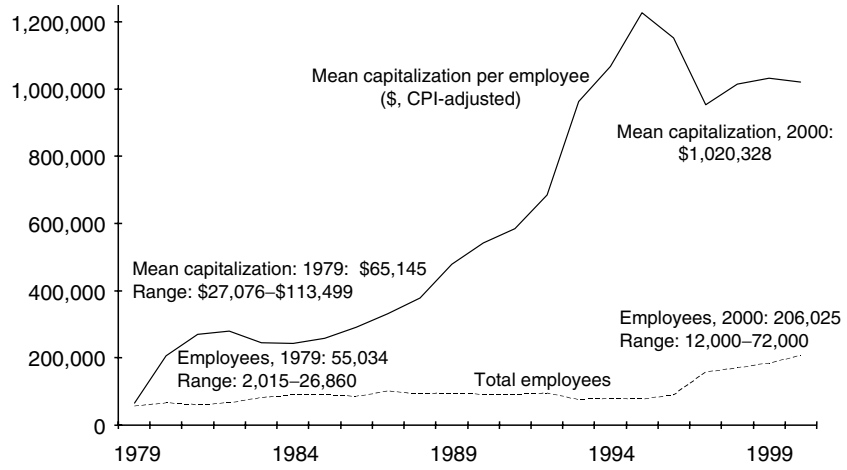

Figure 1.5. *Investment bank employees and capitalization, 1979–2000 (top five banks by capitalization)*
Sources: SIA, Securities Industry Databank and Factbook.

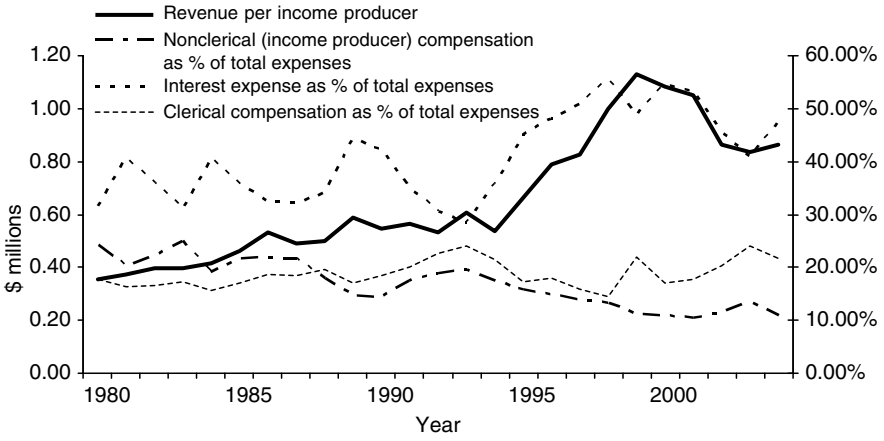

Figure 1.6. *Income producer revenue and compensation (ten largest banks by capitalization)*
Sources: SIA, Securities Industry Databank and Factbook.

$113,000, with a mean of $65,000. In 2000, per-employee capitalization ranged from $875,000 to $3,585,000, with a mean of about $1 million.

A final indication of the declining relative importance of human capital is illustrated in figure 1.6, where we report as a percentage of

total expenses revenue per income producer and their (non-clerical) compensation for 1980–2004. Revenue per income producer increased fairly steadily through 1995 and then nearly doubled over the next five years, before pulling back with the stock market decline. Over the same period, nonclerical compensation declined from over 20 percent to around ten percent of total expenses. Clerical compensation (as a percentage of total expenses) remained fairly stable over the period. By contrast, interest expenses, which provide a rough approximation of payments to financial capital, fluctuated between 30 and 45 percent of total expenses until 1994, when they began tracking closely the rising path of revenue per income producer.

In sum, the ever-increasing trading volumes of the secondary securities markets, the increasing power of distributed, desktop computing, and the explosion of derivative trading in investment banks have had two consequences. First, investment banks that rely upon a security market presence to deliver their core informational services need more financial capital than ever before. Second, these investment banks are less reliant upon hard-to-find, judgment-based, tacit professional skills which can only be acquired on the job. There is a declining dependence on human capital per unit of production within the industry.

INDUSTRY STRUCTURE

We have argued that investment banks are primarily concerned with the creation of informational assets. Since these assets cannot be the subject of formal financial contracts, the investment bank creates an environment within which mutual trust underpins agreements to find, and to pay for, price-relevant information. Hence, as we demonstrate in greater detail in chapters two and three, investment banks rely upon their reputational capital. Moreover, investment banks have traditionally relied upon tacit human skills that are hard-to-acquire and hard-to-prove or to disprove. The bank's ability to sell these skills again rests upon its reputation: indeed, we argue in chapter nine that the need to maintain a reputation for highly skilled employees explains the historical use in investment banks of the partnership form of organization.

The importance of tacit human capital, the need to tie this capital to the investment bank, and the value of reputational capital can help us to explain the industrial organization of the investment banking industry. First, reputations are hard-to-acquire (and

easy-to-lose). Hence new investment banks, which have no reputation, face a substantial barrier to entry. As a result, the investment banking industry has been highly concentrated throughout its history. This observation can be usefully documented using industry 'league tables', which report firm rankings by the dollar value of transactions that they complete. Tables 1.4 and 1.5 summarize investment bank rankings for the last four decades. They show the dollar value of new US-underwritten common stock issues for the banks that managed them (i.e. that acted as 'bookrunner'), and also the value of mergers and acquisitions for which the banks acted as advisers.

Several facts are immediately apparent from tables 1.4 and 1.5. First, the market for managing US common stock offerings has become increasingly concentrated during the last half century. The 1960s began shortly after the last major antitrust challenge to the investment banking industry. During this decade, the top five banks by market share accounted for 38 percent of the value of US shares brought to market during the decade, and the top ten banks accounted for 62 percent. By 2003, the top five and top ten investment banks accounted for 64 and 87 percent of market share, respectively.

It is also noteworthy that many of the names that appeared at the top of the league tables during the 1960s maintained a leading position in 2003. In fact, every bank among the top ten in the 1960s that does not appear in 2003 was absorbed by one of the 2003 top ten banks at some point in the intervening period. This observation is consistent with our statement that reputational capital presents a significant barrier to entry into the investment banking industry.[3] Investment bank reputation is a focal point of our analysis throughout the book.

We have already pointed to the technological changes that raised the minimum operating scale for retail-oriented investment banks in the 1970s. This was the basis for a wave of consolidations, which saw many of the highly ranked investment banks of the 1960s folded into those which remained in 2003. Some of the highly ranked names of 2003, such as Citigroup, UBS, JP Morgan, and BancAmerica, are

[3] The 'tombstone' advertisements announcing the completion of a transaction provide further evidence of the importance that investment banks place upon reputation (see Hayes, 1971, and Carter and Manaster, 1990). The banks participating in a transaction are listed in the corresponding tombstone advertisement according to their roles and, among banks serving similar functions, their perceived standing in the industry.

Table 1.4. *Underwritten common stock (thousands of US dollars) US transactions*

1960–69		1970		1980		1990		2003	
First Boston	$3,989	Merrill Lynch	$591	Merrill Lynch	$2,233	Alex. Brown	$2,975	Merrill Lynch	$20,184
Merrill Lynch	3,721	First Boston	345	Morgan Stanley	1,623	Goldman Sachs	2,634	Citigroup	19,526
Lehman Brothers	3,218	Kidder, Peabody	321	Kidder, Peabody	1,188	Salomon Brothers	1,756	Goldman Sachs	14,554
Blyth	2,732	Blyth	262	Goldman Sachs	952	Merrill Lynch	1,596	Morgan Stanley	12,116
White, Weld	2,546	Eastman Dillon	256	First Boston	818	Lehman Brothers	1,013	UBS	10,273
Morgan Stanley	2,258	Stone & Webster	239	Dean Witter	758	First Boston	929	CS FirstBoston	7,355
Goldman Sachs	2,220	Morgan Stanley	211	Blyth Eastman	639	Paine Webber	911	LehmanBrothers	6,575
Dean Witter	2,000	White, Weld	135	Lehman Brothers	629	Morgan Stanley	911	JP Morgan	6,031
Kuhn, Loeb	1,931	Lehman Brothers	134	EF Hutton	465	Smith Barney	807	Bank of America	4,069
Kidder, Peabody	1,891	Smith Barney	132	Salomon Brothers	454	Dean Witter	759	AG Edwards	2,708
Total market	$43,022		$4,224		$12,841		$20,082		$119,503
Top 5 market share	38%		42%		53%		50%		64%
Top 10 market share	62%		62%		76%		71%		87%

Note: Full credit to bookrunner, equal credit to joint book runners.
Source: Securities Data Corporation.

Table 1.5. *Mergers and acquisitions (thousands of US dollars) US transactions announced during year*

1980		**1990**		**2003**	
Morgan Stanley	$10,564	Goldman Sachs	48,223	Goldman Sachs	$60,377
Lazard Freres	6,579	Morgan Stanley	45,820	JP Morgan	30,143
Salomon Brothers	4,683	First Boston	41,009	Merrill Lynch	29,838
First Boston	4,456	Salomon Brothers	33,163	Citigroup	26,773
Merrill Lynch	2,977	Lazard Freres	25,181	Lehman Brothers	22,143
Lehman Brothers	2,657	Dillon, Read	22,239	CS First Boston Intl	20,449
Shearson Lehman	2,600	Morgan Guaranty	15,840	Morgan Stanley	15,549
Kidder, Peabody	2,169	Merrill Lynch	15,218	CS First Boston	13,832
Dean Witter	1,687	Shearson Lehman	12,430	Deutsche Bank	13,222
Goldman Sachs	1,535	Lehman Brothers	10,903	Bear Stearns	10,286
Total market	$24,371		$238,370		$176,036
Top 5 market share	120%		81%		96%
Top 10 market share	164%		113%		138%

Note: Full credit given to each eligible adviser.
Source: Securities Data Corporation.

commercial banks. They were allowed egress into the investment banking industry only when legal restrictions on their activities were removed by the 1999 repeal of the 1933 Glass-Steagall Banking Act. This resulted in a further wave of investment bank consolidation in the 1990s.[4]

The M&A advisory business relies upon human skill and judgment, and hence is at least as reputationally intensive as the new issues business. Table 1.5 reports league tables for banks engaged in this business for 1980, 1990, and 2005. Once again, this is a highly concentrated business. Many, though not all, of the top underwriters levered their reputational capital into a strong position in M&A advisory work.[5] Moreover, some firms have largely specialized in M&A advisory services: Lazard Freres is a noteworthy example. Investment banks like Lazard have been joined in recent years by a new group of specialized 'boutique' banks that focus on M&A and corporate restructuring. The boutique operations have been founded by prominent bankers who have left bulge-bracket firms to start their own businesses. We argue in chapter ten that they chose to do so because it was very hard to combine their own, highly human-capital-based and reputationally intensive, specialisms with the emphasis upon scale and financial capital of the modern bulge-bracket firm. Prominent examples of firms that were founded in this way are Greenhill & Co. and the Blackstone Group.

Until very recently, M&A advisory specialists were privately held and had relatively small balance sheets. They nevertheless exercised considerable influence, particularly in the most prominent transactions where they were engaged for their highly specialized expertise. More recently, many of these firms have been forced to rethink their competitive strategies. Both Lazard and Greenhill have elected to join the ranks of publicly traded firms.

The data from tables 1.4 and 1.5 concerning industry size and shape that we have already discussed probably understate the concentration of market power within the investment banking industry. Although investment banks compete aggressively to manage securities

[4] Figure 10.1 on page 298 provides a visual presentation of reorganization and consolidation among the most prominent banks from mid century forward. Corwin and Schultz (2005) provide a comprehensive listing of mergers and acquisitions involving investment banks from 1997 to mid-year 2002.

[5] Note that these market shares are difficult to interpret in the light of the industry convention of granting full credit to multiple advisers on a single deal. Hence, market shares for the top five or ten banks can exceed 100 percent of the total.

offerings, and to advise on M&A and restructuring transactions, they also routinely join forces to serve as comanagers and coadvisors. The vehicle through which this occurs for security issuance is the underwriting syndicate. Syndicates are contractual arrangements that bind several firms to collaborate for a single transaction.

We argue in chapter three that syndicates are valuable because they increase the value of an investment bank's reputation in binding itself to work for its corporate clients.[6] Like the relationships within an investment bank's own information marketplace, cooperation within syndicates is sustained by long-lived relationships: although individual syndicates are short-lived, the same banks routinely join forces for many transactions. Admitting its peers into its own syndicate gives an investment bank the opportunity to join future syndicates in which it is not the lead manager. An extreme early example of cooperative reciprocal behavior of this type is the exclusive but informal arrangement between Goldman Sachs and Lehman Brothers in the (co-)origination of deals which ran from 1906 to 1920, and which continued on a less exclusive basis at least until the early 1930s.[7] Despite periodic episodes of public criticism and regulatory interference, there is considerable evidence that reciprocal cooperation has remained an important characteristic of the industry.[8]

Investment banks have traditionally maintained relatively exclusive client relationships. This serves the interests of clients who enter the market relatively infrequently, because concentrating their deal flow with a particular institution enables them to establish an ongoing relationship based upon reputation and trust.[9] Again, a noteworthy example is provided by Goldman Sachs, who, starting from 1956, had a nearly fifty year exclusive banking relationship with Ford Motor Company. We argue in chapter eight that recent technological changes have reduced the difficulty of creating and sustaining reputations with clients. As a result, the exclusivity of client–bank relationships has diminished in recent years. This trend became pronounced during

[6] The lead manager in an underwriting syndicate experiences an additional reputational boost, because its position earns it a stronger placing in the tombstone advertisement.

[7] See 'Brief for Defendant Goldman, Sachs & Co. on Motion to Dismiss Under Rule 41 (b)' filed in *U.S.* v. *H.S. Morgan et al.*, United States District Court for the Southern District of New York, Civil No. 43-757, 1953.

[8] See Carosso (1970), Hayes (1971), Eccles and Crane (1988), Benveniste, Busaba, and Wilhelm (2002), Corwin and Schultz (2005), Pichler and Wilhelm (2001), and Ljungqvist et al. (2006).

[9] See Baker (1990) for a discussion.

the 1990s when commercial banks started to enter the lucrative securities underwriting business. They obtained a toehold in this market through the practice of 'tying': offering lending facilities on attractive terms to prospective security issuers, or threatening explicitly or implicitly to withdraw lending facilities from clients who engaged other banks for issuance business.

The investment bank's investor base is able to provide it with demand data and hence is an integral part of its information marketplace. As a result, the investment bank maintains close relationships with key investors, so that it can create trust and hence ensure that valuable information is created and paid for. We study investment bank relationships in greater detail in chapter nine.

INVESTMENT BANK ACTIVITIES

We now put some meat on the bones of our industry-level generalizations by examining in greater detail the operations of a modern investment bank.

The central investment banking function is the generation and the retailing of price-relevant information. Traditionally, 'investment banking' refers to advisory functions that rest upon the provision and interpretation of this type of information. This type of advice is provided to firms and governmental organizations that wish to raise funds in the securities markets; to corporations that aim to purchase another firm's securities in order to control it; and to corporations that need to renegotiate with security holders, and to restructure their liability structure, generally in order to avoid bankruptcy.

Traditional investment banking relies upon the experience, the skills, and the reputations of its practitioners. It is therefore more closely associated with human skill than with financial capital. However, as we argued above, the information-creation activities of many investment banks rely increasingly upon their secondary market presence, as traders and principal investors. Participation in these activities requires a sizable capital commitment. We have already discussed the importance of securities and derivatives market-making to many modern investment banks. Many of these banks use the information that they acquire from market-making to commit their own funds to the market, an activity which is referred to in the industry as 'proprietary trading'. And investment banks are increasingly eager to make large principal investments in firms, some of whom they advise. This type of principal investment, known collectively as 'merchant

banking', ranges from venture capital investments in fledgling firms to private equity investments, which are often made to support the reorganization of mature firms.[10]

In addition to their capital-intensive trading and principal investment activities, investment banks provide advisory services to secondary-market investors through their asset management arms. Asset management does not place the bank's capital at stake: it generates fees from investment advice and portfolio management services for wealthy individual and institutional clients.

In the succeeding subsections, we describe the activities of the modern investment bank in greater detail.

Traditional Investment Banking

Traditional investment banking relates to advisory work in securities issuance, and also in the M&A market. In this section, we illustrate the general nature of these activities by describing the bank's role in an IPO.[11]

Corporations may decide to perform a securities issue, or they may be identified as a prospect and approached by an investment bank. In either case, investment banks at this stage analyze the firm's prospects and financial status, so as to determine whether the transaction makes sense for the firm, and on what terms. Banks rely when performing this analysis upon experience gleaned from similar deals, as well as upon information provided by the firm. Issuers generally promote competition among banks at this stage, and select their investment bank from a field whose members compete in a 'bake-off' presentation of their analysis.

Once the investment bank has been formally engaged by the corporation, it deepens its analysis in order to prepare the firm's prospectus. The prospectus is the legal document of record, and the bank's responsibility for 'due diligence' in its preparation exposes the bank to the risk of litigation in the event of misstatements, or omissions of relevant facts. In the United States, submission of the preliminary prospectus (the S-1 statement or 'red herring') with the Securities and Exchange Commission (SEC) constitutes registration of the offering.

[10] See 'Wall Street Looks for Slice of Private-Equity Pie', *Wall Street Journal*, 26 September 2005, p. C1.

[11] We describe US practice. Jenkinson, Morrison, and Wilhelm (2005) provide a detailed account of both European and US practice.

The SEC reviews the red herring prospectus over a period which usually lasts several weeks. During this time the bank coordinates a sales effort aimed at mutual and pension fund managers and other institutional investors. The bank also assembles a syndicate of other banks, which assist in the sales and distribution effort, and later share in the underwriting risk. Alongside the sales effort, the bank starts to gather the price-relevant information upon which a successful issue relies. It does so by canvassing institutional investors for indications of the price at which they would purchase shares, and the quantity that they wish to buy. The price and/or quantity bids which the banker receives are used to build a 'book' for the offering. They are not legally binding. However, as we have already discussed, repeated interaction and trust between the parties ensures that these informal promises are honored. Failure to do so would probably result in exclusion from future issues.

When the SEC has approved the issuer's prospectus, the bank and issuer agree upon an offer price that reflects both investor feedback and current market conditions. Once issued, shares are traded in the secondary market. The investment bank's responsibilities at this stage include making a market in the shares, and providing research coverage aimed at prospective investors. As we discussed on page 9, market-making is financial capital-intensive, because the bank may be required to take a substantial position in the securities.[12] In contrast, research coverage relies upon human capital, and is perceived as especially valuable when the bank employs a prominent, or 'all-star', research analyst for the issuer's industry segment.[13] Neither the market-making nor the analyst role forms the basis of an explicit contractual agreement between the issuing firm and the investment bank. However, like its counterparts in the primary market, the investment bank is unlikely to renege upon its promises, because doing so would damage its reputation and with it, its future revenue streams.

The investment bank is remunerated for its expertise by legally acquiring the shares from the firm at a discount to the offer price. The discount, or spread, for moderately priced US IPOs generally hovers around seven percent.[14] When the investment bank acquires the shares, it 'underwrites' the issuing firm's proceeds against unexpected market movements. The risk to which this exposes the banks is

[12] See Ellis, Michaely, and O'Hara (2000).
[13] See Ljungqvist et al. (2006) and citations therein.
[14] Chen and Ritter (2000).

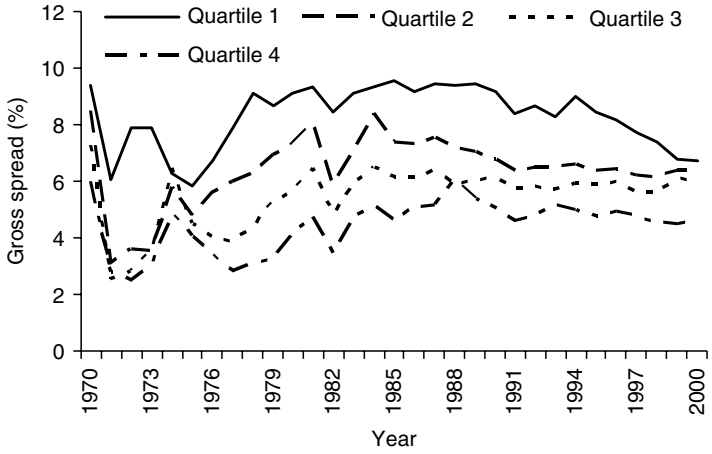

Figure 1.7. *Equity underwriting fees as a percentage of gross proceeds*
Note: The first quartile contains the smallest offerings (measured by gross proceeds).

minimal: the shares are generally sold within hours to the institutional investors who make up the investment bank's book.

The mechanics of Seasoned Equity Offerings (SEOs) and debt offerings are similar but generally less complicated than those of IPOs, if for no other reason than that pricing can be carried out relative to either perfect (in the case of the SEO), or close, substitutes already actively traded in the market. Merger and acquisition and restructuring services involve analytical methods that are similar to those used in securities offerings and may include associated securities transactions.

Over the course of the twentieth century underwriting spreads collapsed in both the debt and equity markets. In 1913, investment banks earned 5–10 percent of the value of a bond offering and 20–25 percent on a common equity offering. In 1940, bonds and common equity carried average spreads of about 2 and 16 percent, respectively.[15] Figures 1.7 and 1.8 show that both debt and equity spreads continued their decline through the early 1970s. Equity spreads rose somewhat until the late 1980s before declining further. A similar pattern obtained among the smallest nonconvertible debt offerings, but by the late 1980s spreads for both large and small debt offerings were in sharp decline. The decline in spreads corresponded with the

[15] Calomiris and Raff (1995).

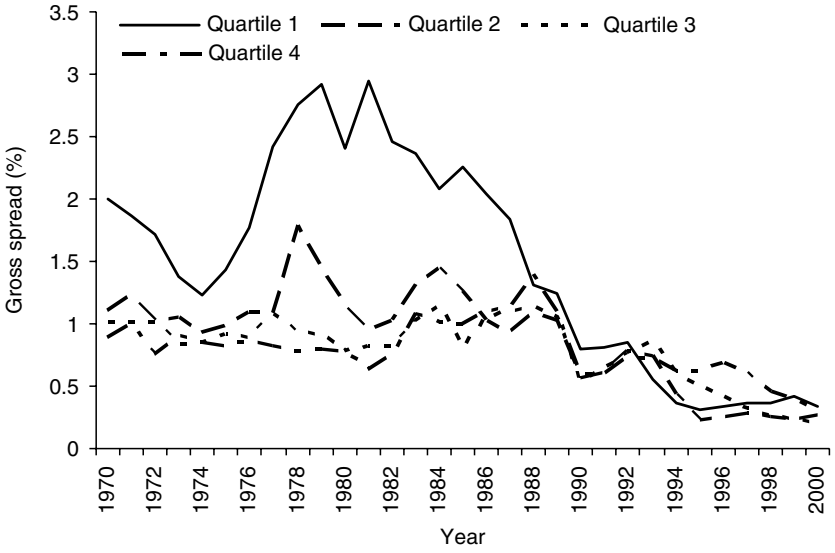

Figure 1.8. *Debt underwriting fees as a percentage of gross proceeds*
Source: Securities Data Corporation.
Note: The first quartile contains the smallest offerings (measured by gross proceeds).

entry of commercial banks into the underwriting business, as Glass–Steagall restrictions were first weakened and then abolished. Commercial banks had considerable expertise in debt funding. Moreover, debt offerings present far less serious informational frictions than do equity offerings. Thus it is natural that debt spreads responded more rapidly and in a more extreme fashion to competition from the new entrants.[16] By 2000, debt spreads for both large and small offerings had fallen below 50 basis points (i.e. 0.5 percent of gross proceeds).

In contrast, while information technology has simplified certain aspects of the equity market, it has not displaced relationships and tacit human capital from their central position in the valuation and placing of new issues. Correspondingly, equity underwriting fees, after falling to about eight percent by 1965, have remained relatively stable in the aggregate. As we explain in chapter eight, however, the aggregate figures mask some important changes in the market, and ongoing experiments with electronic auctions suggest that equity

[16] For similar reasons, the debt markets adapted more rapidly to pressures toward mechanization of issuance and trading practices. See chapter eight.

markets will follow the path of debt markets, albeit perhaps not with such force or speed.

Trading and Principal Investment

In contrast to traditional investment banking activities, trading and principal investment both require a commitment of financial capital. The skills that these activities involve are largely distinct from those of the traditional investment banker, although in areas such as venture capital and private equity investment analysis there is some overlap.

Recent advances in financial theory and in information technology have revolutionized the trading business. Many of the rule-of-thumb approaches to trading that prevailed before the 1980s have been replaced by precise and codifiable techniques that can be acquired at arm's length in professional schools. As a result, trading skill has become increasingly commoditized, and the importance of human relative to financial capital has diminished accordingly. We outline below some of the trading room activities in which financial engineering and computer science have had a particularly profound effect.

First, powerful computers have facilitated the introduction of 'program', or 'basket', trading strategies. The New York Stock Exchange (NYSE) defines a program trade as one that involves the simultaneous purchase or sale of at least fifteen stocks, with a combined value in excess of $1 million. These trades are frequently executed with the goal of matching the performance of a market index such as the S&P 500.[17] Institutional demand for these trades continues to grow as technology drives down their costs.[18]

Second, a combination of advanced computing and mathematically sophisticated financial modeling has enabled more traders to identify price discrepancies across markets. Investment banks develop strategies to profit from these discrepancies in-house, and they also outsource this work by investing in hedge funds. Many of the funds in turn purchase execution services from the bank.

Third, investment banks have in recent years earned substantial profits from the production and distribution of the over-the-counter

[17] Another product of the financial economics revolution is the widely shared belief that this is the most efficient way for most people to invest in the stock market.

[18] During the week ending August 12, 2005, program trading accounted for 15 percent of the daily trading volume on the NYSE. Of the five most active program traders during that week, three (UBS, Lehman, and Credit Suisse First Boston) executed most of their trades for their own account rather than on behalf of clients (*Wall Street Journal*, August 19, 2005, C7).

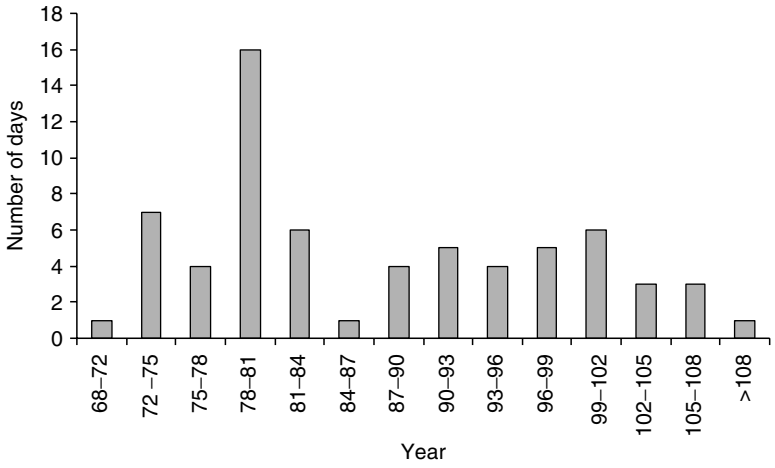

Figure 1.9. *Morgan Stanley daily 99 percent per one-day trading VaR*
Note: Quarter ending May 31, 2005: dollars in millions.

derivative contracts described on page 9. The bank generally acts as counterpart in these deals. It typically earns a fee upon entering into the contract, and must then manage its exposure so as to avoid large future losses. This type of business is naturally capital-intensive, and it exemplifies the modern emphasis upon technical skills, frequently acquired in professional schools.

Information technology has also altered management practice in these areas. Older approaches to managing trading portfolios relied upon judgment, trust, and rule-of-thumb heuristics. These have been supplanted by sophisticated techniques based upon statistical analysis and computerization. The most common of the new techniques is the Value-at-Risk (VaR) approach, which in its original incarnation was developed in the early 1990s by JP Morgan. The VaR figure for an operation indicates the probability with which it will lose more than a given amount over a specified time horizon. For example, a trading book with a one day 99 percent VaR of $1 million will experience a greater loss with one percent probability. Value-at-Risk numbers give senior management a simple handle upon riskiness, which is comparable across business lines. They can be aggregated[19] to give a firm-level VaR, which firms frequently report in their annual reports.

[19] But not by adding them: portfolio effects ensure that the VaR of the whole is less than the sum of the VaRs of the parts.

For example, figure 1.9, which is taken from Morgan Stanley's 05/05 10q filing, shows the firm's daily distribution of daily trading one day 99 percent VaRs for the quarter ending 31 May, 2005. There was one day in which the firm estimated that with one percent probability it could have lost more than $108 million. There were 16 days during which the corresponding figure was between $78 and $81 million. The average daily VaR during the quarter was $87 million. Similarly, in its most recent quarterly earnings report (for the quarter ending February 24, 2006), Goldman Sachs reported record earnings of $2.48 billion but with a VaR of $92 million, up nearly 50 percent from the same quarter the year before.[20]

VaR is not a perfect measure. It does not perform well when market conditions vary significantly from the assumptions underlying its estimation. Moreover, differences in the ways in which firms measure VaR, and the degree to which they apply it to nontrading functions, make comparisons across firms difficult. Notwithstanding these problems, VaR is a powerful and an increasingly ubiquitous tool. It is routinely reported to senior management at the close of day and to shareholders on a quarterly basis. It often serves as a key input to incentive-based compensation plans.

The increasing commoditization of trading knowledge has made it easy for investment banks to replicate the successful trading strategies of their peers.[21] One bank's capital is as good as another's, the basic knowledge used in trading systems or used to value companies has been widely dispersed via business-school training, and startup costs for the development of trading platforms have collapsed with the price of computing power. To the extent that staff are central to the success of a trading operation, they can take their skills to a competitor.

Only when analysis is relatively tacit, deal-specific, and is conducted within the context of a strong client relationship, can banks expect consistently to reap a fair reward for investments in R&D on a fee-for-service basis. Although these conditions obtain in traditional investment banking, they do not in the dealing room, where trading staff mobility and trading strategy replication undermine investment banks' incentives to invest in trading R&D. They have responded in two ways. First, trading and principal investment functions are extremely opaque. Firms are very secretive about their strategies, and they provide only a broad characterization of their returns to trading and principal investment. There are no league tables, and comparative

[20] *Wall Street Journal*, March 15, 2006, C1.

[21] See, for example, Tufano (1989).

rankings are few. In the absence of any legal protection, opacity limits competitors' access to knowledge generated within the bank, and can help to limit the mobility of people in whom it is embedded.[22] Second, investment banks have recently started to patent the methods upon which their ideas rest. Patenting of financial ideas was believed to be impossible until the 1998 appellate court decision in *State Street* v. *Signature Financial Group* changed expectations regarding the enforcement of business method patents. Since then, there has been a flurry of financial patent applications.[23]

Asset Management and Securities Services

Traditional investment banking generates fees from a corporate client base. Asset management and securities services use the information networks of traditional investment banking to generate fees from an investor client base. These are relatively new businesses, which reflect the increasing importance of institutional investors and the aging population.

Asset management generates fees from the investment advice and portfolio management services provided to retail and institutional clients. While most investment banks historically concentrated in their retail businesses upon wealthy individuals, they increasingly attract smaller individual investors by offering their own managed investment funds. Once acquired, fund management clients tend to be relatively immobile, and hence the business generates a revenue stream which is rather more stable than the rest of the bank. While banks with long-standing reputations for high-quality wholesale services have an initial advantage in this market, success requires substantial fixed investments in marketing and distribution channels, and hence is once again dependent upon scale economies.

Securities services include trade execution, clearing, settlement, reporting, and lending collateralized by securities positions. Although securities services can generate considerable revenue (Goldman Sachs earned $380 million in net revenues during the quarter ending February 25, 2005), they also demand significant capital investment.[24] Like the trading activities to which they relate, securities services have become increasingly commoditized in response to technological advances that have promoted standardization and mechanization.

[22] Morrison and Wilhelm (2004).
[23] Lerner (2002).
[24] *Wall Street Journal,* May 20, 2005.

This trend has been particularly pronounced in the retail brokerage business in which Merrill Lynch traditionally specialized. Since the NYSE's 1975 abolition of fixed commission rates this business has become more competitive and less profitable.

In contrast, the wholesale market for prime brokerage services is less standardized, but like retail broking, it has become more dependent upon financial capital. This trend is in large part attributable to an explosive growth in the number and size of hedge funds, which in turn reflects an outsourcing of activities that would once have been performed within investment banks' proprietary trading operations.[25] The most recent estimates place the number of hedge funds worldwide at over 8,000.[26] The dominant firms in the prime brokerage market, Goldman Sachs, Bear, Stearns, and Morgan Stanley, increasingly serve hedge funds by providing advice related to 'risk arbitrage', private equity and complex derivative transactions, as well as providing capital and sophisticated electronic platforms for complex trade execution. Hedge fund business is concentrated among the largest investment banks: aggressive attempts by smaller firms to capture some of the revenue it generates have resulted in lower fees, higher salaries for the key individuals, and a greater bank willingness to assume risk as hedge fund financiers.[27]

Figure 1.10 illustrates relative revenue by functional area for the top ten investment banks by capitalization, as reported to the Securities Industry Association (SIA). Commission income has declined sharply since the elimination of fixed commission requirements. Although it is a very volatile revenue source, the share of total revenues generated by trading declined over the same period. The largest revenue increases occurred in asset management and in the 'other related securities business' category, of which the two major components are fees for corporate advisory services and over-the-counter derivatives dealing.

THE GROWING DICHOTOMY BETWEEN SPECIALISTS AND GENERALISTS

Figure 1.10 suggests that relative revenue growth is strongest among businesses that rely most heavily on human capital. These businesses

[25] Jean-Michel Paul, *Wall Street Journal,* November 8, 2004. Also see chapter ten for further discussion of this point.
[26] *Wall Street Journal*, March 8, 2006.
[27] *Investment Dealers' Digest*, March 3, 2003 and *Wall Street Journal*, May 20, 2005.

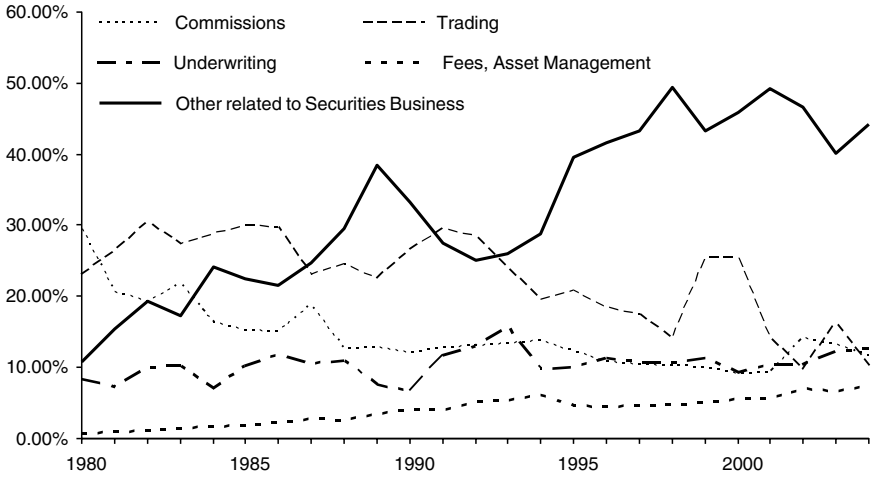

Figure 1.10. *Investment bank revenues (percent of total revenue, ten largest banks)*
Sources: SIA, Securities Industry Databank and Factbook.

include traditional investment banking functions and more sophisticated trading and asset management activities. The most prominent banks attempt to complement efforts in these areas by strengthening their presence in distribution functions that depend heavily on financial capital. Others have followed a path of specialization, focusing upon the creation and maintenance of specialized human capital, while contracting at arm's length for more commodity-like execution and distribution capacity. Morgan Stanley and Lazard Freres are useful prototypes for illustrating this dichotomy.

Morgan Stanley was founded as the investment banking successor to JP Morgan when the 1933 Glass–Steagall Act forced the separation of commercial and investment banking functions. From the time it was founded, Morgan Stanley occupied a position at or near the top of the investment banking industry, particularly for advisory services in corporate transactions. When the bank went public in 1986, it had 105 partners, and at year-end 1985 it had a total of 4,000 employees and $672 million in capital. The firm was closely affected by the secondary market changes that we documented earlier, and it expanded rapidly following its public offering. In 1997 the firm made a major attempt to move beyond its origins in serving corporations and institutional clients by merging with Dean Witter, Discover & Co. The combined entity is now one of the largest full-service investment

Table 1.6. *Morgan Stanley business lines*

Institutional Services	Individual Investor Group	Investment Management	Credit Services
Investment banking	Investor advisory	Mutual funds	Credit card
Institutional sales & trading	Private wealth management	Alternative investments	Mortgage lending
Research		Retirement securities	Insurance

Source: Annual Report (2004).

banks: it closed 2004 with 53,284 employees and $110.8 billion of capital.[28]

Table 1.6 provides a condensed version of Morgan Stanley's structure and business lines, as reported in the firm's 2004 annual report. The Institutional Securities group essentially combines what we characterized above as the investment banking and the trading and principal investment functions. The Individual Investor Group and Investment Management between them account for the bulk of what we characterize as asset management and securities services. The Credit Services division separates Morgan Stanley from most of its investment banking peers.

In contrast to Morgan Stanley, Lazard Freres has recently focused upon advisory services related to corporate acquisitions and restructuring. At times it has been one of the most influential firms in this field. We have already argued that traditional investment banking is extremely reliant upon special human skills. As a result, Lazard's fortunes have rested in recent years upon one or a few key individuals such as Andre Meyer, Felix Rohatyn and, most recently, Bruce Wasserstein. The firm went public only in May 2005. Lazard entered the institutional asset management business in 1970, and it currently derives around a third of its revenue from this source (see table 1.7). Prior to its IPO, the firm's remaining businesses (around ten percent

[28] As a point of comparison, Merrill Lynch was for many years the standard bearer among full-service investment banks, and arguably it remains so today. In 1971, Merrill was among the first investment banks to go public when the NYSE permitted member firms to do so. At year-end 1971 the firm had 217 partners, 18,000 employees and $393 million in capital. The firm's 1971 capitalization was more than three times that of its nearest competitor (Bache & Co.) and dwarfed Morgan Stanley's 1971 capitalization of $17.6 million. At year-end 2004, Merrill Lynch had 50,600 employees and long-term capital (equity, long-term debt and deposit liabilities) of $199 billion.

Table 1.7. *Percentage of net revenue by functional area for Lazard Freres and Morgan Stanley*

	2002		**2003**		**2004**	
	Lazard	**MS**	**Lazard**	**MS**	**Lazard**	**MS**
Investment banking	47%	13%	60%	12%	54%	14%
Financial advisory	46%	5%	58%	3%	51%	5%
Underwriting	1%	8%	2%	9%	3%	9%
Trading, Principal investment	8%	37%	5%	45%	4%	43%
Trading	5%	18%	3%	30%	2%	23%
Investments	2%	0%	1%	0%	1%	2%
Commissions	0%	11%	0%	8%	0%	8%
Net interest and dividends	1%	8%	1%	7%	0%	9%
Asset management, Securities services	45%	30%	35%	26%	40%	26%
Fees	41%	21%	32%	19%	36%	19%
Commissions	4%	7%	4%	6%	4%	6%
Net interest and dividends	0%	1%	0%	1%	0%	1%
Net revenue ($ millions)	$1,166	$19,127	$1,183	$20,857	$1,274	$23,765

of the total) derived from securities underwriting and commissions, and trading profits associated with principal transactions.[29]

At the end of 2004, Lazard had 2,584 employees, of whom 207 were managing directors: these were about ten times the levels reported during the 1970s. The firm's 2004 year-end capitalization of $982 million was modest by industry standards, but substantially greater than the constant $17.5 million reported from 1957 until at least the late 1970s. The apparent capital growth is misleading, however, as the earlier figures vastly understated the personal resources of the firm's partners, which, when necessary, were brought to bear on the opportunities facing the firm.

Table 1.7 shows the contribution of each functional area to net revenues for both Morgan Stanley and Lazard Freres for the years

[29] The restructuring plan associated with the IPO provided for separation of these businesses from the firm's ongoing corporate advisory and asset management businesses.

2002–4.[30] The contribution from investment banking to Lazard's net revenue ranged from 47 to 60 percent, and virtually the whole of this came from advisory services, rather than underwriting. In contrast, investment banking operations accounted for only 12 to 14 percent of Morgan Stanley's net revenue, with the bulk of the contribution arising from underwriting fees. The corresponding figures for trading and principal investment are very different. Lazard generates very little revenue from these activities.[31] The largest fraction of Morgan Stanley's revenues comes from trading and principal investment, with the bulk of this figure being accounted for by the firm's proprietary trading operations. Finally, on a relative basis, asset management and securities services are far more central to Lazard's revenues than they are to Morgan Stanley although, on an absolute basis, Morgan Stanley's 2004 $6.2 billion revenue in asset management and securities services far outstripped the $514 million posted by Lazard in the same area.

The clear implication of these figures is that Morgan Stanley is now very much committed to complementing human capital-intensive businesses with a significant presence in financial capital-intensive businesses.[32] Lazard Freres remains centered upon the human capital-based advisory businesses that enabled the industry to operate with relatively small levels of financial capital prior to the 1980s. Although Lazard's recent public offering is perhaps best understood as a mechanism for transferring control from the firm's founding family and a small group of partners of long standing (led by Michel David-Weill) to a new generation of bankers led by Wasserstein, it occurred at a time when other prominent advisory boutiques have either gone public (e.g. Greenhill and Thomas Weisel) or have sold significant private equity stakes to outsiders (e.g. Houlihan, Lokey, and Zukin) in pursuit of large and permanent infusions of financial capital. The boutique firms coexist with full-service banks that combine advisory services

[30] The contributions do not always sum to 100 percent because we have excluded credit services (for Morgan Stanley) and marginal revenue sources that do not fit within our functional classification scheme. Lazard figures are reported in the firm's S-1 filing with the SEC. The comparable figures for Morgan Stanley are reported in the firm's annual report to shareholders.

[31] Although, in the past, Lazard partners routinely invested their own capital (as opposed to that assigned explicitly to the partnership) in deals for which they advised.

[32] Morgan Stanley's capital dependence is further evidenced by the substantial VaR figure reported above. The firm's most recent quarterly report indicated an average VaR of $84 million, up slightly from the previous quarter.

with the ability to make significant financial capital commitments. At the end of the book we speculate as to how this competition is likely to unfold.

CONCLUSION

Securities markets are an important source of funds for corporations and entrepreneurs. Operations in these markets are intermediated by investment banks: the purpose of this book is to provide an economic rationale for their existence. This chapter has set the scene for this discussion by outlining the main activities of a modern investment bank. We have highlighted some of the themes to which we refer repeatedly throughout the book: the importance of investment banks in stimulating information production and exchange; the central role of reputation in underpinning investment banker activities; the traditional importance to investment bankers of human capital and relationships; and the impact that computerization and codification of many investment banking practices has had in the last three decades upon the composition and the operation of the investment banking sector.

The remainder of the book is organized as follows. In the next two chapters we provide a theoretical explanation for the investment banks as a coordinator of a marketplace for information. This places investment banks squarely within the broader literature on financial intermediation, and points to the importance of the political and legal environment for the operation of investment banks.

With the theory in place we examine in the following four chapters the evolution of the investment-banking industry from its origins in the eighteenth-century North Atlantic trade. This analysis serves two purposes. First, examining the successes and failures of investment banks under a variety of legal, political, and technological regimes helps us to a deeper understanding of the investment bank's role in resolving problems in the exchange of information. Second, the historical evolution of investment banks gives us a number of examples against which we can evaluate our theory.

The final section of the book provides an analysis of the industry's current structure and performance, and offers some informed speculation regarding its future evolution.