Chapter 12

International Equity Financing

When a company lists its shares on a stock market, it seeks to access capital from a wide pool of investors. Apart from this **primary market** at the time of an initial public offering, the daily trading of a corporation's shares among investors (the **secondary market**) provides an objective, forward-looking valuation of the company's activities. This activity determines the cost of additional equity capital: The more investors are willing to pay for a company's shares, the cheaper will be additional capital when the company issues additional shares. Consequently, everything that affects stock market prices is important for a capital-hungry multinational corporation (MNC). (However, we leave a formal discussion of the international cost of capital to Chapter 13.) Another benefit of listing on a public stock exchange is that the presence of a stock market price can be used to align the interests of managers with the interests of shareholders in management compensation schemes.

This chapter examines how and why MNCs list their shares on international equity markets. Most MNCs list their shares on the stock exchanges of the countries in which they are headquartered. However, many MNCs also list their shares on stock exchanges located in other countries. For example, in 2010, the total value of shares traded in the stock of Nokia on the New York Stock Exchange (NYSE) exceeded $70 billion. Such a large volume for a single company is not unusual for the NYSE. For instance, IBM's total NYSE trading volume during 2010 was well over $150 billion. Nevertheless, Nokia, which is one of the world's premier mobile phone companies, is headquartered in Finland, in contrast to IBM, which is a U.S. company. Even though U.S. investors can directly buy Nokia stock on the Finnish stock exchange in what is called *cross-border trading*, Nokia must find this international ("cross-exchange") stock listing valuable. Why? After first giving you a tour of the world's stock exchanges and how they work, we explore the advantages and disadvantages of cross-listing.

12.1 A Tour of International Stock Markets

The Size of Stock Markets

Exhibit 12.1 indicates that the U.S. stock market capitalization was about 31% of the world's stock market capitalization at the end of 2010. The second-largest market is that of Japan, which is followed by China, the London Stock Exchange (which combines the exchanges of the United Kingdom and Italy), and India.[1]

[1]Because not all exchanges in the world are part of the World Federation of Exchanges, from which we pull the data, we miss some reasonably sizable markets, such as New Zealand and the Czech Republic.

Exhibit 12.1 Market Capitalizations of Stock Exchanges

	Market Capitalization (in millions of U.S. dollars)						
	1991 (% of world total)		2000 (% of world total)		2010 (% of world total)		Market Type
United States	4,087,660	36.03%	15,104,037	46.82%	17,283,452	31.41%	Developed
Japan	3,130,863	27.60%	3,157,222	9.79%	4,099,606	7.50%	Developed
China	2,028	0.02%	580,991	1.80%	4,027,840	7.34%	Emerging
London Stock Exchange	NA	NA	NA	NA	3,613,064	6.58%	
United Kingdom	987,952	8.71%	2,567,992	7.99%			Developed
Italy	158,865	1.40%	768,364	2.38%			Developed
India	47,730	0.42%	148,064	0.46%	3,228,455	5.88%	Emerging
Euronext	NA	NA	NA	NA	2,930,072	5.34%	Developed
Belgium	71,319	0.63%	182,481	0.57%			Developed
France	348,083	3.07%	1,446,634	4.48%			Developed
Netherlands	136,158	1.20%	640,456	1.99%			Developed
Portugal	9,613	0.08%	60,681	0.19%			
Hong Kong	121,986	1.08%	623,398	1.93%	2,711,316	4.94%	Developed
Canada	266,874	2.35%	841,385	2.61%	2,170,433	3.95%	Developed
Brazil	42,759	0.38%	226,152	0.70%	1,545,566	2.82%	Emerging
Australia	145,511	1.31%	372,794	1.16%	1,454,491	2.65%	Developed
Germany	393,454	3.47%	1,270,243	3.94%	1,429,719	2.60%	Developed
Switzerland	173,881	1.53%	792,316	2.46%	1,229,357	2.24%	Developed
Spain	147,928	1.30%	504,219	1.56%	1,171,625	2.13%	Developed
Korea	96,373	0.85%	171,587	0.53%	1,091,912	1.99%	Emerging
OMX Nordic	NA	NA	NA	NA	1,042,154	1.90%	Developed
Denmark	44,841	0.40%	107,666	0.33%			Developed
Estonia	NA	NA	1,846	0.01%			
Finland	14,271	0.13%	293,635	0.91%			Developed
Iceland	NA	NA	4,439	0.01%			Developed
Latvia	NA	NA	563	0.00%			
Lithuania	NA	NA	1,588	0.00%			
Sweden	100,913	0.89%	328,339	1.02%			Developed
Russia	244	0.00%	38,922	0.12%	949,149	1.73%	Emerging
South Africa	168,497	1.49%	204,952	0.64%	925,007	1.69%	Emerging
Taiwan	124,864	1.10%	247,602	0.77%	838,401	1.53%	Emerging
Singapore	47,367	0.42%	152,827	0.47%	647,226	1.18%	Developed
Mexico	98,178	0.87%	125,204	0.39%	454,345	0.83%	Emerging
Malaysia	58,627	0.52%	116,935	0.36%	408,689	0.74%	Emerging
Indonesia	6,823	0.05%	28,834	0.08%	360,388	0.66%	Emerging
Saudi Arabia	48,213	0.42%	67,171	0.21%	353,410	0.64%	Not specified
Chile	27,984	0.25%	60,401	0.19%	341,799	0.62%	Emerging
Turkey	15,703	0.14%	69,659	0.22%	307,052	0.56%	Emerging
Norway	22,043	0.19%	65,034	0.20%	295,288	0.54%	Developed
Thailand	35,815	0.32%	29,489	0.09%	277,732	0.51%	Emerging
Israel	6,176	0.05%	64,081	0.20%	227,614	0.41%	Developed
Colombia	4,036	0.04%	9,560	0.03%	208,502	0.38%	Emerging
Poland	144	0.00%	31,279	0.10%	190,232	0.35%	Emerging
Philippines	11,386	0.10%	51,554	0.16%	157,321	0.29%	Emerging
Austria	7,689	0.07%	29,935	0.09%	126,032	0.23%	Developed
Peru	1,118	0.01%	10,562	0.03%	103,348	0.19%	Emerging
Luxembourg	11,308	0.10%	34,016	0.11%	101,129	0.18%	Developed
Iran	34,282	0.30%	34,041	0.11%	86,642	0.16%	Not specified
Egypt	2,651	0.02%	28,741	0.09%	84,277	0.15%	Emerging
Greece	13,118	0.10%	110,839	0.34%	67,586	0.12%	Developed
Argentina	18,509	0.16%	166,068	0.51%	63,910	0.12%	Frontier
Ireland	NA	NA	81,882	0.25%	60,368	0.11%	Developed
Jordan	2,512	0.02%	4,943	0.02%	30,864	0.06%	Frontier
Hungary	505	0.00%	12,204	0.04%	27,708	0.05%	Emerging

(*continued*)

Exhibit 12.1 Market Capitalizations of Stock Exchanges (*Continued*)

	Market Capitalization (in millions of U.S. dollars)						
	1991 (% of world total)		2000 (% of world total)		2010 (% of world total)		Market Type
Sri Lanka	1,936	0.02%	1,074	0.00%	19,924	0.04%	Frontier
Slovenia	NA	NA	2,547	0.01%	9,384	0.02%	Frontier
Mauritius	312	0.00%	1,331	0.00%	7,753	0.01%	Frontier
Cyprus	1,290	0.01%	11,516	0.04%	6,834	0.01%	Not specified
Malta	NA	NA	2,009	0.01%	4,194	0.01%	Not specified
Bermuda	NA	NA	2,146	0.01%	1,535	0.00%	Frontier
Total World Market	**11,345,733**		**32,260,433**		**54,884,333**		

Notes: The data are taken from the World Federation of Exchanges, Datastream, and the S&P/IFC database. The indications "Developed," "Emerging," and "Frontier" are from Morgan Stanley Capital International.

The relative market capitalizations of the different exchanges around the world are in constant flux, however. At one point in the 1980s, Japan's stock market was the world's largest. The dominance of Japan's stock market was also somewhat artificial because cross-holding grossly inflated the numbers.

Cross-holding refers to the practice of one firm owning shares in another firm. If both of these firms are listed on an exchange, and one calculates total market capitalization by merely multiplying the total number of shares outstanding by the market price per share, the market capitalization will be overstated because part of the value of the shares is essentially double-counted. Let's illustrate this with a hypothetical example.

Example 12.1 Cross-Holding of Shares

Assume that Companies A and B are each worth $100. Hence, the total market capitalization of the two companies is $200. Suppose both companies are fully equity financed, so we can represent their balance sheets as follows:

Company A		Company B	
Assets	**Liabilities**	**Assets**	**Liabilities**
$100	$100	$100	$100

Here, liabilities represent owner's equity, and assets represent plant and equipment. If there is no intercorporate share ownership, $200 represents the true value of the assets of both companies and, consequently, the true value of their shares. Now, suppose Company A issues $50 in new shares and buys $50 of the outstanding shares of Company B in the secondary stock market. Whereas the balance sheet of Company B remains unchanged, the balance sheet of Company A becomes

	Company A	
	Assets	**Liabilities**
Physical Assets	$100	$150
Investment in Co. B	$50	

Therefore, the market capitalization of Company A increases by 50%, to $150, and total market capitalization of shares that have been issued by corporations increases by 25%, to $250. Of course, the true value of the assets remains $200 because no new assets were created by this transaction. To get the correct market capitalization, one must value only the shares that are held by the public, in which case we find a valuation of $50 for Company B and $150 for Company A, for a total of $200.

Cross-holding is especially common in Japan and in many European countries, such as Germany and Belgium, where banks are permitted to hold substantial and sometimes controlling interests in non-banking firms. The institutions that construct the major international stock market indices, such as Morgan Stanley Capital International (MSCI), now routinely correct for such cross-holdings.

Exhibit 12.1 also confirms two important recent trends. First, stock exchanges have consolidated across countries, which we discuss in more detail later. Second, the stock markets of a number of developing countries, such as China, India, Brazil, and Korea, have become among the largest in the world.

Emerging Stock Markets

In the early 1990s, emerging countries embarked on a trade and financial liberalization process. They relaxed restrictions on the foreign ownership of assets and improved capital market regulations. The results were dramatic. Not only did capital flows to emerging markets increase dramatically, but their composition changed substantially, as equity and fixed income investments increasingly replaced commercial bank debt. For example, in 1985, Mexico's equity market capitalization was 0.71% of gross domestic product (GDP), and foreigners' only access was through the Mexico Fund traded on the NYSE. After liberalizing its markets, by 2001, Mexico's equity market capitalization had risen to over 20% of GDP, and U.S. investors directly held about 25% of the market.[2] Currently, the Mexican stock market represents 45% of GDP.

Stock markets of developing countries are often referred to as **emerging markets**, and the young stock markets of the least developed countries are called **frontier markets**. In the far right column of Exhibit 12.1, we use the classification system of MSCI.[3]

In 1991, the largest emerging markets, each representing between 0.85% and 1.50% of world market capitalization, were Mexico, Korea, South Africa, and Taiwan. At that time, because of a political boycott, foreigners were not able to invest in South Africa (making its shares not "investable"), and its stock was not part of any established index. Since then, the most striking development has been the rapid growth of the stock markets of Brazil, Russia, India, and China, the emerging economic superpowers. Together, they represent almost 18% of the world market capitalization at the end of 2010. Of the markets dominating in 1991, Korea, South Africa, and Taiwan are still similar in size to Russia (about 1.5% to 2% of world market capitalization), but they are substantially smaller than Brazil, China, and India. It should be noted that Korea has been on the cusp of joining the list of developed markets and may do so soon.

China remains a special case. It now has three different stock exchanges—in Shanghai, Shenzhen, and Hong Kong. The Hong Kong market has been in existence for so long and Hong Kong is sufficiently high income that the Hong Kong market is actually considered a separate, developed market. The two mainland exchanges have grown spectacularly, despite being relatively closed to foreign investors. The following *Chinese Stock Markets* box provides more details.

Overall, emerging markets have become a much more important part of the world stock market since 1991. This happened in two waves. First, emerging markets did not perform as well as the U.S. stock market in the 1990s, which is reflected in their overall lower percentage of market capitalizations by 2000. While the United States and other developed markets experienced spectacular growth in the "dot-com" era, many emerging markets went through a series of crises. Second, in the first half of the past decade, many emerging equity markets appreciated considerably in value, while some markets, such as Korea, saw the number of companies listed on the exchange grow dramatically. Emerging markets also weathered the 2007 to 2010 financial crisis better than many developed markets. The fact that our numbers are measured in dollars also plays a role, as the dollar weakened considerably between 2000 and 2010, causing the U.S. market to become relatively less important over time.

[2]See Bekaert and Harvey (2003) for more details about the liberalization process in emerging markets.
[3]You may be surprised by finding Argentina classified as a frontier market. It was downgraded from emerging market status by MSCI in February of 2009 because of its continued capital flow restrictions.

Chinese Stock Markets

There are two stock exchanges in mainland China, Shanghai and Shenzhen. Both were founded in 1990. The Hong Kong stock exchange has a much longer history and is considered a separate developed exchange. Given its close links to China, the Hong Kong market also provides indirect access to Chinese equities through H shares and "red chips." An H share is a share of a company incorporated in mainland China but listed on the Hong Kong Stock Exchange. While regulated by Chinese law, H shares are denominated in Hong Kong dollars and trade the same as other equities on the Hong Kong exchange. Red chip stocks refer to Chinese companies incorporated outside mainland China and listed in Hong Kong. Their actual business is based in mainland China, and they are controlled, either directly or indirectly, by Chinese organizations, which are, in turn, often controlled by the local, regional, or central government.

For foreign investors, H shares and red chips may be the simplest way to invest in China, because Chinese capital controls make investing in stocks listed on the mainland exchanges rather difficult. There are two types of stocks, A shares and B shares. Originally, the A shares were quoted in renminbi and were to be traded only by local investors, and the B shares were quoted in dollars and were investable for foreigners. B shares represent only a small fraction of the total market. Various reforms have made the situation more complex. Since the end of 2002, certain foreign investors are allowed to trade in A shares under the Qualified Foreign Institutional Investor (QFII) regime. Currently, about 100 foreign institutional investors have been approved to buy and sell A shares under the QFII program, which imposes various restrictions. The total quota under the QFII program is currently USD30 billion. Since 2001, local investors can also invest in the B-share market. In December of 2006, further relaxation occurred when foreign investors were allowed to hold stakes in A shares over 10% of the market capitalization if the stake was maintained for more than 3 years.[4]

The rather minimal foreign involvement in the Chinese stock market is one significant difference between other emerging markets and the Chinese stock market. The spectacular growth of the Chinese stock market until October 2007, when the Shanghai stock index peaked at over 6,000 points, is often ascribed to the speculative fever of Chinese investors with few alternative venues for their substantial savings. Chinese investors are not allowed to invest abroad; the bond markets are relatively underdeveloped; and bank deposits offer diminutive interest rates. Real estate and the stock market are the two major investment venues. Until mid-2010, companies with A shares, which were also listed in Hong Kong and/or in the B-share market, traded at hefty premiums in the A-share market. The market capitalization of the Chinese markets also grew because of multiple initial public offerings (IPOs) by state-owned enterprises, which are often representing very large companies. On October 27, 2006, Industrial and Commercial Bank of China (ICBC) was simultaneously listed on the Hong Kong and Shanghai Stock Exchanges. It was the world's largest IPO at that time, valued at $21.9 billion. In 2010, another Chinese bank, the Agricultural Bank of China, beat the record with an IPO worth $22.1 billion. While the Chinese stock market fell substantially after October 2007 and the Shanghai index remained below 3,000 in early 2011, IPOs have kept the Chinese stock market in the top three of the world in terms of market capitalization.

Despite being one of the top stock markets in the world in terms of market capitalization, the Chinese stock market is far from well developed. For example, only 30% of the market capitalization of the listed companies is tradable (the remainder is mostly owned by government institutions). Since October 2008, the regulatory authorities have allowed margin trading of stocks and stock lending, but short selling of stocks remains difficult. Day trading is not allowed, and there are no options available on the stock market index. A futures contract was only introduced in April 2010. The Chinese market will likely remain underdeveloped until capital controls are lifted and the Chinese currency is made fully convertible.

Stock Markets and the Economy

Dividing a country's stock market capitalization by its GDP is often viewed as an indicator of stock market development. Historically, developed markets typically had larger market capitalization-to-GDP ratios than emerging markets, and within developed markets, ratios in Anglo-Saxon countries were larger than most continental European countries.

[4]For a more detailed time line of reforms in the Chinese stock market, see De Bondt et al. (2010).

For most emerging markets, capital market development was often a slow process, leaving many with relatively small stock markets. The Anglo-Saxon model has always relied more on bonds and equity financing than on bank financing, compared to the continental European model. It is also common for European banks to own shares of their client companies, whereas that is prohibited in the United States. Moreover, it is still the case that more enterprises in Europe are partially government owned (railroads, for example) and hence are not listed on exchanges.

While the old model still holds true on average, the 2010 picture is a bit more nuanced, as Exhibit 12.2 shows. A number of emerging markets have developed rather rapidly, while in Europe, many government companies have been privatized. After the dismantling of the Glass-Steagall Act, passed in 1933 in the United States to separate commercial from investment banking, U.S. financial institutions have become more like their European counterparts in terms of combining banking, insurance, and investment banking activities.

The capitalizations of some exchanges in continental Europe, such as Luxembourg, OMX Nordic (combining a number of Scandinavian and Baltic exchanges), and Switzerland, now represent more than 100% of the GDP in the nations in which they are located. For the London Stock Exchange, combining the United Kingdom and Italy, the 84% ratio represents a relatively high market capitalization-to-GDP ratio for the United Kingdom (well over 100%) and a relatively low one for Italy. In Asia, Hong Kong and Singapore also feature very large market capitalization-to-GDP ratios.

Exhibit 12.2 Market Capitalization as a Percentage of GDP

Developed Markets		Emerging and Frontier Markets	
Australia	119.25	Argentina	18.21
Austria	34.41	Bermuda	25.19
Canada	138.80	Brazil	76.38
Euronext	73.05	Chile	171.60
Germany	43.25	China	70.11
Greece	22.16	Colombia	73.65
Hong Kong	1,197.13	Cyprus	30.04
Ireland	29.58	Egypt	38.87
Israel	113.10	Hungary	21.95
Italy and United Kingdom	84.12	India	225.76
Japan	76.05	Indonesia	51.85
Luxembourg	193.87	Iran	25.64
Norway	71.41	Jordan	113.77
OMX Nordic	104.86	Korea	110.71
Singapore	297.74	Malaysia	186.66
Spain	89.42	Malta	53.76
Sweden	85.23	Mauritius	222.40
Switzerland	235.31	Mexico	45.25
United States	118.18	Peru	67.31
		Philippines	83.21
		Poland	43.34
		Russia	64.27
		Slovenia	20.21
		South Africa	261.00
		Sri Lanka	41.30
		Taiwan	196.35
		Thailand	88.84
		Turkey	42.12

Note: The data are for the end of 2010. Stock market capitalizations are from the World Federation of Exchanges. GDP numbers are from International Financial Statistics.

While on average, market capitalization-to-GDP ratios are smaller in emerging markets than in developed markets, there are a number of countries with ratios over 100%, including Chile, India, Jordan, Korea, Malaysia, Mauritius, South Africa, and Taiwan. Chile is the only Latin American country on this list. Its stock market development has been bolstered by a social security system requiring workers to save for retirement through several investment funds.

The Organization and Operation of Stock Markets

Legal Organization

Legally, stock markets can be organized as private or public organizations, called bourses or exchanges. A **private bourse** is owned and operated by a corporation founded for the purpose of trading securities. In many countries, several private exchanges compete with one another. This is the situation in the United States and Japan, but in most markets, one dominant exchange has emerged. In **public bourses**, the government appoints brokers, typically ensuring them a monopoly over all stock market transactions. While historically many exchanges, especially in Europe (Belgium, France, Spain, and Italy, for instance), started out as public bourses, waves of deregulation in the 1980s and 1990s resulted in the dismantling of this structure in most countries. Today, most bourses are private, although China's exchanges are quasi-state institutions. In all countries, however, bourses are typically subject to substantial government regulation.

The Globalization of Exchanges

Cross-listing, in which companies like Nokia list their shares on several exchanges around the world, has contributed substantially to the globalization of exchanges. Exchanges have also globalized simply by extending trading hours to make their markets more accessible to foreign traders located in other time zones. In addition, several exchanges have merged or created alliances with foreign exchanges to automatically cross-list their stocks.

In 2000, the stock exchanges of Amsterdam, Brussels, and Paris merged to form Euronext. Euronext then absorbed the Lisbon exchange and LIFFE, the London derivatives market. Euronext became a company listed in Paris. Its goal was to provide a pool of liquidity through a common order book, one set of clearing hours, a single settlement procedure, and one screen-based electronic system for any company listed with one of the exchanges that are part of Euronext. In March 2007, consolidation took a big leap forward with the merger of the NYSE and Euronext to form NYSE Euronext, Inc. NASDAQ (National Association of Securities Dealers Automated Quotations), the other major U.S. stock exchange, also expanded by forming the NASDAQ-OMX group, which operates seven stock exchanges in Europe (Finland, Sweden, Denmark, Iceland, Latvia, Lithuania, and Estonia) and has a stake in the Dubai stock exchange.

More mergers are in the works. In early 2011, after the London and Toronto stock exchanges announced their merger, Deutsche Börse and NYSE Euronext announced a plan to merge. Deutsche Börse owns the Frankfurt stock exchange and, together with the Swiss stock exchange operator (SWX), is co-owner of Eurex, a large derivatives exchange. Almost simultaneously, the Singapore stock exchange declared its plans to buy the Australian stock exchange. Since January 2010, the exchanges of Budapest (Hungary), Ljubljana (Slovenia), Prague (the Czech Republic), and Vienna (Austria) became equal subsidiaries of a holding company called CEESEG (Central and Eastern Europe Stock Exchange Group). While the exchanges continue to operate separately with the holding company providing financial and administrative support, it seems likely that they will eventually merge.

Consolidation is primarily a response to an increasingly competitive environment where exchanges face competition from other exchanges and alternative, mostly electronic trading systems. Such competition has also driven another major trend that makes mergers even

easier going forward—**demutualization**, the process of converting exchanges from non-profit, member-owned organizations to for-profit, publicly traded companies. Examples include the Australian Stock Exchange (1998), the Toronto Stock Exchange (2000), Euronext (2000), NASDAQ (2000), Deutsche Börse (2001), and the NYSE (2005). On October 1, 2008, NYSE Euronext acquired Amex, the American Stock Exchange, to enhance its trading in U.S. options, exchange-traded funds (ETFs), closed-end funds, structured products, and cash equities.

Trading Practices

The trading practices of a market directly affect price discovery and liquidity. Price discovery is the process by which information is revealed. A good trading process leads to "fair," or "correct," prices that cannot be manipulated to the advantage of individual traders. However, stock market manipulation still exists, as the following *Stock Market Manipulation in China* box illustrates. In a liquid market, trading happens quickly, and large quantities of securities can be traded without the price being affected. Transaction costs are also low in liquid markets.

There are two major trading arrangements used by international stock markets: **price-driven trading systems** and **order-driven trading systems**. In a price-driven system, market makers stand ready to buy at their bid prices and sell at their ask prices, as in the foreign exchange market, but similar price- or quote-driven trading systems also exist for stocks. In an **order-driven trading system**, orders are batched together and then auctioned off at an equilibrium market price. Such an auction may happen once per day, a few times per day, or more continuously (e.g., facilitated by a computer). To match orders, a number of precedence rules are typically employed, such as the following:

- ***Price priority:*** The highest bid (buy) and the lowest ask (sell) have priority over other orders.
- ***Time priority:*** Orders at the same price are treated on a first-come, first-served basis.
- ***Order priority:*** Market orders (orders to buy or sell at the market price) have priority over limit orders (orders to buy or sell at a maximum or minimum price).

Stock Market Manipulation in China[5]

On April 1, 2003, a Beijing court handed down long-awaited sentences in one of the largest stock manipulation cases in history. Several men were convicted of manipulating the stock of China Venture Capital Group and were sentenced to jail terms ranging from 2 to 4 years and fines of up to CNY500,000. Yet the alleged masterminds of the scheme, Lu Liang and Zhu Huanliang, have not yet been captured and incarcerated.

At the beginning of 1998, China Venture Capital was a company listed on the Shenzhen Stock Exchange (one of the three stock exchanges in China), with a stock price around CNY10. In early 1998, Zhu, a major stock market player, contacted Lu, an established business journalist, to help him unwind his money-losing investment in China Venture Capital. At that time, Zhu controlled about 40% of China Venture Capital's outstanding shares.

As part of the deal, from December 1998 to May 1999, Lu began to build up his inventory of stock, buying first primarily from Zhu and eventually arranging to purchase 34.61% of the restricted shares owned by the government and assuming complete control of the board of directors. Now, Lu was ready to start the manipulation of the China Venture Capital stock in earnest. First, Lu was able to mislead the investing public with various company press releases, thereby significantly increasing the stock price. Second, Lu actively used large-size "wash trades" to increase the stock price and to produce the impression of high trading volume.[6] Apparently, Lu

[5]This box is based primarily on Wu and He (2003).

[6]A *wash trade* is a strategy of simultaneously buying and selling the same stock. Of course, when the manipulator sells, he hopes the stock price does not drop by more than the amount it went up when shares were bought.

gave specific instructions to his head trader to execute buy trades to attract attention and to execute sell trades while avoiding attention. As a result of this manipulation, the stock price reached over CNY84 per share. Lu then took over other companies and formed new business ventures using the stock of China Venture Capital to finance his acquisitions.

Eventually, the scheme collapsed when traders and investors began to learn the truth. Interestingly, Lu facilitated the collapse by doing an interview with a reputable finance and economics magazine, which ultimately cast light on the deception. China Venture Capital's stock price rapidly sank back to CNY10. While Lu was under house arrest, he managed to escape, and his whereabouts are unknown to this day.

Although this box is about China, it is important to note that price manipulation may occur in many less developed markets. For example, Khwaja and Mian (2005) demonstrate that brokers in Pakistan earn significantly higher returns on their trades than on trades intermediated for outside investors. They use detailed transactions to show that the returns are due to a "pump and dump" price manipulation scheme. Aggarwal and Wu (2006) in fact analyze no less than 142 stock market manipulation cases pursued by the Securities and Exchange Commission (SEC) in the United States between 1990 and 2000.

Automation and Electronic Trading

Over the past two decades, stock trading has become increasingly computerized and automated. In order-driven systems, it is straightforward to automate the trading rules adopted by the exchange to arrive at transaction prices. By recording all orders and making them public instantly, automation may appear to contribute greatly to the transparency of the market. However, this transparency has costs because of the presence of two types of traders: liquidity traders and informed traders. Liquidity traders trade for exogenous reasons, not because they have private information regarding the value of a stock. Examples of liquidity traders include retail investors who need money for a down payment on a house, pension funds or mutual funds that must invest their participants' inflows and reinvest dividends received, and index funds that track particular stock market indexes and consequently must trade the whole portfolio of stocks in the indexes. Informed traders trade on the basis of private information regarding the value of the stock.

An automated system with an open order book allows informed traders to wait behind their screens for the incoming orders of uninformed traders to obtain better pricing. Informed traders are themselves reluctant to reveal their information and consequently do not enter large orders (usually called a block) into an automatic trading system. In many countries, blocks of stock were historically traded "upstairs," meaning in offices away from the trading floor and via telephone through negotiation rather than through an automated system.

In the meantime, as in the foreign exchange market, private electronic communication networks (ECNs) have rapidly developed. An ECN lists the prices of securities trading on other exchanges and either lets its subscribers trade directly with one another or uses some form of order-crossing network. As a result, investors get slightly better buy and sell prices.

Such systems have existed for a long time. Instinet, founded in 1967 and now an independent subsidiary of Nomura, was one of the pioneers. Many investment banks also operated private crossing networks. Rapid technological developments have led to a proliferation of off-exchange trading venues, and regulatory authorities have started to regulate them. In Europe, the European Union (EU) introduced MiFID (Markets in Financial Instruments Directive), a financial law implemented in November 2007, that defined multilateral trading facilities (MTFs) and set rules regarding price and volume transparency on such venues. Chi-X Europe, a unit of Instinet, apparently attracts substantial trading volumes in the major European stocks. In the United States, the SEC has defined "Alternative Trading Systems" as alternative trading venues for securities without the formal listing requirements of an exchange. It also introduced Regulation National Market

System, known as Regulation NMS, which requires that trades anywhere be executed at the best available price.

Electronic systems clearly facilitate anonymous trading of large blocks of shares, which has allowed rapid growth in so-called "**dark pools**." Dark liquidity pools deliberately sacrifice price and volume transparency to offer anonymity to institutional and other large investors. While many of these dark pools are private companies (such as Posit/Matchnow from ITG), there are also broker-owned dark pools (such as Nomura's NX or Goldman Sachs's SIGMA X), and the exchanges are now also setting up their own dark pools to compete with the off-exchange venues. For example, NYSE Euronext operates SmartPool, and the London Stock Exchange operates Turquoise.

Electronic trading and the proliferation of trading venues also promoted the growth of high-frequency algorithmic traders, who buy and sell stocks to profit on razor thin price differences. Financial experts on microstructure have not yet agreed as to whether the new trading landscape contributes to price discovery and liquidity (see Schwartz [2010] for a discussion). On the one hand, algorithmic traders often act as liquidity providers, buying when prices are low and selling when prices are high. In fact, many exchanges pay them for their liquidity-providing services. On the other hand, both the presence of algorithmic traders and the proliferation of trading venues fragment order flow and may make prices less informative. After all, the price would be most informative and accurate if it simultaneously combines the information of as many market participants as possible, as would occur in a price auction. Many exchanges feel that these alternative trading venues free-ride on the price discovery provided by the exchanges (while their existence threatens to erode full price discovery) and that the alternative trading venues should face more regulation regarding transparency. Yet, some research suggests that trading costs have decreased over time (see Exhibit 12.4). It is likely that the debate about price discovery, transparency, and liquidity will continue for some time in academic, practitioner, and regulatory circles, and its outcome will shape the trading landscape of the future.

Examples of Trading Practices on Major Exchanges

The classic example of a price-driven stock exchange is NASDAQ, which operates a complex communications network that centralizes a geographically dispersed market. Bid and ask prices of thousands of actively traded stocks are continuously quoted by hundreds of competing NASDAQ market makers who deal in any stocks they choose. Information from ECNs is also incorporated. From computer terminals connected to NASDAQ's mainframe computer, brokers are able to see the current bid and ask prices for all NASDAQ stocks, quoted on the screen, by competing market makers (dealers). An investor's broker can execute a trade online through NASDAQ's computer or call a NASDAQ dealer with a bid or an ask price at which she wants to transact. The London Stock Exchange runs SETS (Stock Exchange Electronic Trading Service), an electronic system introduced in 1997. It also maintains active market platforms for smaller, less liquid stocks, both local and foreign ones. London is in fact a major market for international stock trading.

An example of an order-driven system is the Tokyo Stock Exchange (TSE), the largest exchange in Japan. Since 1999, the exchange switched to pure electronic trading, and it introduced a new super-fast "Arrowhead" system in early 2010. There are no dealers. Instead, the best eight bids and offers in the order book representing customers' potential trades are displayed. Trades are matched in milliseconds. The TSE sets limits on the daily stock price fluctuations based on the previous day's closing price.

The NYSE is an interesting combination of a price-driven system and an order-driven system and was recently completely redesigned. There are now three key market participants. The

first are called Designated Market Makers (DMMs), which succeed the former Specialists. DDMs can also trade for their own account, but they have the responsibility to maintain a "fair and orderly" market in a particular stock, for instance, by holding physical and/or automated auctions, at the open and the close and in periods of significant imbalances. Floor Brokers, who collect orders from clients, still exist, but they may also use external ECNs to execute an order. Finally, there are Supplemental Liquidity Providers (SLPs), who are exchange members (investment banks and brokers) that generate sufficient volume (for their own accounts) to be paid for providing liquidity services. Logically, a NYSE member organization cannot act as a DDM and an SLP for the same stock.

The first European stock exchange to adopt an electronic trading system was the Paris Bourse, with its CAC (*Cotation Assistée et Continue*) system, which was later replaced by the NSC (*Nouveau Systéme de Cotation*), or Super-Cac. The market is fully automated, and there is no longer any floor trading. The Paris Bourse does allow block trades to be negotiated outside the NSC. A recent study by Lefebvre (2010) suggests that order fragmentation between the upstairs block market and the NSE system does not negatively affect liquidity on the main market. On the contrary, stocks that have an active upstairs market have higher liquidity.

Turnover and Transaction Costs

Exhibit 12.3 lists turnover on various exchanges during 1991, 2000, and 2010. **Turnover** is the total dollar volume of trade done during the year divided by the exchange's total dollar market capitalization at the end of the year. For example, if every share traded exactly once during the year, turnover would be 1, or 100%. Turnover is considered to be an indicator of liquidity, although it also reflects the arrival of news that instigates trades. In 2010, turnover in the United States of close to 200% was the highest of all developed countries; Spain and Germany also had turnover rates over 100%. In contrast, some small markets, such as Bermuda, Cyprus, and Ireland, had turnover less than 20%.

Overall, emerging markets have lower turnover than developed markets, but turnover differs greatly across emerging markets. Four emerging markets had turnover over 100% (China, Korea, Taiwan, and Turkey), but seven countries also had turnover less than 20%. Turnover is mostly higher in Asia than in Latin America and has generally increased for most countries over the past 20 years.

Turnover is inversely related to the costs of trading stocks. **Trading costs** have three components. First, the investor making a trade may have to pay brokerage commissions and other fees, which are typically relatively small, especially for large orders. Second, securities have bid and ask prices, so the investor must buy from the trader at the trader's high sell price and must sell to the trader at the trader's low bid price. Third, trading relatively large amounts when the market is illiquid creates a **market impact** in which the price the investor gets rises as the investor buys or falls as the investor sells.

Of the three components, commission costs are easiest to estimate. They tend to decrease with trade size and are minuscule for very large trades. According to Investment Technology Group (ITG), a trading and research company, commissions in 2010 account for about 10 basis points of total trading costs in developed markets and about 20 basis points in emerging markets. ITG also estimates total trading costs for various countries and country groups. Market impact costs have always been difficult to assess. This is especially true in the current trading environment, in which there are a large number of possible venues for trading. Many trades are happening within the bid–ask spread, and some traders are being paid to provide liquidity. Consequently, even the bid–ask spread component is not so trivial to estimate. Nevertheless, ITG produces regular trading cost estimates, and we reproduce some of their 2010 estimates for various countries and country groups in the last

Exhibit 12.3 Turnover in Developed and Emerging and Frontier Markets

Panel A: Developed Markets

	Turnover		
	1991	2000	2010
Australia	0.32		0.73
Austria	0.92	0.31	0.39
Bermuda	NA	0.06	0.07
Canada	0.29	0.75	0.63
Cyprus	0.05	0.80	0.11
Euronext	NA	NA	0.69
Belgium	0.09	0.21	
France	0.33	0.75	
Netherlands	0.29	1.06	
Portugal	0.29	0.90	
Germany	0.96	0.84	1.14
Greece	0.19	0.86	0.64
Hong Kong	0.32	0.61	0.55
Ireland	NA	0.18	0.15
Israel	1.36	0.37	0.45
Japan	0.32	0.85	0.97
London Stock Exchange	NA	NA	0.76
United Kingdom	0.32	0.71	
Italy	0.16	1.01	
Luxembourg	0.01	0.04	0.21
Norway	0.53	0.92	0.89
OMX Nordic	NA	NA	0.89
Denmark	0.21	0.85	
Estonia	NA	0.18	
Finland	0.11	0.70	
Iceland	NA	0.54	
Latvia	NA	0.40	
Lithuania	NA	0.13	
Sweden	0.21	1.18	
Singapore	0.38	0.60	0.45
Spain	0.27	1.96	1.16
Switzerland	0.40	0.77	0.64
United States	0.53	2.11	1.76

Panel B: Emerging and Frontier Markets

	Turnover			Market Concentration	
	1991	2000	2010	2000	2009
Argentina	0.26	0.04	0.06	67.6	71.9
Brazil	0.31	0.45	0.56	34.6	54.8
Chile	0.07	0.10	0.16	67.6	48.1
China	0.40	1.24	2.00	9.5	32.5
Colombia	0.05	0.04	0.14	68.0	72.8
Egypt	0.05	0.39	0.46	48.0	39.4
Hungary	0.23	1.01	0.95	88.9	96.5
India	0.48	0.34	0.33	48.9	30.6
Indonesia	0.43	0.53	0.29	44.3	48.4
Iran	0.15	0.15	0.20	NA	69.2
Jordan	0.17	0.08	0.28	58.3	69.2
Korea	0.89	3.24	1.47	18.4	33.7
Malaysia	0.18	0.50	0.27	19.9	39.3
Malta	NA	0.09	0.01	NA	94.6
Mauritius	0.02	0.06	0.05	NA	61.0
Mexico	0.32	0.36	0.26	66.5	63.1
Peru	0.12	0.14	0.05	67.9	65.8
Philippines	0.13	0.16	0.14	42.7	48.7
Poland	0.19	0.47	0.21	25.1	56.7
Russia	NA	0.52	0.23	93.9	66.1
Saudi Arabia	0.05	0.26	0.57	67.3	58.5
Slovenia	NA	0.18	0.05	NA	79.2
South Africa	0.05	0.38	0.37	30.9	47.9
Sri Lanka	0.05	0.13	0.25	68.5	46.1
Taiwan	2.93	3.97	1.08	29.5	34.6
Thailand	0.84	0.79	0.77	37.7	48.2
Turkey	0.55	2.57	1.34	43.3	50.4

Notes: Computations are based on data from the World Federation of Exchanges, Datastream, and the S&P/IFC database. The numbers for 2010 use electronic order book volume but exclude negotiated deals.

column of Exhibit 12.4. The first column has data for 2005 for the developed countries and data for 2008 for the other groups. The 2008 data (the furthest we could go back) should be viewed as potentially not representative, because trading costs go up with market volatility, and markets were extremely volatile during the 2007 to 2010 global crisis. Trading costs in most developed markets are 40 to 50 basis points and have not changed much since 2005. U.S. small cap stocks are more expensive to trade (about 70 basis points), and stocks in developed Asia (excluding Japan) have become more expensive to trade since 2005 (with a trading cost of about 70 basis points). In the older emerging markets of Asia and Latin America, trading costs are now 85 to 90 basis points, whereas the costs are 110 basis points in emerging Europe and over 150 basis points in the mostly frontier markets in Africa and the Middle East.

Exhibit 12.4 Trading Costs in Emerging Markets

Country	2005 (quarter 3)	2010 (quarter 1)
United States (large cap)	40.0	38.8
United States (small cap)	75.0	71.8
United Kingdom	55.0	48.7
Japan	94.0	50.5
Canada	87.4[a]	49.4
Developed Asia (excluding Japan)	54.0	72.9
Developed Europe (excluding United Kingdom)	64.0	43.4
Emerging markets	123.7[a]	89.7
Emerging Asia	110.7[a]	85.7
Emerging Europe	145.2[a]	111.2
Emerging Latin America	150.0[a]	87.3
Emerging Africa and Middle East	145.7[a]	162.3

Notes: The data are taken from ITG's Global Trading Cost Review, 2010 (quarter 1). The trading costs are expressed in basis points.

[a]Data are for 2008, quarter 3.

Research has shown that trading costs are "priced." That is, stocks with otherwise similar characteristics and promised cash flows trade at different prices when their trading costs and liquidity are different. Investors demand higher expected returns on stocks with higher trading costs or lower liquidity, and hence the prices of these stocks are lower. Research by Bekaert et al. (2007) suggests that financial liberalization in emerging markets has significantly lowered trading costs. Cross-country differences in trading costs thus provide an incentive to international firms to list their stocks on exchanges with lower transaction costs. Cross-listing may increase stock prices, reduce expected returns, and thus lower the firm's cost of capital, as we will see in Chapter 13.

Casablanca: From a Sleepy Place to a Thriving Modern Market?[7]

Casablanca typically conjures up the image of the classic movie starring Humphrey Bogart as Rick Blaine, an American who runs Rick's Café Américan in Casablanca, Morocco. In the early days of World War II, Morocco was a French protectorate and was thus under German control. There was active trading in "letters of transit" that allowed the bearer to travel around German-controlled Europe and to neutral Lisbon, Portugal, and then to the United States. Gambling was tolerated although it was officially banned; and special discounts were extended to Rick's friends. In short, Rick's Café could serve as a good metaphor for an emerging market: Just as Rick could "fix" the roulette wheel to help his friends, so it may be that trading practices in emerging markets are not as fair as in the developed world.

The Casablanca Stock Exchange (CSE) is a typical emerging financial market that went through momentous change between 1990 and 2000. In the 1980s, the Moroccan stock exchange was a backwater in many ways. It was a state institution, with very few listed stocks and almost no participation of individual investors in the stock market. Institutional investors would often trade blocks on the upstairs market, but this upstairs market—in which trades were based on mutual agreements—was neither transparent nor standardized. The exchange was extremely illiquid, and most stocks did not trade for weeks. Foreign investors were not prohibited from buying Moroccan stock, but foreigners stayed away because of the archaic structure, the low trading volume, and the possibilities of market manipulation.

In 1989, Morocco announced an ambitious privatization and economic liberalization program, which also included financial market reforms that would greatly alter the operation of the stock exchange starting in 1993. The stock

[7]The analysis in this box builds heavily on the article by Ghysels and Cherkaoui (2003).

exchange was privatized and reformed. The reforms created a dealer/market-maker structure in which more disclosure was required from both listed companies and market makers.

The new reforms began to attract foreign investors, and in 1996, the CSE was included in the International Finance Corporation (IFC) emerging markets database. The number of individual investors increased considerably, reaching 300,000 in 1996. Exhibit 12.5 shows that these reforms had a profound effect on the stock market. Trading volume and liquidity exploded. Finally, on December 17, 1996, the CSE adopted the screen-driven trading system of the Paris Bourse. It is generally believed that such structural changes should greatly affect the quality of the market and lower its cost of trading. There is no doubt, as Exhibit 12.5 amply illustrates, that the reforms immediately increased turnover and liquidity, but did trading costs fall? Unfortunately, researchers do not have data on bid–ask spreads, let alone estimates of market impact. However, Ghysels and Cherkaoui (2003) nonetheless attempted to infer what the trading costs were using the trading data of several stocks before and after the reforms. Surprisingly, Ghysels and Cherkaoui found that, at least until 1996, trading costs on the CSE actually increased after the reforms.

There are multiple interpretations of these results. Let's round up the usual suspects. First, although liquidity improved, until 1996, the CSE remained a relatively illiquid market compared to other markets, and trading was thin. Second, foreign investors (especially new arrivals) are sometimes among the least informed of market participants. *Casablanca* presents a case in point: When Captain Renault asks Rick what an ex-pat like him is doing in Casablanca, he answers that he came for his health, saying, "I came to Casablanca for the waters." Renault exclaims, "The waters? What waters? We're in the desert!" Rick laconically replies, "I was misinformed." Likewise, perhaps CSE dealers possessed a tremendous amount of market power relative to foreign traders and were able to pass along higher costs to them. A third possibility is that the Ghysels and Cherkaoui model misestimated true trading costs.

If the results are accurate, however, there are a few important lessons from this detailed example. First, jumps in turnover and trading are not necessarily associated with lower trading costs, although they typically are. Second, although reforms might encourage foreign investors to participate in a market, by themselves, they do not seem to bring down trading costs. What might have an effect on trading costs, however, is automated trading. Only after screen-driven trading was introduced to the CSE in late 1996 did transaction costs fall. Research by Domowitz et al. (2001) shows more generally that automated systems are associated with lower costs.

Exhibit 12.5 Casablanca Stock Exchange: Basic Indicators

Year	Number of Trading Sessions	Average Daily Trading Volume	Total Market Capitalization	Ratio of Market Capitalization to GDP	Market Index
1989	248	123	5.0	2.6	122.65
1990	244	510	7.8	3.5	158.68
1991	243	428	12.4	5.0	187.55
1992	248	626	17.0	6.6	207.88
1993	248	4,611	25.7	10.0	259.78
1994	251	7,235	39.0	13.1	342.39
1995	251	20,730	50.4	17.5	342.39
1996	247	19,510	75.6	23.0	447.13

Notes: From Ghysels and Cherkaoui (2003). The entries to the table provide annual summary statistics of basic indicators. The average daily volume is in millions of Moroccan dirhams (MAD), the local currency. The total market capitalization is expressed in billions of MAD, and the market index value is taken on the last day of the year.

12.2 International Cross-Listing and Depositary Receipts

An increasing number of MNCs are finding ways to broaden their investor bases and raise capital by cross-listing their shares on foreign exchanges. For example, Royal Dutch Shell is headquartered in Amsterdam and is listed on the Amsterdam, London, and New York exchanges. Novartis, a pharmaceutical company headquartered in Basel, Switzerland, is traded on the Swiss Exchange in Zurich and in New York.

Exhibit 12.6 Percentage of Turnover by Foreign, Cross-Listed Companies

Exchange	Turnover %	Domestic Companies Listed	Foreign Companies Listed
Americas			
Bermuda SE	5.95	14	31
BM&FBOVESPA (Brazil)	1.10	373	8
Buenos Aires SE	32.53	101	5
Colombia SE	18.56	84	2
Lima SE	20.47	199	49
Mexican Exchange	8.84	130	297
NASDAQ	9.31	2,480	298
New York SE	9.76	1,799	518
TSX Group	1.31	3,654	87
Asia-Pacific			
Australian SE	4.62	1,913	86
Bursa Malaysia	1.42	948	8
Tokyo SE Group	0.02	2,281	12
Europe-Africa-Middle East			
Athens Exchange	7.00	277	3
Deutsche Börse	9.89	690	75
Irish SE	2.10	50	9
Johannesburg SE	26.07	352	45
London SE Group[a]	9.67	2,362	604
Luxembourg SE	18.68	29	260
OMX Nordic[b]	7.15	752	26
Oslo Børs	22.58	195	44
Warsaw SE	2.01	569	15
Wiener Börse	1.11	89	21

Notes: The data are for 2010 and were provided by the World Federation of Exchanges (www.world-exchanges.org). Due to different reporting rules and calculation methods, turnover figures across exchanges are not entirely comparable. We report only the markets with foreign turnover percentages higher than 1%. We also report the total number of domestic and foreign companies that are listed.

[a]London SE Group includes Borsa Italiana.

[b]OMX Nordic includes the Copenhagen, Helsinki, Reykjavik, Riga, Stockholm, Tallinn, and Vilnius exchanges.

The number of cross-listed firms grew quickly in the 1990s. Yet, the bulk of the trading on an exchange is still mostly accounted for by domestic firms. Exhibit 12.6 shows the percentage of total value traded due to trading of foreign companies in various countries where the turnover percentage by foreign companies was over 1% in 2010. Markets with a large foreign presence include the Luxembourg exchange, the Johannesburg Stock Exchange, the Buenos Aires Stock Exchange, the Oslo exchange, and the Colombia and Lima exchanges.[8]

In the 1990s, cross-listing grew the fastest in the United States, especially at the NYSE. However, during the 2000s, growth of cross-listings in the United States stalled relative to listings on other exchanges, such as London's. Some have blamed the 2002 Sarbanes-Oxley Act, aimed at improving corporate governance and accounting standards (see Chapter 1). A number of firms even de-listed. For example, in 2007, SGL, a German graphite and carbon fiber materials maker, de-listed from the NYSE in order to cut the costs associated with complying with Sarbanes-Oxley regulations. The box summarizes academic research regarding the effects of the Sarbanes-Oxley Act on U.S. cross-listings. However, by 2010, the Bank of New York Mellon's review of the market suggests that the trend has reversed, with the majority of the new listings happening on major U.S. exchanges and on the Luxembourg exchange.

How Do Firms Cross-List?

Companies seeking a listing overseas must satisfy two requirements. First, they must comply with the standards set for cross-listing by the exchanges. For example, the Tokyo Stock

[8]The numbers are the value traded using the electronic order book, which exclude negotiated deals. In the United Kingdom, more than half of such deals (in total representing about 20% of value traded) involve foreign companies.

Sarbanes-Oxley Act and Cross-Listing

During the mid-2000s, the majority of new depositary receipt (DR) listings were on non-U.S. exchanges. Many felt that this shift reflected the costs of litigation and corporate governance regulations when listing in the United States in the wake of the **Sarbanes-Oxley Act** (SOX henceforth). A flurry of academic research has thoroughly studied the effects of SOX on cross-listing. Although the debate is ongoing, we summarize the results that seem robust across several studies.[9]

The first finding is that because SOX was passed, foreign firms are indeed less likely to list in the United States (as opposed to listing in, for example, the United Kingdom) than before, all else equal. The second more controversial finding is that cross-listing in the United States continues to be accompanied by positive stock market returns. In some sense, this is not surprising. Although SOX increases administrative costs, it also provides enhanced corporate governance because SOX imposes criminal and civil penalties in case of false certifications of financial statements that help protect shareholders against potentially crooked insiders (managers) better than before.

Can these two findings be reconciled? The types of firms that tend to be less likely to list are revealing: They are mostly small firms (for which compliance costs may be steep) and, particularly, firms with stronger inside control. Firms from emerging markets and from countries with weak legal protection of minority shareholders are now more likely to choose Rule 144A and Level III listings, which do not require SOX compliance (see Boubakri et al., 2010). This is consistent with the bonding hypothesis (see Section 12.3). Insiders of foreign firms, knowing that SOX makes it harder for them to extract value from minority shareholders, decide not to list in the United States. This decision is of course not in the interest of the minority shareholders. If such firms would list, the benefits to the minority holders would be higher than before SOX because agency conflicts are better mitigated than before, as Duarte et al. (2011) show.

Evidence from de-registrations from the U.S. markets also appears consistent with this interpretation. Leuz et al. (2008) studied companies that ceased SEC reporting but continued to trade publicly and showed a spike in such "going dark" actions after SOX. They found evidence suggesting that controlling insiders de-register to protect private control benefits and decrease outside scrutiny in firms with strong inside control.

Exchange listing criteria and associated fees are steeper for non-Japanese companies than for domestic companies. Second, a company that wants to cross-list must adhere to the securities regulations of the country in which it wants to list its shares. This may require registering with the country's securities commission and reconciling the company's financial accounts with the market standards of that nation.

Cross-listed stocks can be traded directly on a national stock market, but most often they are traded in the form of a **depositary receipt (DR)**, which represents a number of original shares held in custody by a financial institution in the country of the exchange. The best-known depositary receipts are American depositary receipts (ADRs) and global depositary receipts (GDRs), which we discuss next. In 2010, the first Hong Kong, Brazilian, and Indian DRs occurred. Standard Chartered, a U.K. bank, raised $590 million in the Indian offering.

American Depositary Receipts

An **American Depositary Receipt (ADR)** represents a specific number of shares in the home market that are held in custody by a U.S. depositary bank. The depositary bank converts all dividends and other payments into U.S. dollars and charges a small custodial fee for its services. The Bank of New York Mellon (BNY Mellon) dominates the ADR custodial market, but JPMorgan Chase, Citigroup, and Deutsche Bank are also important players.

[9]The box is based on research by Duarte et al. (2011), Doidge et al. (2009), and Leuz (2007).

Whereas most non-U.S. companies use ADRs, a minority of companies, mostly Canadian ones, use ordinary listings in which they are traded entirely like U.S. companies and face SEC registration and adherence to the reporting requirements of U.S. generally accepted accounting principles (GAAP).

Types of ADRs

The listing of foreign shares in the United States is subject to a detailed set of rules. Exhibit 12.7 gives an overview of the various types of ADRs and the rules that apply to them. Generally speaking, requirements involve registering with the SEC and furnishing an annual report with a reconciliation of financial accounts with GAAP.

A major distinction among the types of ADRs is whether the listing is associated with raising capital in the United States. No new capital is raised when firms list a Level I or Level II ADR. That is, no new shares are issued by the company. Only existing shares are being traded. **Level I ADRs** trade over the counter (OTC) in New York in what is called **pink sheet trading** and are not listed on a major U.S. stock exchange. The OTC market is composed of a network of broker/dealers who complete transactions via telephone or computer rather than in a centralized marketplace. (Pink sheets are weekly publications covering OTC securities and their market makers.) Level I ADRs face few requirements. They must register with the SEC but are not required to comply with GAAP. Basically, the firms file their home country accounting statements with adequate English translations. Well-known companies such as Switzerland's Nestlé and Japan's Nintendo are active OTC ADRs. **Level II ADRs** trade on the NYSE or NASDAQ, and hence must satisfy the exchange's listing requirements. Firms issuing Level II ADRs must register with the SEC and must also file a form to comply with GAAP ("Form 20-F"). Typically, a firm first uses a Level I ADR. Then, it moves to a Level II.

Level III ADRs trade on one of the major exchanges, and they are also issued to raise capital in the United States. This implies that the SEC disclosure and GAAP requirements are even more stringent. Finally, **Rule 144 ADRs (RADRs)** are capital-raising ADRs whereby the securities are privately placed with qualified institutional investors, such as pension funds and insurance companies. As a result, the SEC and GAAP requirements are minimal. The drawback is that RADRs are very illiquid, much like the private placements discussed in Chapter 11. RADRs can only trade through the PORTAL Alliance system, which is a screen-based automated trading system developed by the NASDAQ OMX group and a number of major financial institutions.

Another important distinction is whether the ADR is sponsored or unsponsored. Sponsored ADRs are created by the bank at the request of the foreign company that wants to cross-list. The sponsoring bank often offers ADR holders an assortment of services, including

Exhibit 12.7 Types of ADRs

	Description	Trading Location	GAAP Requirement
Level I	Unlisted	OTC pink sheets	No GAAP reconciliation required
Level II	Listed on major U.S. exchange	NYSE, AMEX, or NASDAQ	Only partial reconciliation for financials
Level III	Offered and listed on major U.S. exchange	NYSE, AMEX, or NASDAQ	Full SEC compliance, including full U.S. GAAP reconciliation for financials
Rule 144A (RADR)	Private U.S. placement to qualified institutional buyers (QIBs)	U.S. private placement market using PORTAL	No U.S. GAAP reconciliation required

Note: Data are from Miller (2000).

investment information and portions of the annual report, translated into English. The depositary fees are paid by the foreign company. Unsponsored ADRs are put in place by a U.S. financial institution, without the direct involvement of the foreign company. Consequently, the foreign company may not provide investment information on a regular basis or in a timely manner. ADR investors pay the depositary fees on unsponsored ADRs. Today, the bulk of depositary receipt programs are sponsored.

The Road to a Successful ADR Listing

The following 19 steps to a successful ADR listing in the United States are excerpted from "Solving the ADR Puzzle: The Expert Guide to Building a Successful ADR Program" (Bank of New York et al., 2002):

1. Appoint an independent accountant/auditor with expertise in international offerings and U.S. capital markets.
2. Appoint an external legal counsel specializing in U.S. securities law to advise on SEC filings, prospectus (if any), and other related matters.
3. If the listing involves a U.S. public offering, appoint an underwriter(s)/investment bank(s) with appropriate transaction experience, sector or industry knowledge, and U.S. distribution capabilities. Investment banks will often make a "pitch" for the underwriter role in what is known as a "beauty contest." An important consideration is the likelihood of good after-market support.
4. Appoint a depositary bank with a significant amount of ADR listing experience, appropriate infrastructure, a knowledgeable staff, and technical capabilities.
5. Select a financial printer, which will manage the confidential document creation, revision, SEC filings, printing, and distribution. If necessary, foreign-language translations can also be arranged by the financial printer.
6. Appoint an investor relations firm that specializes in U.S. listings of non-U.S. companies. Seek an international communications firm with experience in advising and assisting non-U.S. companies. Choose a firm with free access to senior counselors in both the United States and your country.
7. Apply for an exchange listing with the exchange on which you wish to list your stock. The procedure will differ, depending on the exchange. For example, the application to the NYSE will also involve selecting a specialist firm.
8. If the listing involves a U.S. public offering, prepare Form F-1, an SEC registration statement required for any non-U.S. company making its first offering of securities in the United States. The document describes in detail the securities and the transaction being undertaken. It will have been in preparation for several months, and it will be submitted for review and comments by the SEC's corporate finance division together with the prospectus for the offering, if any.
9. Send deposit agreement and Form F-6, submitted by the depositary bank, to the company for review. The documentation describes in detail all the activities undertaken by the depositary bank as agent on behalf of the company and has by now become standard documentation.
10. Have the investor relations firm prepare for the listing day event with detailed recommendations, including a publicity strategy, which should include a tactical plan for special events and media tour aimed at key audiences in the United States and the domestic market.
11. If the listing involves a U.S. public offering, prepare a Red Herring (preliminary prospectus). The company and underwriters print preliminary copies of the prospectus, which will be used to sell the shares to potential investors. Final prices are not contained in this document.
12. File Form F-1 (offerings only). With full and final response to SEC comments, company and counsel make final revisions to the registration statement, which the financial printer will then file with the SEC.
13. Request a CUSIP number from Standard & Poor's. This is a security identification code that provides financial intermediaries with a uniform number that identifies a company through all phases of securities processing and recording. Underwriters request a unique security identification number for the new ADR from the requisite authority.
14. Finalize an exchange listing agreement. All parties agree to the documentation, and the issuer promises to abide by the regulations of the chosen stock exchange.
15. Agree with the depositary bank on the final details of the documentation, which is then filed with Form F-6 with the SEC for review and comments. The review usually takes about 4 weeks.

16. If the listing involves a U.S. public offering, the price of the issue must be determined. Underwriters make final decisions regarding the price of the issue, taking into consideration market conditions and investor demand.
17. If the listing involves a U.S. public offering, schedule the closing, which involves the company, its underwriters (if any), the depositary, and legal counsel for all parties. The underwriters transfer the proceeds for the share sale to the company (or other selling party), and the company transfers ordinary shares to the subcustody account of the depositary.
18. Conduct listing day events. This may involve significant promotional activities and media coverage.
19. Trading of ADRs commences!

Global Depositary Receipts

Many of the ADRs discussed so far are also part of a **global depositary receipts (GDRs)** program. GDRs are like ADRs, but they can trade across many markets and settle in the currency of each market. One important GDR program was Telmex, the Mexican telephone company, which in 1991 became the first international offering of equity shares in a public utility by a developing country. In 2010, RUSAL, a Russian mining company, raised $177 million through a GDR program, listing on NYSE Euronext Paris, the first GDR for this market. Many of the DRs listed in London and Luxembourg trade on a platform called the International Order Book. However, some of the multilateral trading facilities, such as Turquoise and Chi-X, have now also started to trade DRs.

Global depositary receipts are not always associated with existing companies seeking to increase their shareholder base and raise additional capital. They can also be associated with companies wanting to tap the equity market for the first time. Some companies issue stock locally but also target foreign investors, especially foreign institutional investors. When a firm issues shares in multiple foreign markets, sometimes simultaneously with distribution in the domestic market, the issue is part of the **Euro-equity market**. Like the Eurocurrency and Eurobond markets discussed in Chapter 11, the Euro-equity market involves international issues originated and sold anywhere in the world, making **external equity market** a more appropriate name.

Primary equity markets have become more and more globalized, with many IPOs of non-U.S. companies including a U.S. or other international listing. The wave of privatizations of government enterprises that occurred in Europe in the 1980s and in emerging markets in the 1990s is an important factor behind this development. The accompanying equity issues—such as those of British Telecom in December 1984 and YPF, Argentina's state-owned oil company, in 1993—were so large that it was desirable to involve foreign investors directly. In 2010, the Brazilian oil company, Petrobras, attempted to raise $70 billion and chose to raise $10 billion in DR form. JPMorgan Chase acted as the depositary bank for the NYSE deal.

Size and Growth of the Depositary Receipt Market[10]

While ADRs dominated the cross-listing market in the 1990s, the market is now more global. Of a total of 2,205 sponsored depositary receipt programs outstanding at the end of 2010, only 18.5% are U.S.–listed ADRs, and over 46% are now part of GDR programs.

Data from BNY Mellon indicate phenomenal growth in depositary receipt (DR) programs, with between 85 and 189 new DR programs per year every year since 1992. Part of this growth was accounted for by firms from emerging markets attempting to raise capital in the largest capital market in the world, following large-scale liberalization programs in these countries. As of the end of 2010, the BNY Mellon data indicate that India now accounts for

[10]Most of the data discussed here are based on data from BNY Mellon (2010).

more of the total outstanding DR programs than any other country. Russia, China, and Brazil round out the top four countries, followed closely by the United Kingdom. Each accounts for 5% to 6% of the total number of DR programs. The growing importance of Brazil, Russia, India, and China in the global economic landscape is again visible.

Russian companies primarily list on the London Stock Exchange (LSE), and Indian companies seem to prefer Luxembourg. These markets and the NYSE have the highest number of outstanding DRs. However, in terms of trading activity, the NYSE remains the largest market for DR trading by a substantial margin, representing almost two-thirds of worldwide DR trading in 2010.

Among the most actively traded DRs in the United States during 2010 were Baidu.com, a Chinese Internet company; BP, the British oil company; Vale, a Brazilian metals and mining company; Petrobras, a Brazilian oil company; and Teva Pharmaceuticals, an Israeli pharmaceutical company.

POINT–COUNTERPOINT

The Pricing of Royal Dutch and Shell

Ante is poring over the financial pages of the newspaper, searching for the prices of the ADRs for Royal Dutch and Shell, when Freedy yells, "You're not still trying to find arbitrage opportunities, are you? You know international financial markets are efficient."

Ante replies, "You may think markets are efficient, but you haven't read this article by Froot and Dabora (1999) in the *Journal of Financial Economics*. They've really uncovered a whopper of an issue. I'm going to get rich!"

Ante then lays out the facts for Freedy: "A corporate charter has linked Royal Dutch Petroleum (RDP), a Dutch company, and Shell Transport and Trading (STT), a U.K. company, since 1907. All the operating units of the two companies use the same brand name, Shell, and after cash distributions to shareholders are decided, 60% of the cash goes to RDP shareholders, and 40% goes to STT shareholders. This arrangement looks more like one company with two classes of equity. RDP is listed on nine exchanges in Europe, and its ADR trades on the NYSE in the United States. STT is listed in London, and its ADR also trades on the NYSE."

After Freedy hears the details, he asks, "So, what is the big deal? I suppose you've found some price discrepancies between the RDP price in Amsterdam and its ADR price in New York. Or is STT's London price not equal to its ADR price in New York? Which is it? You know, you've got to get the prices into a common currency, and the ADR may be for more than one share."

Ante replies, "Well, you're right about those issues. The price of one share of RDP in Amsterdam should be the price of one ADR share in New York multiplied by the €/$ exchange rate. Also, the STT ADR represents six STT shares in London, so $/ADR should equal ($/£) × (£/share) × 6. When Froot and Dabora did those calculations, the prices were usually within 2% or 3% of each other. Plus, it was hard to get the timing of the quotes on the stocks, the ADRs, and the exchange rates all at the same time. So, I know I can't make money on those tiny differences. The real issue is the difference between the prices of Shell and Royal Dutch."

Freedy takes the bait. "What do you mean? If there are X shares of RDP outstanding and Y shares of STT, and if RDP shareholders get 60% of the cash flows, and STT shareholders get 40% of the cash flows, the price of one share of RDP should equal $(Y/X) \times (60/40) \times (\text{Price of one STT share})$. Tell me that Froot and Dabora did this and found a big difference."

Ante grins, "That is exactly right. There are 536,074,088 shares of RDP outstanding, and there are 3,314,503,242 shares of STT outstanding. So, one RDP share should have the

same value as $(3{,}314{,}503{,}242/536{,}074{,}088) \times (60/40) = 9.2744$ STT shares. Or, since 6 STT shares = 1 STT ADR, one RDP ADR = 1.5457 STT ADR. When Froot and Dabora examined those prices, the prices were often as much as 15% different. I can drive a truck through that spread!"

As usual, Suttle is listening in and feels it is time to enter the conversation. "So, Ante, what is your big plan?" he asks.

Ante replies, "Well, if STT is selling at a 15% discount to RDP, I'll just buy STT and short RDP and pocket the difference: It is an arbitrage!"

"Ah," says Suttle. "You make it sound so easy. But what if the discount gets bigger?"

"What do you mean?" Ante asks. "I still make money, don't I?"

"Actually, Ante, if the discount gets bigger, you would lose money," says Suttle. "Remember, at some point, you have to cover your short position. If the price of RDP went up by more than the price of STT, this would widen the discount, and you would lose. You'd also lose if RDP fell in value by less than STT fell. Once there is a discount, the arbitrage is risky."

Ante replied, "Well, I'm going to have to think about that."

Epilogue

In 2005, Royal Dutch and Shell unified into Royal Dutch Shell, plc, with headquarters in The Hague. The new company now has two classes of shares, A and B shares. They trade on both the London Stock Exchange and Euronext Amsterdam and in the form of ADRs in New York. The two classes of shares have identical rights except in relation to the source of dividend income, where, for tax purposes, A shares have a Dutch source and B shares have a U.K. source.

A number of researchers have more systematically examined the price differences between ADRs and the original shares. Gagnon and Karolyi (2010) examined over 500 U.S. cross-listed securities from 35 different countries, finding very small average price differences amounting to about five basis points. However, they also note that these differences are volatile and reach extremes. Yeyati et al. (2009) also examined a wide set of cross-listings, focusing on emerging markets with some level of capital controls. They show that arbitrage is effective in eliminating substantial price differentials, especially for liquid stocks, but that capital controls do generate substantial price differentials and may effectively prevent arbitrage.

Global Registered Shares

A **global registered share (GRS)** is an ordinary share of a company that trades and transfers freely across national borders. The shares trade in the local currency of the exchanges on which they are listed and are entirely fungible across the exchanges. Unlike an ADR, a GRS is an actual share of the company, not a receipt representing the ordinary shares deposited in trust. Deutsche Bank's GRS trades on the NYSE and the Deutsche Börse, and UBS's GRS trades on the NYSE and the Swiss stock exchange.

The most famous GRS, however, was the very first one: On November 17, 1998, trading commenced for DaimlerChrysler AG shares on stock exchanges around the world. The new symbol for the first GRS was DCX. Daimler-Benz AG, the famous manufacturer of Mercedes-Benz cars, had merged with Chrysler Corporation, the smallest but most efficient of America's big three car producers, in May 1998. Daimler-Benz and Chrysler managers agreed to design and implement a global share as the only equity vehicle to be issued to all DaimlerChrysler stockholders with their merger transaction. Richard Grasso, CEO of the NYSE, hailed the event as a landmark for the globalization of stock markets, saying, "The security will trade in the United States in dollars, on the Deutsche Börse in Deutsche marks, and in 16 other markets

around the world in whatever currency these markets would choose. We created for the first time a concept where equity could follow the sun" (see Karolyi, 2003).

All share registration and transfer was handled, respectively, by the U.S.–based and German-based agents/registrars. Establishment of the Europe/Asia segment required the introduction of registered shares instead of more common bearer shares in Germany. The Depositary Trust Company (DTC) in the United States and Deutsche Börse Clearing (DBC) in Germany handled the settlement and book entry of shares. To establish the GRS, the SEC approved an electronic link between DTC and DBC so that cross-border transactions could be cleared and settled in either the United States or Germany, ensuring complete transparency.

How does a GRS facility compare to an ADR? ADRs represent negotiable claims on home-market ordinary shares (in bearer or registered form) issued by a U.S. depositary bank and coordinated in the home market through a local, custodial bank affiliate. Settlement of cross-border trades takes place daily through ADR issuances or cancellations ("conversions") conducted by the depositary bank, and fees for such transactions amount to about 5 cents per share. The ADRs are, of course, quoted, traded, and settled in U.S. dollars, and dividends are paid in U.S. dollars through the bank. Finally, the depositary bank maintains ownership records and processes corporate actions.

The GRS has "fewer moving parts" and does not require the intervention of a depositary bank. The per-share fee for conversion is subsumed by a single $5 settlement cost to the DTC that is independent of the number of shares. Hence, a GRS may be less expensive to trade. At the same time, there is no depositary bank to oversee the coordination of the transfer, clearing, and settlement procedures of the GRS or to process corporate actions. In addition, ADRs provide the flexibility of bundling (or unbundling) a number of home-market shares into a receipt and, therefore, ensure that the shares trade in a price range that closely mirrors that of the company's competitors. This may help create additional liquidity. Finally, share ownership is more direct with a GRS than with an ADR. Holding a GRS gives investors the same voting privileges, rights to receive dividends, and so forth, whereas the depositary intermediary may impose certain restrictions.

Karolyi (2003) studied the DaimlerChrysler merger in detail, finding some advantages (such as greater trading activity and enhanced liquidity) but also some disadvantages. For example, the order flow and trading volume migrated from the NYSE back to the Frankfurt exchange. Also, the return volatility of DaimlerChrysler significantly increased after the issue of the GRS. Karolyi's study should temper the enthusiasm of experts who have touted the GRS as a cheaper and easier cross-border facility. In 2007, this particular cross-border marriage ended in divorce, as DaimlerChrysler sold its Chrysler unit to Cerberus Capital Management, a private equity firm, retaining only 19.9% of the company. DaimlerChrysler changed its name to Daimler AG.

12.3 The Advantages and Disadvantages of Cross-Listing

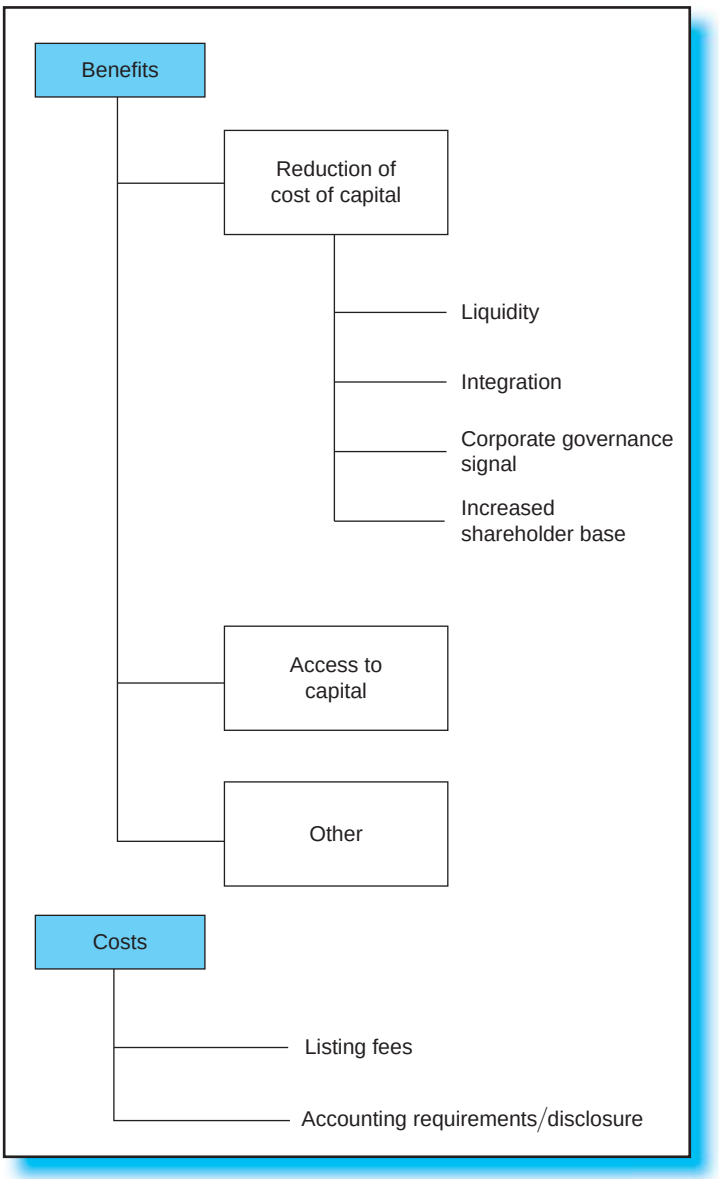
Depositary receipts (DRs) provide investors with international diversification at low cost. DRs overcome obstacles such as foreign custody arrangements and are conveniently denominated and pay dividends in the local currency. Essentially, DRs trade, settle, and clear exactly like domestic securities.

But what are the advantages for the cross-listing company? Cross-listing enhances shareholder value primarily by reducing the cost of capital (which in turn increases the stock price) and by allowing the MNC to exploit growth opportunities with additional foreign capital. Most of the empirical research has focused on foreign companies listing in the United States. Although the estimates differ somewhat across studies, the introduction of

an ADR for a typical company translates into a lower cost of capital by between 0.7% and 3% (see, for example, Foerster and Karolyi, 1999; Hail and Leuz, 2009; and Miller, 2000). Cross-listing may reduce the cost of capital because it improves liquidity, provides a wider shareholder base, allows the stock to be integrated in global capital markets, and improves corporate governance, which is enforced by the country in which the MNC cross-lists. However, some have doubted the long-term benefits of cross-listing (see Sarkissian and Schill, 2009).

Cross-listing is not free, though. Money is paid in exchange fees and road shows, and more importantly, cross-listing may impose a level of scrutiny on the company's managers that they dislike. Exhibit 12.8 gives an overview of the pros and cons of cross-listing from the perspective of the cross-listing firm. The next two sections explain these benefits and costs in more detail and summarize the vast literature on the effects of cross-listing.

Exhibit 12.8 The Costs and Benefits of Cross-Listing



The benefits of cross-listing may not be limited just to the firms that cross-list. Fernandes (2009) shows that firms in the home country that do not cross-list but that are correlated with stocks that do (for example, because they are in the same industry) may also experience positive price effects. In this case, the benefits of ADR issues may "spill over" into the local market.

Why Firms Choose to Cross-List

Liquidity

It is now widely recognized that liquidity is priced in stocks. More liquid stocks have lower expected returns and hence higher prices than less liquid stocks. Thus, cross-listing on a larger, more liquid market that lowers transaction costs for investors and improves liquidity induces lower expected returns and, hence, increases the stock price.

While there is a debate about the relative importance of this liquidity effect, research has shown that typically, after listing abroad, stocks experience an increase in total trading volume and a significant decrease in home market bid–ask spreads, due in large part to competition from the new market. If trading in the foreign market also leads to more efficient price discovery and fewer opportunities to exploit insider trading, there is an additional benefit to cross-listing. Indirectly, the fact that the price effects of U.S. companies listing in Toronto, Tokyo, or European exchanges are small shows that liquidity is an important benefit of cross-listing. Nevertheless, some policymakers are quite concerned about possible adverse effects of multimarket trading. If cross-listing causes trading to migrate to the new market, firms that do not cross-list may become even less liquid as the home market traders and other people working on the local exchange are made worse off. Halling et al. (2008) found that local turnover increases for cross-listing firms based in developed markets but decreases for firms based in emerging markets.

Wider Shareholder Base

The listing of an ADR is usually thought to widen a corporation's shareholder base, and this in itself may generate a price effect. Merton (1987) developed a theory in which investors consider only a subset of the available securities when constructing their portfolios. They may be unaware of the other securities because of information problems, for example, or because the costs of trading these stocks might be prohibitive. In this case, stocks with a wide shareholder base are less risky, have lower expected returns than stocks with narrow shareholder bases, and receive higher prices.

If cross-listing through a depositary receipt literally expands the shareholder base, we should see an increase in stock price and lower expected returns going forward. This argument is particularly important because institutional investors in various countries are often restricted either legally or through their charters with respect to their foreign investments. However, cross-listed securities are often viewed as domestic investments and, hence, may be the only way that some institutional investors may diversify internationally.

Market Integration

Markets are integrated when securities of similar risk have the same expected returns, whatever the market in which they trade (see Chapter 13 for more details). A firm located in a country that is not fully integrated in the world capital markets typically faces a higher cost of capital because the firm's equity risk has to be borne mostly by investors in its own country. If the firm finds a way to make it less costly for foreign investors to hold its shares, these investors share some of the firm's risk, and therefore, the cost of capital falls.

Investment barriers segment domestic capital markets from global capital markets. Investment barriers are usually grouped into "direct" and "indirect" barriers (see Bekaert, 1995; Nishiotis, 2004). Direct barriers comprise regulatory frictions from foreign exchange

controls, foreign ownership restrictions, taxes, and trading costs. For example, during much of the 1990s, the Korean authorities restricted foreign ownership in Korean companies to 10% of total market capitalization. Indirect barriers arise when countries fail to subject their companies to stringent disclosure requirements and investor protection is poor. These factors might play a large role in the investment decisions of international investors.

By cross-listing in a foreign market, a firm makes its shares more accessible to foreign investors, which can be viewed as a liberalization of the domestic equity market. In some cases, the government literally relaxes restrictions for cross-listing stocks in order to facilitate cross-border arbitrage between the stock prices in the local and foreign markets. For example, even though Chile imposed capital flow and dividend repatriation restrictions on foreign investors in the mid-1990s (that is, foreigners could not repatriate capital or dividends for at least 1 year after the initial investment), these restrictions were lifted for the many Chilean companies cross-listing in the United States during that time. The opposite occurs as well. When Brazil introduced a 2% tax on foreign bond and stock purchases in 2009 to dampen capital inflows, Brazilian ADRs suddenly became especially attractive. However, the Brazilian authorities proceeded to levy a tax on the ADR issuing company when the shares are deposited with CETIP, Brazil's custodial agency. If the Brazilian companies pass on the extra cost to the (overseas) buyers of the shares, the good deal on ADRs should disappear.

To sum up, cross-listing should lead to higher prices upon announcement of the listing and lower expected returns afterward. Consistent with this hypothesis, firms from emerging markets typically experience larger cross-listing price effects than firms from developed markets because emerging markets are more likely to be segmented from world capital markets.

Corporate Governance Signal

Indirect barriers can be reduced through better corporate governance. In corporate finance theory, it is now generally accepted that many firms are plagued by agency problems where controlling shareholders or managers try to appropriate funds from the firms. These private benefits of control may lead a firm to make suboptimal decisions (for its shareholders) with respect to investment, recruiting, and so on. In countries with poor investor protection and poor accounting standards, which includes not only emerging markets but also many European countries, these private benefits of control may be substantial and can depress stock prices.

When a firm cross-lists in a market with better investor protection, accounting standards, and disclosure requirements, firms commit themselves to an increased level of monitoring of both management and controlling shareholders. If they list in the United States, they also subject themselves to the litigious U.S. legal system. The reduction in deadweight costs resulting from agency problems increases the present value of future cash flows. The signal of improved management quality that the listing brings lowers the corporate governance discount, allowing the firm to face a lower cost of capital going forward.

This kind of reasoning, known as the "bonding hypothesis," played a major role in the NYSE listing of Kookmin Bank, the largest Korean bank, in November 2001. Kim Jung-tae, president and CEO, explains: "After Korea's financial crisis in 1997, many foreign investors were suspicious of Korean banks' books, and we wanted to clarify the situation by going abroad, especially on the NYSE. I think we have been fully tested in terms of accounting transparency and asset quality under more conservative U.S. GAAP. Our primary purpose is to be as open as possible."

Research by Doidge et al. (2004) and Reese and Weisbach (2002) argues that a substantial part of the higher valuation enjoyed by cross-listing emerging market firms is due to the corporate governance channel. Recent research by Lang et al. (2002) also suggests that more stringent disclosure requirements have an important side benefit: They improve analysts' earnings forecasts and therefore lead to more accurate prices. However, Bris et al. (2007) claim that the economic significance of the "market integration" effect is more than double that of bonding.

Capital Needs and Growth Opportunities

Companies in emerging markets and small countries often outgrow their home markets and use cross-listing to raise capital to continue to grow. In addition, the worldwide privatization boom mentioned earlier created very large companies in very capital-intensive sectors, such as telecommunication, energy, and transportation. The size of these companies, compared to their home markets, virtually required that they raise capital outside their home countries. Fast-growing emerging markets and their firms remain capital hungry. In 2010, almost $22 billion was raised through DR programs, with the BRICs accounting for more than 90% of total capital raised.

Companies that face constraints in the external financing markets can invest more only if they can generate more internal cash flows. Such a constrained firm's real investments will then be sensitive to cash flow growth. Financing constraints are most likely to exist in less financially developed markets. Lins et al. (2005) show that foreign firms listing in the United States become much less financially constrained and substantially increase funds raised in the debt and equity markets. Both access to foreign investment banks with the ability to certify the quality of a deal and greater competition among providers of underwriting services help to reduce the cost of raising external capital. Hail and Leuz (2009) assert that almost half of the increase in firm value from U.S. cross-listing is attributable to an increase in growth expectations.

Other Benefits of Cross-Listing

When SAP, a German-based software company, listed on the NYSE in 1999, it not only wanted to enhance shareholder value, but also wanted to strengthen its commercial profile in the United States. A foreign firm that has a U.S. customer base can increase brand awareness through a cross-listing, given the road show and publicity it entails and the continued increased media attention a listed security garners.

Pagano et al. (2002) found that firms with cross-listings subsequently see their foreign sales as a percentage of total sales increase by approximately 20%. Of course, it might be the case that the firms cross-listed because they planned to expand their international activities and desired access to international capital markets to facilitate the expansion of their operations.

Increasingly, ADRs play a role in cross-border acquisitions. For example, AngloGold, a South African mining company, began with a Level I ADR in June 1998 and soon after listed on the NYSE, bringing a real lion to the bell podium of the NYSE. Whereas this event clearly scored much media coverage, the main intent of the listing, according to CEO Bobby Godsell, lay elsewhere: He claimed in interviews that the firm's ADR program played a critical role in the firm's acquisition program. In 2004, AngloGold merged with the Ashanti Goldfields Corporation of Ghana to create AngloGold Ashanti, the world's second-largest gold producer.

Finally, ADRs may help in the human resource departments because they make it easier to set up a stock or stock option remuneration plan for top talent working in the United States.

Why Firms Decide Against Cross-Listing

As we have said, listing on a foreign exchange is not costless. There are direct one-time costs, such as registration and listing fees, and there are the perennial costs of additional reporting and disclosure requirements. These latter factors are the primary inhibitors that keep more companies from listing abroad. When Daimler-Benz cross-listed its stock on the NYSE, it was not happy to find out it had to disclose the pay packages of its management. German and Swiss firms also tend to "smooth" reported earnings using various hidden accounting reserves; they cannot do this under U.S. GAAP. Among other things, smooth earnings help to reduce taxes when tax rates are progressive, as demonstrated in Chapter 17.

Doidge et al. (2004) argue that cross-listing, while good for a firm, may not be beneficial for the controlling shareholders who may have to give up some of their private control benefits through the disclosure that is required under U.S. GAAP. By listing in the United States, a foreign firm increases the rights of its shareholders, especially its minority shareholders. It also constrains a controlling shareholder's ability to extract private benefits from control. From this perspective, it is not surprising that not every large foreign firm cross-lists in the United States.

Which firms cross-list? It seems likely that cross-listing will be done by firms with good growth opportunities that need funds to invest but find it difficult to finance their growth with internal funds or through debt. In these firms, the private benefits of control are relatively modest, and the controlling shareholders benefit from the firm's growth. Consequently, the growth opportunities of cross-listed firms should be valued more highly because they can better take advantage of these opportunities and because a smaller part of the cash flows of these firms is expropriated by controlling shareholders.

12.4 Strategic Alliances

Some projects are financed by multiple but separate companies. The best-known form of cooperation is probably the **joint venture**. A joint venture occurs when two or more independent firms form and jointly control a different entity, which is created to pursue a specific objective. The new entity tries to combine the strengths of each partner.

The joint venture is an example of a **strategic alliance**, which is an agreement between legally distinct entities to share the costs and benefits of what is hoped to be a beneficial activity. The activity typically involves large investments, but the level of collaboration is typically fairly low and is focused on a well-defined set of activities, services, or products. Strategic alliances are most appropriate for companies wanting to exchange technical expertise or when there are legal, regulatory, or cultural constraints that might prevent, say, an acquisition of one company by another.

A good example of a strategic alliance involved Novartis, a Swiss pharmaceutical company, and Vertex, a U.S. biotechnology research company. In 2001, Novartis basically funded Vertex's research with total funds involving some $215 million over 6 years and further licensing fees of up to $600 million. In exchange, Novartis retained the worldwide distribution and development and marketing rights to eight potentially marketable drugs. This example is not an isolated case. Interfirm collaborative agreements are the norm in the biotech industry, but they also occur in a broad range of other industries.

An interesting question is why certain activities are organized through strategic alliances rather than inside one firm. Why did Novartis choose to conduct this research through an arms-length contract with another firm instead of internally? Robinson (2008) suggests an intriguing possibility: Strategic alliances are more often than not used to finance "underdog projects." Underdog projects have potentially high payoffs but low success probabilities; that is, they are very risky ventures. Even though an underdog project may have equal or higher expected value compared to other projects, managers in the relevant divisions may be unwilling to supply effort, fearing that the headquarters of the firm may take resources away from the underdog project. Through an alliance with a smaller, outside firm undertaking the underdog project, a centralized, large firm (the "parent") guarantees that the project gets some basic financing because the alliance is a legally enforceable contract between two legally distinct entities. In exchange, the parent gets a fraction of the revenues the project earns while giving the stand-alone firm undertaking the underdog project options to extra funds when the project's prospects improve.

12.5 Summary

This chapter examines equity financing in a global market. The main points of the chapter are as follows:

1. A multinational corporation can obtain additional funds by issuing shares to its existing shareholders or to new shareholders. Most MNCs have shares listed on the stock market of the country in which they are headquartered, but many list their shares on several stock exchanges around the world, with the U.S. stock exchanges being most popular.
2. The largest stock markets are in the United States, Japan, and China. The U.S. market is large relative to U.S. GDP, unlike many European stock markets. In Europe, bank financing is a relatively more important source of funding for companies.
3. The emerging stock markets of developing countries developed rapidly over the past 20 years, following a process of financial liberalization. The stock markets of India, Korea, Russia, and Brazil are among the largest in the world.
4. The Chinese stock market is not yet very well developed and is not very open to foreign investors, but it has nonetheless grown spectacularly, partially through IPOs of large state-owned enterprises.
5. Most stock markets are private organizations, and many are now publicly traded corporations.
6. A trading system may be order driven or price driven. In a price-driven system, such as NASDAQ in the United States, dealers act as market markers for certain stocks and stand ready to buy at a bid price and sell at an ask price. In an order-driven system, such as the Tokyo Stock Exchange, share prices are determined in a continuous auction that brings together the supply and demand of shares. The NYSE has elements of both systems.
7. Stock markets around the world have become increasingly automated, and large numbers of alternative trading venues compete for order flow.
8. Stock markets have consolidated in response to competitive pressures to allow international investors more time to trade and to automatically cross-list shares.
9. Turnover is often viewed as a liquidity indicator, and the United States has the largest turnover of all developed stock markets.
10. Turnover is negatively related to trading costs, which consist of brokerage commissions, bid–ask spreads, and market impact.
11. Transaction costs in emerging markets are larger and turnover is generally lower than in developed markets.
12. When foreign companies list their shares in the United States, they typically use American depositary receipts (ADRs), which are held in custody by a depositary bank and represent a certain number of original shares issued in the home stock market.
13. ADR programs come in three varieties: Level I (not exchange traded), Level II (exchange traded), and Level III (exchange traded and capital raising). In addition, private placements occur through Rule 144.
14. Global depositary receipts (GDRs) are similar to ADRs. However, they can be traded on many exchanges in addition to U.S. exchanges.
15. Global registered shares (GRSs) trade simultaneously in different markets around the world, in different currencies, with the shares being completely fungible across markets.
16. Cross-listing a stock can lower a company's cost of capital through several channels, including improved liquidity and better corporate governance. It can heighten the awareness of the firm's brands, provide direct access to foreign capital, and make future capital access easier.
17. A strategic alliance is an agreement between legally distinct companies to share the costs and benefits of a particular investment.

Questions

1. What are the differences between public and private bourses?
2. What is the difference between a price-driven trading system and an order-driven trading system? Which system lends itself most easily to automation?
3. What is a dark pool?
4. Do we have a global stock market as we have a global foreign exchange market?
5. What is turnover?
6. What are the three primary components of transaction costs in trading stocks?
7. Does high turnover always signal lower transaction costs?

8. What is the difference between an ADR and a GDR?
9. What motivates companies to cross-list their shares?
10. What is the difference between a GDR and a GRS?
11. Has cross-listing been beneficial for most listed companies? If yes, why doesn't every company cross-list?
12. What is a strategic alliance?
13. What is a joint venture?

Problems

1. The following table shows how average share prices jump (in percentage) after the announcement that the stocks will be cross-listed (see Miller, 2000). The price response should be interpreted as corrected for risk and market movements that happened on the same day:

	All ADR Issues	Capital Raising	Non-Capital Raising
Emerging Markets	1.5	0.9	2.8
Developed Markets	0.9	0.7	0.9
Total	1.2	0.8	1.4

Although these numbers appear small, it is important to realize that announcements of domestic equity issues, which by definition raise capital, lead to an average negative return response of 2% to 3%. The main reason is that capital-raising equity issues are viewed as a signal by the managers that the firm may be overvalued in the stock market.

Given what you learned in this chapter, answer the following:

a. Why is there a positive price response when a company's shares are cross-listed?
b. Why might the response for emerging-market firms be larger than for developed-market firms?
c. Without knowing that equity issues in a domestic context are associated with negative price responses, is the difference between capital-raising and non-capital-raising ADRs a surprise? Why or why not?

2. Suppose you are a U.S.-based investor, and you would like to diversify your stock portfolio internationally. What advantages do ADRs offer you? Would it be wise to restrict your international portfolio only to ADRs?
3. Web Question: Go to www.adrbnymellon.com/files/MS32022.pdf, navigate to Investor Relations, and find the 2010 Annual Report. Sarkissian and Schill (2004) claim that cross-listing firms tend to prefer cross-listing in markets "close to home." Can you see evidence in favor of this hypothesis in the listing data for 2010?

Bibliography

Aggarwal, Rajesh K., and Guojun Wu, 2006, "Stock Market Manipulations," *Journal of Business* 79, pp. 1915–1953.

Bank of New York, Gavin Anderson & Company, Van der Molen Specialists, PricewaterhouseCoopers, and Bowne, 2002, "Solving the ADR Puzzle: The Expert Guide to Building a Successful ADR Program," www.adrbny.com/files/2002_VDM_Guide_.pdf.

Bank of New York Mellon, 2010 "The Depositary Receipt Markets: The Year in Review," www.adrbnymellon.com/.

Bekaert, Geert, 1995, "Market Integration and Investment Barriers in Emerging Equity Markets," *World Bank Economic Review* 9, pp. 75–107.

Bekaert, Geert, and Campbell R. Harvey, 2003, "Emerging Markets Finance," *Journal of Empirical Finance* 10, pp. 3–55.

Bekaert, Geert, Campbell R. Harvey, and Christian Lundblad, 2007, "Liquidity and Expected Returns: Lessons from Emerging Markets," *Review of Financial Studies* 20, pp. 1783–1831.

Boubakri, Narjess, Jean-Claude Cosset, and Anis Samet, 2010, "The Choice of ADRs," *Journal of Banking & Finance* 34, pp. 2077–2095.

Bris, Arturo, Salvatore Cantale, and George P. Nishiotis, 2007, "A Breakdown of the Valuation Effects of International

Cross-Listing," *European Financial Management* 13, pp. 498–530.

De Bondt, Gabe J., Tuomas A. Peltonen, and Daniel Santabárbara, 2010, "Booms and Busts in China's Stock Market Estimates Based on Fundamentals," ECB Working Paper No. 1190.

Doidge, Craig, Andrew G. Karolyi, and René M. Stulz, 2004, "Why Are Foreign Firms Listed in the U.S. Worth More?" *Journal of Financial Economics* 71, pp. 205–238.

Doidge, Craig, Andrew G. Karolyi, and René M. Stulz, 2009, "Has New York Become Less Competitive than London in Global Markets? Evaluating Foreign Listing Choices over Time," *Journal of Financial Economics* 91, pp. 253–277.

Domowitz, Ian, Jack Glen, and Ananth Madhavan, 2001, "Liquidity, Volatility and Equity Trading Costs Across Countries and Over Time," *International Finance* 4, pp. 221–255.

Duarte, Jefferson, Katie Kong, Stephan Siegel, and Lance Young, 2011, "The Impact of the Sarbanes-Oxley Act on Shareholders and Managers of Foreign Firms," manuscript, Jones Graduate School of Business.

Fernandes, Nuno, 2009, "Market Liberalization at the Firm Level: Spillovers from ADRs and Implications for Local Markets," *Journal of International Money and Finance* 28, pp. 293–321.

Foerster, Stephen, and G. Andrew Karolyi, 1999, "The Effects of Market Segmentation and Investor Recognition on Asset Prices: Evidence from Foreign Stocks Listing in the U.S.," *Journal of Finance* 54, pp. 981–1013.

Froot, Kenneth, and Emile Dabora, 1999, "How Are Stock Prices Affected by the Location of Trade?" *Journal of Financial Economics* 53, pp. 189–216.

Gagnon, Louis, and Andrew G. Karolyi, 2010, "Multi-Market Trading and Arbitrage," *Journal of Financial Economics* 97, pp. 53–80.

Ghysels, Eric, and Mouna Cherkaoui, 2003, "Emerging Market and Trading Costs: Lessons from Casablanca," *Journal of Empirical Finance* 10, pp. 169–198.

Hail, Luzi, and Christian Leuz, 2009, "Cost of Capital Effects and Changes in Growth Expectations Around U.S. Cross-Listings," *Journal of Financial Economics* 93, pp. 428–454.

Halling, Michael, Marco Pagano, Otto Randl, and Joseph Zechner, 2008, "Where Is the Market? Evidence from Cross-Listings in the U.S.," *Review of Financial Studies* 21, pp. 724–761.

Karolyi, G. Andrew, 2003, "DaimlerChrysler AG, the First Truly Global Share," *Journal of Corporate Finance* 9, pp. 409–430.

Khwaja, Asia I., and Atif Mian, 2005, "Unchecked Intermediaries: Price Manipulation in an Emerging Stock Market," *Journal of Financial Economics* 78, pp. 203–241.

Lang, Mark H., Karl V. Lins, and Darius Miller, 2002, "ADRs, Analysts, and Accuracy: Does Cross Listing in the U.S. Improve a Firm's Information Environment and Increase Market Value?" *Journal of Accounting Research* 42, pp. 317–346.

Lefebvre, Jérémie, 2010, "Block Trades and Market Liquidity on Euronext Paris," manuscript, Louvain School of Management.

Leuz, Christian, 2007, "Was the Sarbanes-Oxley Act of 2002 Really This Costly? A Discussion of Evidence from Event Returns and Going-Private Decisions," *Journal of Accounting & Economics* 44, pp. 146–165.

Leuz, Christian, Alexander Triantis, and Tracy Yue Wang, "Why Do Firms Go Dark? Causes and Economic Consequences of Voluntary SEC Deregistrations," *Journal of Accounting & Economics* 45, pp. 181–208.

Lins, Karl V., Deon Strickland, and Marc Zenner, 2005, "Do Non-U.S. Firms Issue Equity on U.S. Stock Markets to Relax Capital Constraints?" *Journal of Financial and Quantitative Analysis* 40, pp. 109–133.

Merton, Robert C., 1987, "A Simple Model of Capital-Market Equilibrium with Incomplete Information," *Journal of Finance* 42, pp. 483–510.

Miller, Darius, 2000, "Return Behavior and Pricing of American Depositary Receipts," *Journal of International Financial Markets, Institutions and Money* 9, pp. 43–67.

Nishiotis, George P., 2004, "Do Indirect Investment Barriers Contribute to Capital Market Segmentation?" *Journal of Financial and Quantitative Analysis* 39, pp. 613–630.

Pagano, Marco, Ailsa Roell, and Josef Zechner, 2002, "The Geography of Equity Listings: Why Do European Companies List Abroad?" *Journal of Finance* 57, pp. 2651–2684.

Reese, William A., and Michael S. Weisbach, 2002, "Protection of Minority Shareholder Interests, Cross-Listings in the United States, and Subsequent Equity Offerings," *Journal of Financial Economics* 66, pp. 65–104.

Robinson, David T., 2008, "Strategic Alliances and the Boundaries of the Firm," *Review of Financial Studies* 21, pp. 649–681.

Sarkissian, Sergei, and Michael J. Schill, 2004, "The Overseas Listing Decision: New Evidence of Proximity Preference," *Review of Financial Studies* 17, pp. 769–809.

Sarkissian, Sergei, and Michael J. Schill, 2009, "Are There Permanent Valuation Gains to Overseas Listing?" *Review of Financial Studies* 22, pp. 371–412.

Schwartz, Robert A., 2010, "Dark Pools, Fragmented Markets, and the Quality of Price Discovery," *Journal of Trading* 5, pp. 17–22.

Wu, Guojun, and J. He, 2003, "The Life of a Manipulated Stock," manuscript, University of Houston.

Yeyati, Eduardo Levy, Sergio L. Schmukler, and Neeltje Van Horen, 2009, "International Financial Integration Through the Law of One Price: The Role of Liquidity and Capital Controls," *Journal of Financial Intermediation* 18, pp. 432–463.