

Box 1. Building a Resilient Financial System in Hong Kong, China

Under the Sino-British Joint Declaration of 1984, Hong Kong reverted to Chinese sovereignty on July 1, 1997, becoming the Hong Kong Special Administrative Region (HKSAR), governed by the Basic Law of 1990. In monetary and financial affairs, the relationship between mainland China and Hong Kong will follow the principle of “one country, two currencies, two monetary systems and two monetary authorities.” Article 109 of the Basic Law protects the status of Hong Kong as an international financial center. Article 110 ensures the independent formulation of monetary and financial policies and of regulation and supervision by the government of the HKSAR. Article 111 stipulates that the Hong Kong dollar will be the legal tender, backed by a 100 percent reserve fund. Article 112 states that no foreign exchange controls will be applied. Article 113 specifies that the government of the HKSAR will manage the Exchange Fund, primarily to maintain the value of the Hong Kong dollar.

Current market sentiment appears strongly to support the view that over the medium term the transfer of sovereignty will not have any adverse effects on the Hong Kong dollar. Indeed, swapped into U.S. dollars, the yield curve of Hong Kong Monetary Authority (HKMA) bills and notes lies below the U.S. yield curve at maturities up to seven years. This sentiment reflects the generally positive assessment of the Hong Kong financial system and of the professional financial management practiced by the HKMA.

The cornerstone of the financial system is the currency board linking the Hong Kong dollar to the U.S. dollar, which the HKMA has successfully defended in the past, most recently in January 1995 in the wake of the Mexican financial crisis. The first line of defense of the linked exchange rate is a large stock of reserves—US\$64 billion at end-April 1997, or 40 percent of 1996 GDP. The second line of defense is the ability of the HKMA to raise short-term interest rates to make it expensive for speculators to obtain Hong Kong dollar credit. The banking system is highly capitalized and liquid, with very low levels of nonperforming loans, and it can tolerate increases in short-term interest rates that may be necessary to defend the exchange rate. Moreover, in 1996 the HKMA put in place other features of the financial system that increase its robustness, implementing a real-time gross settlement system in December and establishing a Mortgage Corporation, which will help to isolate property finance from fluctuations in short-term interest rates.

In addition, the People’s Bank of China, which has reiterated its support for the present exchange rate arrangements in Hong Kong, has stated that it would be prepared to use its own foreign exchange reserves to defend the Hong Kong dollar. The HKMA has also established a swap facility with the People’s Bank to provide liquidity to its reserves in the event of an attack on the exchange rate, as it has with 10 other monetary authorities in the region.

Box 2. The Brady Bond Market Comes of Age

Since the first restructuring of Mexico's defaulted sovereign loans into Brady bonds in 1990, the Brady market has grown to become the largest and most liquid emerging debt market. The investor base, composed originally of commercial and investment banks, gradually widened to include mutual funds, insurance companies, and other institutional investors. The number of distinct issuers and diverse characteristics of the different classes of Brady bonds—fixed- and floating-rate, collateralized and uncollateralized—and more recently the availability of derivatives, facilitated a rich set of sovereign and interest rate investment strategies. However, seven years after Mexico turned its defaulted sovereign loans into the first Bradys, some market participants are forecasting a rapid demise of the market. With the conclusion of a debt restructuring deal in March 1997 for Peru, the stock of outstanding dollar-denominated Brady bonds reached a peak of around \$156 billion and has been declining following a series of buybacks and exchanges for uncollateralized global and Eurobonds. Côte d'Ivoire and Vietnam are expected to be the last significant entrants to the market, but their additions to the stock of Bradys is unlikely to offset the amounts recently retired by Brazil, Ecuador, Panama, and Poland.

As in previous Brady deals, Peru's debt restructuring operation offered a menu of options to creditors, with the government repurchasing \$2.6 billion of principal and past-due interest and issuing \$4.8 billion of Brady bonds.

Creditor preferences determined the issuance of \$2.4 billion in past-due interest bonds (PDIs), \$1.7 billion in front-loaded interest reduction bonds (FLIRBs), \$560 million in discount bonds, and \$182 million in par bonds. The PDI bonds and FLIRBs carry below-market interest rates for the first 10 years, paying LIBOR plus $\frac{1}{6}$ percent thereafter, and have a graduated amortization schedule to maturity in 2017. The discount and the par bonds are collateralized and mature in 2027.

Improved conditions in emerging debt markets following the sustained rally since the Mexican crisis have led several countries to buy back and/or exchange their outstanding Brady bonds, mainly the collateralized instruments, at significantly lower spreads. Following the high-profile exchange in April 1996, Mexico used the proceeds of a 20-year global bond to retire \$1.2 billion of discount bonds in September and called the remaining \$1.1 billion of Aztec bonds in early 1997. In a deal that mimicked the Mexican swap, the Philippines exchanged one-third of its par bonds for a \$690 million 20-year uncollateralized Eurobond in September 1996. The exchange freed up \$183 million of collateral in U.S. treasury bonds. Ecuador, Panama, and Poland also followed this strategy and bought back some \$250 million, \$600 million, and \$1.7 billion of Brady bonds, respectively. More recently, Brazil—the largest Brady country, with almost \$50 billion in bonds outstanding—exchanged \$2.7 billion of Brady bonds for a 30-year uncollateralized global bond.

Box 3. Repackaged Brady Bonds

“Repackaged” or “synthetic” Brady bonds are structured asset-backed securities in which the underlying asset is a portfolio of Brady bonds and the structure is provided by a credit derivative providing for a reduction, or suspension, of payment if a credit event involving the issuer of the Brady bond occurs (see Appendix 1, “Credit Derivatives,” to Annex III). These credit-linked notes are issued by an offshore trust or special purpose vehicle that holds the underlying Brady bonds, usually with a significant degree of overcollateralization. Most repackaged Brady bonds are sold to retail investors in Germany and are denominated in deutsche mark at fixed interest rates, so the issuer will, if necessary, swap the income from the Brady bonds into fixed-rate deutsche mark. Hence, the investor acquires a hedged exposure to emerging market credit that earns a significant premium over German government bonds.

The first public repackagings of Brady bonds in 1992 involved Venezuelan Debt Conversion Bonds, but the market for Brady repackagings really only developed in 1996—in 1993–94 there had been a large number of repackagings of Mexican tesobonos and some other non-Brady debt. Since 1992 there have been at least 76 public repackagings of emerging market debt with a total

value of \$6.6 billion. Repackaged Brady bonds have accounted for \$2.1 billion—most of the remainder was composed of Brazil Multi-Year Deposit Facility Agreement bonds (\$1.3 billion) and repackaged Mexican tesobonos (\$1.1 billion). The most common sovereign risks identified in the repackagings were Brazil (\$2 billion in repackaged bonds), Mexico (\$1.2 billion), Venezuela (\$737 million), and Argentina (\$513 million). Other countries whose bonds have been repackaged include Ecuador, Mexico, Russia, and Turkey.

These bonds provide a means of arbitraging yield differentials between different investor bases—a comparatively high demand in Germany for deutsche mark-denominated emerging market credit—and between different classes of bonds (Eurobonds versus Bradys). However, if such transactions increase in popularity, credit-linked bonds may have a detrimental effect on liquidity in the markets for emerging market debt—since the Brady bonds are stored in trusts and replaced by relatively illiquid Eurobonds. Also, credit-linked bonds are issued by private firms but provide exposure to sovereign credit risk, and therefore compete for investor interest against new sovereign debt, possibly increasing the borrowing costs for emerging market issuers.

Box 4. Emerging Market Currency Eurobonds: The Eurorand Market

Recently, offshore issuance and trading in South African rand-denominated debt have grown rapidly. Following its inception in September 1995, issuance activity in the Eurorand market remained relatively modest, with issuance of around \$1 billion annually in 1995–96. During the first half of 1997, issuance surged to over \$15 billion, while the yield curve was extended out to first 10 and then 30 years. The sector has been particularly popular with supranational issuers, who have accounted for about half of the issues. While a wide range of other entities have been active in the sector, including international banks and corporations, these have been almost exclusively from the mature markets. By May 1997, only two South African entities had tapped the sector. It is estimated that less than 10 percent of the funds raised in the sector have been for use in South Africa.

For *investors*, the attraction of Eurorand debt has been the combination of high yields and highly rated issuers. Investors have, therefore, been able to earn rand interest rates, but at lower perceived credit risks than if they invested directly in South Africa, where entities are bound by the sovereign ceiling. By permitting the separation of exchange rate and (sovereign) credit risk, Eurorand debt has been extremely popular with retail investors—particularly in Europe—willing to accept rand exchange rate risk but preferring the lower credit risk of an investment grade issuer, and with institutional investors bound by fund management rules to investment grade issues. The attraction for *issuers* to the Eurorand market has been the low cost of funding. By offering rand exposure without sovereign risk, triple-A-rated issuers have been able to price primary deals typically

some 75 basis points below the South African gilts yield curve. The fact that investors have been willing to accept lower yields from the more highly rated issuers than is available on South African gilts has created a yield gap that has allowed issuers to swap the proceeds with, for example, a highly rated international investment bank or a South African counterparty, to obtain dollar funding rates of 35–40 basis points below LIBOR.

The fact that a majority of the funds raised have not been intended for use in South Africa raises the question of what effect the Eurorand market has on capital flows to South Africa and on the value of the rand. In the first instance, when the rand required for purchase of a Eurorand issue is obtained on the domestic spot market by surrendering dollars, there is a capital inflow into South Africa. There are then a variety of possibilities, and the net effect could be neutral or positive for capital flows and foreign exchange markets. First, the issuer could exchange the rand raised for dollars on the domestic spot market, implying a capital outflow that offsets the original inflow, and the net effect is zero. Second, the issuer could invest the proceeds in South Africa. In this case there is a net capital inflow equal to the value of the issue. Third, after exchanging the proceeds into dollars, the issuer could enter into a swap to buy rand forward from a domestic South African counterparty, and this would reduce pressure on the forward rand exchange rate. If the issuer enters into a swap with an international investment bank, the investment bank in turn could hedge its risk by, for example, making a leveraged purchase of gilts. In this case, there would be some net inflow, but less than the value of issue.

Box 5. Trends in Funds Management

Large-scale shifts in households' saving behavior and deregulation of financial industries in many industrial countries have made the fund management industry one of the most dynamic segments of the financial industry in recent years. In 1985, the 10 largest institutional investors in the United States managed assets worth \$969 billion (expressed in 1995 dollars). A decade later, the top 10 institutional investors managed assets of \$2.4 trillion.¹ Growth has been especially marked in mutual funds. U.S. mutual fund assets have risen at double-digit growth rates since 1970 when they amounted to just \$48 billion.² By the mid-1980s mutual fund assets had reached \$495 billion, and by April 1997 they totaled \$3,729 billion. Over the 1970–97 (April) period, the number of U.S. mutual funds increased from 361 to almost 6,500, and the number of individual accounts with mutual funds increased from about 11 million to 151 million. Although the institutionalization of savings, and especially the shift by households from bank accounts toward mutual funds, has not been as marked in most other industrial countries as it has in the United States, the trend is apparent in other countries also and this process is widely expected to gather momentum in coming years.

Demographic changes and the increased sophistication of small investors around the world, in tandem with the deregulation of financial markets, have intensified competition for savings among banks, mutual funds, insurance companies, and pension funds. In part because the fund management business is a low-overhead busi-

ness, the response of the industry to intensified competition for funds has been consolidation. This consolidation activity has been evident in two main features of the fund management business.

First, in an increasingly global financial market, the importance of geographic presence has lessened, and thus fund management companies have responded to competitive pressures by consolidating their operations geographically. Global asset management companies are increasingly consolidating operations in one center, such as San Francisco, Boston, or London. For instance, Dresdner Bank, Germany's second-largest bank, and Barclays Bank, the largest bank in the United Kingdom, both announced in late 1996 that they were consolidating their global asset management operations in San Francisco. This geographic consolidation has been facilitated by the ability of fund management companies to contract out aspects essential to the business of fund management, but which are distinct from the management of funds per se. In particular, the development of mutual fund "supermarkets" that offer the services of a wide variety of fund management companies at the retail branch level has led to a geographic separation of the fund manager and the investor in those funds. Similarly, fund management companies have increasingly contracted out back-office functions to third parties, which themselves may be geographically far removed from the fund managers.

Second, there has been a great deal of merger and acquisition activity among fund management companies, particularly in the past few years. Fidelity Investments, the largest institutional investor in the United States, managed \$426.7 billion in assets at end-1995, almost two-and-a-half times the assets (in 1995 dollars) of the largest institutional investor in 1985, Pru-

¹*Institutional Investor* (July 1996).

²Data on U.S. mutual funds are from the Investment Company Institute.

dential.³ In comparison, the 300th largest asset manager at the end of 1995 controlled \$2.7 billion in assets, just slightly more than the \$2.4 billion (in 1995 dollars) managed by the 300th-largest asset manager in 1985. This points clearly to a consolidation of assets, with the largest asset managers growing much more rapidly than the smaller asset managers. Although Fidelity's growth in total assets under management slowed in 1996—it received just 10 percent of net equity mutual fund inflows versus 20 percent in 1995—it is a very large player, with some estimates attributing 12–15 percent of turnover in U.S. equities to Fidelity alone. In Europe, too, consolidation in the fund management industry has taken hold in recent years. In late 1996, two French insurance groups, AXA and UAP, announced plans to merge to create one of the world's largest asset managers, with combined assets of \$420 billion (end-1995 figures), rivaling Fidelity of the United States.

So, while it is clear that consolidation is having profound effects on the size of the larger asset managers, can one conclude that investment assets are concentrating in the hands of just a small number of mammoth asset managers? The evidence does suggest that consolidation is working in this direction, but the pace is not as fast as might be imagined, particularly in the United States. In 1985, the top 10 asset managers accounted for 23 percent of the assets of the largest 300 asset managers, and this share was the same five years

³The figures reported here and below on institutional investors are calculated from figures reported in *Institutional Investor* (various issues) and the IMF's *International Financial Statistics*.

later.⁴ By end-1995, however, this figure had increased modestly, to 27 percent. Moreover, the top 100 asset managers increased their share of the assets managed by the top 300 asset managers by 9 percentage points over 1985–95, accounting for 83 percent of assets at end-1995. Similarly, in Europe, the top 10 asset managers increased their share of assets managed by the top 100 asset managers by 7 percentage points over the period 1991–95, from 31 to 38 percent of the assets of the largest 100. Consolidation activity, therefore, seems to have increased the relative size of the largest asset managers much more in Europe than in the United States. In the United States, consolidation activity has been more broadly based, increasing the relative size of the largest hundred or so asset managers. However, it is noteworthy that classification of asset managers geographically is becoming increasingly meaningless—as mentioned above, recently some large European asset managers have consolidated global asset management activities in the United States. Moreover, consolidation activity has increasingly been across borders, reflecting a tendency toward the evolution of global asset managers.

In light of the forces affecting the fund management industry in recent years and the response of the industry to those forces, it is widely held that the outlook for the industry contains considerably more consolidation in the industry as well as geographically. An oft-painted scenario for the industry early in the next century is one in which there are a relatively small number of very large global companies each managing assets well in excess of \$150 billion and a number of smaller management companies surviving in regional niche markets.

⁴*Institutional Investor* (July 1996).

Box 6. Circuit Breakers

As equity markets around the world continue their upward momentum, many of them reaching new heights, concerns about possible overshooting and a subsequent sudden drop in equity prices are beginning to emerge. Following the equity market crash of 1987, many countries instituted various forms of circuit breakers. Ten years later, these countries and others are taking a second look—deciding whether to reset the conditions for their use or whether to adopt some form of them for the first time. Despite their growing use, especially among emerging market countries, there continue to be misconceptions about the purpose and effectiveness of circuit breakers. Circuit breakers are only a temporary measure for reducing market volatility or unidirectional price movements.¹ If fundamental information is the basis for the price movement, and not features of destabilizing trading strategies or panics, then circuit breakers simply slow the eventual price movement: they do not reverse it.

The two most common circuit breakers are trading halts and price limits. Trading halts can be initiated in two ways: a specialist, or other exchange official, may have the authority to halt trading; or a trading halt may be imposed after a price change of a given amount or percentage. The length of the halt can be pre-established or can be discretionary. Price limits place bounds on the price change but do not limit the period of nontrading: if a price hits a limit, trading beyond that price limit cannot take place; only when prices fall back within the limits can trading resume. Another type of circuit breaker is a limitation on the types of trades or strategies that can be initiated during a period of high volatility, or even in a normal period. For example, some exchanges routinely disallow short sales unless the price has experienced an “uptick,” that is, the price had to have moved up by the

trading increment. Another example is that all index arbitrage trades must be executed through an electronic system that delays their execution by five minutes when price changes exceed a given amount.

To choose the circuit breaker mechanism that will be most effective, it is important to define the goals of the circuit breaker and to assess the surrounding environment. In most cases, the goal of circuit breakers is either to dampen price movements caused by speculative activity or to slow down the price effects of trading strategies that are thought to have destabilizing or overshooting effects (e.g., portfolio insurance, the dynamic hedging of options). Even when destabilizing speculative activities or trading strategies are absent, there is often a belief that sharp movements in prices, regardless of their cause, are likely to engender a panic mentality, causing investors to act irrationally, further reinforcing existing price movements. Similarly, even when price movements reflect underlying fundamentals, a limit on the maximum amount lost in a given period may allow participants who would not have been able to pay for their losses had the full price decline occurred to pay on a timely basis. Regardless of which type of circuit breaker is chosen, to operate effectively the market needs to be centralized, information needs to be disclosed during the halt, and there needs to be a well-known method for the resumption of trade.

Trading halts can only truly halt trading when trading is centralized. In the United States, for example, when trading halts were introduced after the 1987 market break, close coordination between the stock exchanges and the futures exchanges, on which associated futures contracts were traded, was required. In October 1996, the Dhaka Stock Exchange in Bangladesh instituted a circuit breaker to limit price movements to a daily 5 percent, only to have its effectiveness undermined by the unofficial curb market where no such impediment to trading could be maintained.

An integral element to using any circuit breaker mechanism is the disclosure of information. It is imperative

¹In fact, some empirical studies find that circuit breakers may increase volatility (Lauterbach and Ben-Tsiyon, 1993; Lee, Ready, and Seguin, 1994).

that market participants learn something during a trading halt that helps them determine the instrument's price: both fundamental information and order flow information are important. Depending on the trading mechanism, either indicative quotes or postings of bids and offers and the amounts underlying them should be given at intervals during the halt to provide information about order imbalances. If open outcry is used, market participants should freely announce their willingness to buy or sell at various prices.

In addition, there needs to be an established and well-known method for resuming trade. A single call auction, whereby a specialist gathers the bids and offers over a set period of time and establishes a market-clearing price at which all the existing orders receive the same execution price, is thought to be one of the most equitable. It helps to relieve an element found in most panics—the desire to get an order executed before the price falls farther.

In addition to the immediate microstructure issues surrounding the trading environment, there are also infrastructure issues that may require attention. When clearing and settlement procedures are not well established or take extended periods of time to operate, uncertainty regarding the solvency of the participants can arise, limiting liquidity and participation when it is most needed and, in some instances, inhibiting the use of the exchange entirely as a venue for trading.

As an alternative to circuit breakers, share repurchases by corporate issuers may help stem a dramatic price decline in equity markets. At some point, a firm may deem the price of its stock low enough to buy it back and reissue it at a later date for a profit, thereby obtaining additional equity from the market. Share repurchases signal to the market that the firm, with inside knowledge of its value, believes that the shares are undervalued. Similarly, purchases from a major participant in the market can show confidence and help inhibit further sales. To allow these mechanisms to operate, a country may need to relax or eliminate restrictions regarding corporate repurchases.

Other institutional features that may reduce the incidence of a crisis include (1) restrictions on bank lending for stock purchases by requiring various amounts of collateral;² (2) better audit trails to detect market-trading abuses, such as price manipulation that may start a panic; and (3) education of market participants, especially small retail investors, to enable them to understand the practices and procedures surrounding trading during normal times as well as the different procedures that may occur during stressful periods.

While certain types of circuit breakers may achieve some goals, they are all impediments to a freely functioning market—preventing buyers and sellers from executing trades at mutually agreed prices—and have some deleterious effects. Circuit breakers may limit trading by participants that are attracted only by large price moves, and hence eliminate a stabilizing factor. In most instances, the existence of circuit breakers is likely to alter participants' behavior around their imposition. For instance, a “magnet effect” may occur when participants recognize that as the price approaches a price limit they will be unable to execute their desired trades and so they execute early. Alternatively, an opposite “repelling effect” may occur when participants prevent the limit from being hit because they know their ability to trade will be impaired. While these behavioral trading effects are certainly present, the most basic criticism of circuit breakers is that when fundamental information implies a large price movement, circuit breakers merely lengthen the time involved in obtaining the new price level.

²The collateral should not be the same as the instrument being purchased because this would reinforce price movements. For example, if a bank loan is used to purchase equity and the collateral underlying the loan is also equity, a fall in equity prices means that, to maintain the collateral, the borrower needs to sell equity in an already falling market, adding further pressure on equity prices.

Box 7. ERM2

The Treaty of Maastricht does not specify the exchange rate arrangement between EMU and the EU countries that are not initial members. To eliminate this uncertainty, in December 1995, the European Council in Madrid announced that the current ERM will be replaced by a new exchange rate mechanism, called ERM2, whose main features were agreed on in the Resolution of the Amsterdam European Council in June 1997.

The main objective of ERM2 will be to support the single market by avoiding the disruption of trade flows resulting from real exchange rate misalignments or excessive nominal exchange rate volatility. Participation will be voluntary but expected, especially by countries planning to join EMU with a delay. To allow for different degrees and strategies of convergence, the structure of ERM2 will be flexible. Target fluctuation bands vis-à-vis the euro will be wide: plus or minus 15 percent. Narrower bands between the ECB and non-EMU national central banks are foreseen, but they will be “without prejudice to the interpretation of the exchange-rate criterion” of the Maastricht Treaty. Also, bilateral fluctuation bands and intervention arrangements between two non-EMU national central banks will be possible. Intervention at the margin should be automatic and unlimited, but the ECB and the EMU national central banks will be en-

titled to suspend intervention if the primary objective of price stability is threatened. Intramarginal intervention will remain discretionary. The Very Short Term Financing Facility (VSTF) of the current ERM will be available also in ERM2 “broadly on the basis of the present arrangements.”

The main uncertainty about the functioning of ERM2 regards the commitment of the ECB to support a currency of the system under attack. This commitment seems to be limited by the provision that intervention could be suspended “if this were to conflict with the primary objective of price stability.” Threats to price stability, however, are likely to be much rarer than in the present ERM because the large scale of EMU will allow easier sterilization of any ERM2-related intervention; in addition, the latter will have a much more limited impact on the liquidity of the euro area. At the same time, intervention by a non-EMU national central bank will not be very effective in stabilizing its parity with the much larger euro zone. Thus, non-EMU countries can reasonably be expected to exercise their obligation for stabilizing ERM2 parities primarily through the maintenance of appropriate monetary, fiscal, and structural policies, rather than through foreign exchange market intervention.

Box 8. Volatility and Correlation of Asset Returns in EMU

The relation between exchange rate stability and the volatility of asset prices has been one of the most debated issues in the economic literature. One view is that a fixed exchange rate regime—hence EMU—increases the volatility of securities prices. According to this view, when the exchange rate is not allowed to change, shocks to productivity, consumer preferences, or other real shocks of domestic origin will be reflected to a larger extent in securities prices (“volatility transfer hypothesis”).

Several arguments have been put forward to counter or qualify this view. First, the volatility transfer hypothesis holds unambiguously only when real domestic shocks prevail; if domestic or foreign money demand shocks prevail, a fixed exchange rate regime would have, instead, an opposite, dampening, effect on the volatility of securities prices. Furthermore, for foreign real shocks, the consequences of fixing the exchange rate become ambiguous. Second, if the volatility of the exchange rate is created by uninformed “noise traders” or “chartists” responding to nonfundamental factors, then credibly fixing the exchange rate would eliminate the excess volatility without transferring it to other sectors of the economy. Finally, if the fixed exchange rate regime is imperfectly credible and stochastic shocks may trigger a speculative attack, then the volatility of interest rates is higher than it would be with a perfectly credible parity or a single currency, as in EMU; in this case, the impact of a fixed-rate regime on the volatility of interest rates provides no indication of what would happen with a perfectly credible fixed exchange rate regime or EMU.

The question can only be settled empirically. A recent study by Flood and Rose (1995) of various episodes of fixed and flexible exchange rates over the 1960–91 period for OECD countries concludes that there is little evidence that “reducing exchange rate volatility compromises the stability of other macroeconomic variables” (p. 36). Similar results are obtained for EMS countries by Artis and Taylor (1994) and Fratianni and von Hagen (1990). Following a methodology similar to Mussa (1988), Bodart and Reding (1996) compare the volatility of bond and equity market returns across different exchange rate regimes. They use high-frequency data (daily returns between January 1989 and December 1994) for Belgium, France, Germany, Italy, Sweden, the United Kingdom, and the United States. They find that the countries with the lowest foreign exchange volatility (Germany, France, and Belgium) have the lowest volatility of bond returns also. In these countries, the volatility of equity prices is also lower than in Sweden and Italy. Furthermore, after breaking up the sample into subperiods, they find that, as long as the EMS regime was credible, the low volatility in foreign exchange markets was associated with a low volatility in bond markets. When foreign exchange volatility increased, bond market volatility did also. Analogous—although weaker—results were obtained for equity prices. Frankel (1996) conducts a similar experiment on stock prices and reaches similar conclusions. This evidence suggests that lower—not

higher—volatility of securities prices is associated with lower exchange rate variability.

There are two main reasons why securities prices could be correlated across countries: a common fundamental factor or contagion effects. In both instances, the correlation is likely to be affected by EMU. First, if EU securities prices share a common fundamental, EMU can increase their correlation because it reduces the variance of idiosyncratic shocks due to independent monetary policies. EMU might also reduce the correlation of securities prices by increasing the variance of the credit risk component. In the government bond market, this may happen because EMU eliminates the possibility of using the inflation tax to resolve country-specific budgetary difficulties. Similarly, in the corporate bond market, EMU eliminates the possibility of using the exchange rate instrument to compensate for real idiosyncratic shocks. In stock markets, EMU is expected to have a lower impact on price correlations because of the much higher potential for idiosyncratic shocks. A higher cross-country correlation of equity prices should, however, also be expected because EMU eliminates idiosyncratic monetary policy shocks and is likely to increase the correlation of business cycles.

Second, international correlations of securities prices can also be explained by contagion effects due to noise trading or herd behavior unrelated to fundamentals. In this case, cross-country correlations should be higher in periods of high market volatility, when there is a large dispersion of expectations about fundamentals. As long as fixing exchange rates or introducing a single currency reduces the uncertainty about monetary policy, periods of high market volatility should become less frequent and contagion and correlation of securities prices should fall. Thus, if international correlations of securities prices stemmed mainly from contagion effects, EMU would not increase the correlation—as suggested by the fundamental approach—but reduce it.

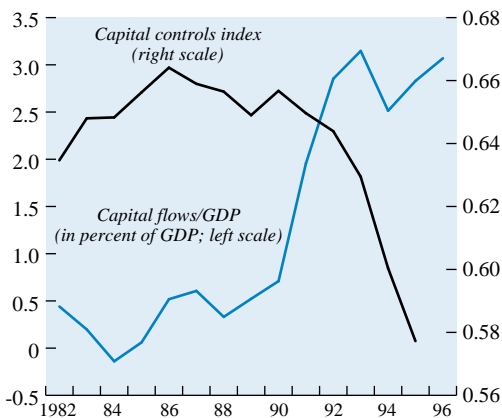
Two studies on the effects of exchange rate regimes on the cross-country correlation of securities prices suggest that a smaller exchange rate volatility, and thus EMU, should increase cross-country correlations. Bodart and Reding (1996) find that correlations of both bond and equity prices were stronger for the countries with the lowest exchange rate volatility. Moreover, correlations weakened in the turbulent period of the ERM. Interestingly, the correlation between German and U.K. bond markets was higher during the short period in which the British pound was part of the ERM. Frankel (1996) conducts a similar experiment on Irish stock market data and obtains similar results. The existing empirical evidence suggests that the exchange rate regime matters and that exchange rate stability tends to increase cross-country correlations of securities prices. EMU may then be expected to have a similar effect. These results should, however, be interpreted with caution because they do not rule out the possibility that changes in the volatility of idiosyncratic fiscal and political shocks—affecting simultaneously foreign exchange markets and securities markets—could account for the observed changes in correlations.

Box 9. Liberalization of Capital Controls in Emerging Markets

The figure plots an index of capital controls in emerging markets. This index is based on information on 163 countries obtained from the IMF's annual survey of Exchange Arrangements and Exchange Restrictions and constructed using the methodology of Bartolini and Drazen (1997). Three dummy variables for each country for each year were constructed corresponding to whether a country restricted capital account transactions, used multiple exchange rate practices, or enforced surrender requirements for export proceeds. An index for each country for each year is obtained by summing its dummy variables and dividing by three. It varies between zero and one, with zero representing a complete lack of controls and one the existence of all the restrictions mentioned above. The aggregate capital control index shown is the mean of the country indices for each year.

The loosening of capital controls in emerging markets since the mid-1980s is clearly brought out by the index. The figure also suggests that the decline in capital account restrictions may have contributed to the recent boom in capital flows to emerging markets. The correlation between the index and capital inflows is -0.3 over the period shown and provides some simple corroboration for the claim that liberalization of external transactions has been instrumental in attracting foreign capital.

Capital Controls in and Flows to Emerging Markets



Sources: International Monetary Fund, *Annual Report on Exchange Arrangements and Exchange Restrictions*; and *World Economic Outlook*.