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SYSTEMIC RISK IN

EMERGING MARKETS FINANCIAL SYSTEMS

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Abstract

This paper gives an overview of the concept of systemic risk in emerging markets, focusing from the risks arising when companies raise capital internationally. When companies become active on the international arena and especially in emerging markets, more considerations have to be taken into account before a sound investment decision can be made. Recent crises in Mexico, Asia and Russia have shown that financial turmoil can spread between markets and create substantial jitters. The paper surveys the existing literature regarding systemic risk events in the above mentioned crises. The conclusions are that spillover effects have been present in all crises. The latter part of the paper consists of a correlation exercise between Argentina and 11 other emerging markets during the period of turmoil in Argentina in 2001. The conclusion is that minor contagious events can be traced from the Argentine crisis to the selected emerging markets. Some co-movements during the first half of 2001 can be interpreted as spillover effects, while the latter part of 2001 show muted effects, probably as a result of that investors and analysts differentiated between Argentina and other emerging markets during this period.

Key words

- Systemic risk
- Contagion
- Emerging markets
- Cost of capital
- Argentina

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1.   Introduction

The global integration of financial markets and the fact that more and more companies and investors are becoming active on the international market have fostered a need for companies and investors to understand the risks involved with global investments. Especially emerging markets have, during the last decades, attracted a lot of foreign investments, because of their growth potential and low production costs. Investments in emerging markets can, however, be hazardous because of often less developed financial systems where turmoil in other markets can spill over to the domestic market.

A vast majority of emerging markets started their transition period with adopting some form of a fixed exchange rate regime, in an effort to stabilise their economies. As transition proceeded, the economies became increasingly integrated with the world economy. However, this opening up also meant that the economies are more subject to external shocks, making those with fixed exchange rate regimes potentially more vulnerable to currency crises. The Mexican crisis of 1994 spread jitters to other financial markets, but the transition economies seemed unaffected during this period. Three years later, the Thai crisis created spillover in Asia and affected other regions, such as Latin America. However, the effects on transition economies received little media coverage. By August 1998, with the eruption of the Russian crisis, the effects on emerging markets were mainly covered on an aggregate level. Estimations of the impact on different emerging markets were seldom made, and the spillover effects on these countries seemed more muted than elsewhere.[1]

The purpose of this paper is to give an overview of companies' different possibilities when raising new capital abroad or investing in international markets, and to describe different kinds of risks that arise when companies and investors become active on the global arena. The paper focuses on systemic risk between countries, with a special focus on emerging markets. The aim is, from a company's or investor's perspective, to try to determine what the effects of systemic events can be and what drives it. A second aim of this paper is to investigate if any systemic events can be traced from the Argentine crisis period during 2001.

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[1] Gelos and Sahay, 2001, page 54

Part 2 gives an overview of different types of crises and summarises what caused the recent financial crisis in Argentina. Part 3 describes the selected research design and explains the empirical methods used, while part 4 focuses on the cost of capital that arise for a company when becoming active internationally. Part 5 reviews different theoretical models of systemic risk. Part 6 surveys some literature dealing with the recent Mexican, Asian and Russian crises in an effort to give an overview of past contagious and systemic events. Some evidence of the importance of linkages for transmission of financial turmoil is presented in part 7, while part 8 tries to trace systemic events from the Argentine crisis during 2001 on 11 other emerging markets. Part 9 concludes.

2. Background

2.1. Types of crises[2]

Several kinds of economic or financial crises can be distinguished. A *currency crisis* occurs when a speculative attack on the exchange value of a currency results in a sharp depreciation or a devaluation of the currency. The authorities may be forced to defend the currency by raising interest rates or by expending large volumes of international reserves. A *banking crisis* can be said to refer to a situation in which actual or potential bank runs or failures make banks suspend the internal convertibility of their liabilities. This can compel the government to intervene by extending assistance on a large scale. Banking crises may be so widespread that they assume systemic proportions. *Systemic financial crises* are potentially severe disruptions of financial markets that can have large adverse effects on the real economy, by impairing markets' ability to function effectively. A systemic financial crisis may involve a currency crisis, but a currency crisis does not necessarily involve serious disruption of the domestic payments system and may therefore not amount to a systemic financial crisis. Finally, a *foreign debt crisis* is a situation in which a country cannot service its foreign debt, whether sovereign or private.

Crises of all types often have common origins with misalignments in asset prices or exchange rates, often in a context of financial sector distortions and structural rigidities. Crises may then be considered to be the consequence of financial or economic disturbances when economies suffer from high degree of vulnerability. A crisis can be triggered by a sudden loss of confidence in the banking, payment or the settlement system. Such an effect can be caused by correction of asset prices, or by disruption to credit or external financing flows that expose underlying economic and financial weaknesses. Crises may also involve sharp declines in asset prices and failures of financial institutions and non-financial corporations. Of course, not all corrections of imbalances lead to a crisis. Whether they do or not depends, apart from the magnitude of imbalances themselves, on the credibility of policies to correct the imbalances and achieve a so called "soft landing", as well as the robustness of the

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[2] This part is based on the IMF classification outlined in World Economic Outlook, (1998), Page 74-75.

country's financial system. These factors together determine the economy's vulnerability to crises

Currency, banking and debt crises can occur simultaneously, as was seen in east Asian and the 1994-95 Mexican crises. The 1992-1993 ERM crisis were, in essence, currency-related, even though the Nordic countries that experienced currency crises also had domestic banking crises around the same time. Furthermore, what may begin as one type of crisis may develop into other types as well. For example banking crises have often preceded currency crises, as occurred in developing countries such as Turkey and Venezuela in the mid-1990s. Banking crises have also preceded debt crises, as in Argentina and Chile in 1981-82. The converse has occurred in cases as Colombia, Mexico, Peru and Uruguay, where the withdrawal of external financing in 1982 precipitated banking crises. What began as currency crises in some east Asian countries transformed into banking and debt crises, illustrated most clearly by Indonesia. However, this phenomenon does not necessarily imply causality.

Banking sector difficulties may not always be apparent, especially in poorly supervised and inadequately regulated systems, or in circumstances where lending booms and asset price inflation may mask banking problems until a correction in asset prices exposes the fragility of the financial system. The same is true for problems linked to corporate sector indebtedness. In these situations, the fragility of the banking or the corporate sector may be fully exposed only after a run on the currency has undermined confidence more generally and precipitated speculative shifts that expose and intensify banking and debt problems. This was a clear feature of the east Asian crisis in the latter part of the 1990s.

2.2. The Argentine crisis in 2001

This part gives a brief background to the recent Argentine crisis that erupted in 2001. The case of Argentina is selected because of its importance as an emerging market and the currently prevailing financial crisis climate, which has not yet been explored to a great extend. This paper will later review the recent Mexican, Asian and Russian crises. The lessons learned when reviewing the existing literature of systemic events from these crises provides a good background when investigating the Argentine crisis. Of interest is to see if similar events that was seen during the above mentioned crises can be traced from the Argentine crisis.

Even before the latest period of great turmoil, Argentina's story is that of a decline unparalleled in modern times. Blessed with some of the world's most fertile land on the endless *Pampas,* Argentina, in the 19th century, attracted a flood of British capital and European immigrants. By 1913, having grown at an annual average rate of 5% for the previous three decades, it was one of the world's ten richest countries, ahead of France and Germany.

It has been a reversed story ever since. Exporting beef and grain to Britain ceased to be a passport to prosperity. Argentina's leaders, starting with Juan Domingo Pedron, a populist army colonel who ruled from 1946 to 1955, aggravated their country's problems by retreating into protectionism and financing generous benefits to workers by printing money. Four decades of political and economic instability culminated in the restoration of democracy in 1983. But the economy still languished: between 1976 and 1989, income per capita shrank by more than 1% per year. Two periods of hyperinflation and two banking collapses, destroyed confidence in both the peso and the economic policy. Argentines preferred to use dollars, and the wealthy shipped their capital abroad.

In 1991, Carlos Menem, a pragmatic Peronist, and Domingo Cavallo, his economy minister, set out to reverse this decline through free-market reforms such as open trade. Their cornerstone was a currency board, under which the peso was fixed by law at par to the dollar, and the money supply restricted to the level of hard-currency reserves. Mr Cavallo called this "convertibility", deliberately harking back to Argentina's golden age (for much of the period before 1935, the country had operated a currency board, in which a body known as the *Caja de Conversion* was charged with maintaining the peso's value in gold).

Mr Cavallo's scheme seemed to work. After a lag, inflation was subdued. With all risk of devaluation apparently removed, capital poured in from abroad. Mr Menem privatised almost everything the state owned, except for a couple of banks. Between 1991 and 1997, Argentina's economy grew at an annual average rate of 6.1%, the highest in the region. Productivity increased as investments modernised farms, factories and ports.

The currency board was however a demanding regime. Having renounced both exchange rate policy and monetary policy, the government was left with few tools to respond to external shocks. The first foretaste of difficulties came in 1995, after Mexico had been forced to devalue its peso. Nervous investors withdrew their money from Argentina, the economy shrank by 3%, and a dozen banks collapsed. But the government responded effectively by tightening bank regulation and capital requirements, and encouraged foreign banks to take over weaker local ones. By the next year, the economy was growing strongly again (see figure 1).[3]

Figure 1: Real GDP growth

(year-on-year, percent change)
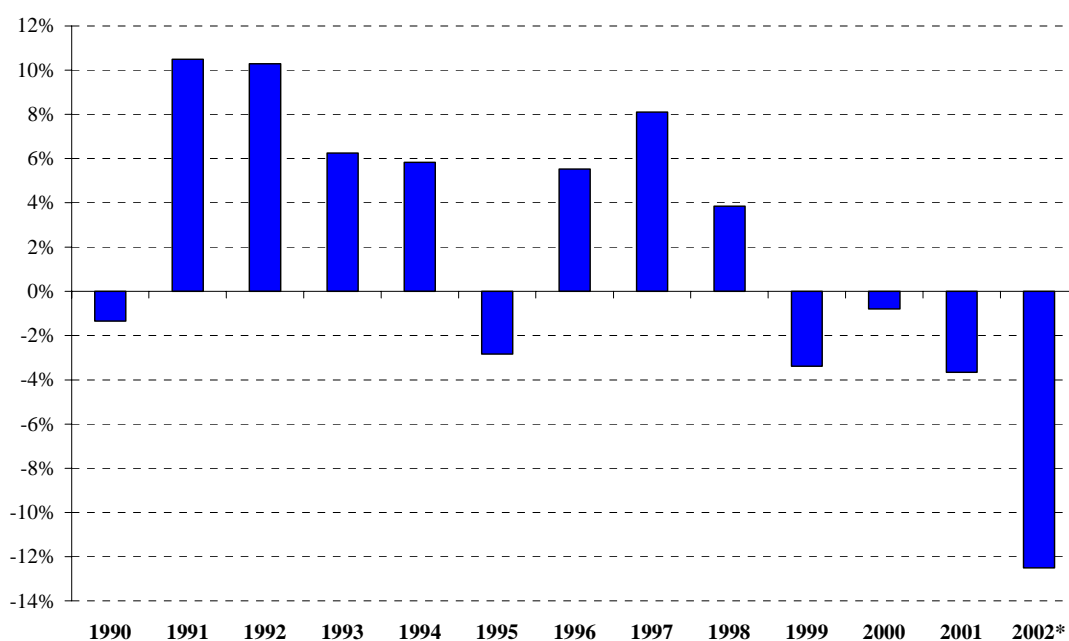
Source: World Economic Outlook (projection)*

Triggering the crisis Argentina is in today, was the contagion from the turmoil in south-east Asia and Russia in mid-1998 which led to a prolonged recession in Argentina. In 1999, the public accounts started to worsen considerably against the backdrop of recession driven by a combination of steady increases in spending in the 1990s and declining tax revenues. Furthermore, the increased funding of the government deficit on the domestic market (instead of on international markets) led to a crowding out of private domestic borrowing and declining private investment.

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[3] The Economist (2002)

During 2000, institutional investors in emerging countries perceived a marked deterioration of Argentina's prospective solvency, which was permanently under stress, since the country's export revenues were barely adequate to serve the external debt. Despite the doubling of the International Monetary Fund's (IMF) financial assistance in November-December 2000, the market worsening of Argentina's fiscal conditions (first quarter of 2001) and the negative reaction of markets to some of the measures announced by Economy minister Cavallo (June-July 2001) triggered – by means of contagion – a sell-off of bonds, raising costs of international borrowing.

Argentina was lingering on the brink of a debt default since July 2001, when the Argentine government was forced to reduce the maturity of debt offered in a domestic debt auction amidst sharply rising yields.

The appreciation of the dollar against the yen and European currencies, as well as the strong devaluation of the Brazilian real that eroded the competitiveness of Argentine exports, amplified the crisis. The CPI-weighted real effective exchange rate appreciated by about 7.5% in the first half of 2001, mainly due to the weakness of the Brazilian real. As a consequence Argentine export growth slumped to an average value of below 2% in the last three years from values of far above 10% in the mid-1990s.

As a consequence of the prolonged economic downturn and the slow export growth, the ratio of external debt to GDP reached levels of 53.7 percent in 2001 and the respective ratio to exports reached 470 percent.[4]

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[4] Statistical source is IMF's International Financial Statistics

3. Research design and empirical methods

3.1. Survey method

This paper aims at giving an overview of the concept of systemic risk in emerging markets by reviewing the existing theoretical and empirical literature. At the heart of the concept is the notion of "contagion", a particular strong propagation of failures from one company, market or system to another. A theoretical background on the cost of capital theory for companies and the theoretical models of systemic risk is given in part 4 and 5 in order to understand the findings in the later reviewed papers. Part 6 and 7 reviews the current literature on the subject and gives an overview of which ideas are the most dominant. The literature does seldom explicitly view the concept from a company perspective but the conclusions can be applied to a company level.

The risk with a survey like this is that important work may be left out. The focus on emerging markets is chosen to limit the literature in order to give a more complete picture. The literature is, however, still extensive, which may lead to an incomplete survey. Some of the reviewed papers are chosen because of the authors well known reputation, the reputation of the journals in which they were published, or just because they raise important and interesting points. This arbitrary selection process should be taken into account.

A problem when drawing conclusion from previous work on systemic risk in emerging markets is the different definitions of contagion that are being used. This paper has used the World Bank definition of contagion but often is contagion as a concept used in a broader form. Some papers use definitions of contagion that other label as systemic risk. It is therefore sometimes difficult to distinguish the two concepts from each other. An attempt to do so is not made in this paper and both systemic risk and the sub-notion contagion is treated as spillover effects from one market to another or from one market segment to another.

3.2. Correlation method

The latter part of this paper consists of correlation calculations between Argentina and 11 emerging markets[5] in the world as a method for attempting to draw conclusions on the impact of the period of turmoil during 2001 in Argentina on these countries. The 11 countries have been chosen as representatives of emerging markets in different regions of the world. The correlation calculations will be performed on three different instruments; exchange rates, bond yields and stock market indices. The Argentine 12-month forward exchange rate against the dollar is used as a proxy of the exchange rate because of Argentina's currency board arrangement with US dollar during the chosen time span. The calculations are based on daily data where all calendar weekdays are included and the last observation carried over when an observation is missing, due to national public holidays. A 30 days moving average, without any lag, is used for the calculations. The equation for the correlation coefficient is:

$$\rho_{x,y} = \frac{Cov(X,Y)}{\sigma_x * \sigma_y}$$

where:

$$-1 \leq \rho_{x,y} \leq 1$$

and:

$$Cov(X,Y) = \frac{1}{n}\sum_{i\infty1}^{n}(x_i - \mu_x)(y_i - \mu_y)$$

This kind of correlation exercises has obviously its limitations since it is based on two non-stationary time series. For this reason conclusions from the results should be drawn cautiously.[6]

Forbes and Rigoborn (1999) point out that tests for contagion in the presence of heteroskedasticity are inaccurate. This is because the presence of heteroskedasticity will bias the results toward finding contagion even when the underlying propagation mechanism is constant and no shift-contagion actually occurs. Similarly, Loretan and English (2000) point out an important result of probability theory: when the

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[5] These countries are Brazil, Chile, Hungary, Malaysia, Mexico, Philippines, Poland, Russia, South Korea, Slovenia and Turkey.
[6] Gujarati (1995), page 725

movements of random variables are more volatile, sampling correlations between those variables will be elevated even if the underlying data generating process remains unchanged. This suggests that one should be more cautious in interpreting the fluctuations in correlation during periods of market volatility as true changes in the distribution of asset returns. They went on to draw a rather cautious conclusion: rather then suggesting that contagion does not occur, contagion measured by increased sample correlations between asset returns could be no more than a by-product of high sampling volatilities.

4. The cost of capital theory

Companies can finance new investments either by retained earnings, loans or issues of new equity capital. Retained earnings are seen as the most common source, followed by loans and lastly equity issues. When companies decide to raise capital in form of loans or equity issues, they can do so either on the domestic or on the international market. Loans can also be denominated in domestic or foreign currency. This international dimension makes companies open to more risks but also creates opportunities. Indeed, when a company becomes active on the international market more considerations have to be taken into account. Loans from abroad can be a cheaper form of raising capital but events in the country of issuance can have wide-spread effects, reaching also to individual companies. Companies have to take into account a risk premium when the loan is denominated in another currency. A potential appreciation or depreciation of the home currency vis-à-vis the currency of issuance can be a costly or beneficial event for the company.

As in the case of raising capital abroad, in the form of bond issuance, issuing equity abroad is generally a very expensive and time-consuming business for companies which are relatively small when compared internationally. It can be even more expensive if negative effects on the new market occur, and hence affect the company's international equities.

The cost of capital takes into account debt and equity costs. The expected cost of capital is determined by the rate of return required by investors to purchase and hold equity and debt instruments. The corporate cost of capital will be equalised across countries on an ex ante, after-tax and risk-adjusted basis, if efficiency obtains and there are no substantial distortion costs. Therefore is a perfect international financial integration needed in order to equalise the cost of capital.

Governments play an important role for companies when deciding how to raise new capital. Governments can affect the outcome of markets, in for a company both negative and positive ways. By changing the rules of the markets, governments create

a *political risk*, for which companies averse to risk will claim a political risk premium.[7]

Companies can also become exposed to specific country risks when investing in other countries. Foreign direct investments in countries with comparative advantages can bring great savings and new gains. Especially investments in emerging markets have during the last decade been popular, not least because of the often low labour and other production costs. Expansions in new markets can therefore bring a lot of opportunities but more considerations have to be taken into account. Foreign investments often mean a greater exposure to exchange rate risks. Companies investing in other countries also have to become conscious about that macroeconomic developments, in turn affecting for example stock and bond markets, in other countries can have a great impact on the companies' costs and future development.

All the new risks arising for companies when becoming active on the international arena increases the importance for monitoring global developments. Only with a sound understanding of global markets and how events in one market can spread to others can well based investment decisions be taken.

These important considerations for companies play, in turn, an important role for analysts and investors. When analysing or investing in companies with links to emerging markets must consideration be taken into account that these links might make the company prone to greater risks. An internationally active company is often more difficult to analyse, since more factors have to be investigated before a full picture of the company can be made.

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[7] Oxelheim, (1996)

5.   Theoretical models of systemic risk

5.1. The concept of systemic risk

If one look at systemic risk in a very general sense is it not only a phenomenon within economics and financial systems. The most natural way of looking at the effects of systemic risk may be in the fields of health and epidemic diseases. Epidemic diseases, such as the Great Plague in the middle ages, can spread over great areas and wipe out a significant portion of a population. If we view the effects of systemic risk in the field of economics, it is often argued that the risk in financial systems is the greatest. Systemic risk in financial systems can then off course, in turn, effect other parts of the economy, as well as the political framework.[8] A more technical explanation is that systemic risk is the probability that cumulative losses will occur from an event that ignites a series of successive losses along a chain of institutions or markets comprising a system.[9]

A systemic event can, in the narrow sense, be seen as an event where the release of bad news about a financial institution, or even its failure, or the crash of a financial market leads to similar effects on one or several other financial institutions or markets. The shaded area in figure 2 shows these systemic events in the narrow sense. Of great importance is what can be called the "domino effect" from one institution, or one market, to another. Systemic events in the broad sense – indicated by the ticks in both the shaded and the non-shaded areas of figure 2 – include the above mentioned effects, but also simultaneous effects on a large number of institutions or markets.

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[8] De Brandt and Hartmann, (2000), page 10
[9] Kaufman, (1996), page 3

Figure 2: Systemic events in the financial system

Type of initial shock	Single systemic events (affect only one institution or one market in the second round effect)		Wide systemic events (affect many institutions or markets in the second round effect)	
	Weak (no failure or crash)	Strong (failure of one institution or crash of one market)	Weak (no failure or crash)	Strong (failures of many institutions or crashes of many markets)
Narrow shock that propagates -Idiosyncratic shock	X	X contagion	X	X contagion leading to a systemic crisis
-Limited systematic shock	X	X contagion	X	X contagion leading to a systemic crisis
Wide systematic shock			X	X systemic crisis

Note: X means that the combination of events defined by the cell is a systemic event. The shaded area describes cases of systemic
 events in the narrow sence. Systemic events in the vroad sence also include the cells with X in the last row.
Source: De Brandt and Hartmann (2000)

5.2. Contagion – the major source of systemic risk

Co-movements that cannot be explained by global shocks or trade and financial linkages, are normally categorised as *contagion*. Contagion can often occur randomly and in ways that are very difficult to anticipate. Sometimes even psychological factors among investors can trigger the spread of shocks as investors are known to follow the crowd without analysing the changes on a more fundamental basis. Another explanation of contagion focuses on the possibility that investors imperfectly recall past events. Past crises might play a mayor role when new financial turbulence is being analysed. The fear that the turbulence may trigger a crisis can therefore affect investors and analysts.[10]

Contagion can also be seen as the way a problem spreads from one part of an economy to another. The different units can be part of one sector or of different ones. This can happen on a domestic or on an international level and even between different economies. The World Bank defines contagion as follows:

> "Contagion is the cross-country transmission of shocks or the general cross-country spillover effects. Then contagion does not need to be related to crisis. However, contagion has been emphasised during crisis times."[11]

The intensity of contagion can be measured by the number of units involved and through regional and inter-sectoral differences. One can differentiate between two kinds of spreads (see figure 3). In the first scenario, a problem occurring in unit A

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[10] Gelos and Sahay, (2001), page 56
[11] World Bank

spreads out to unit B, C, and D because of a simultaneous shock. An example of this variant can be found in view of the Asian crisis. The crisis started in Thailand and then spread in the form of a macro-shock into several other east Asian states, namely Malaysia, Korea, Indonesia and the Philippines.

Figure 3: Spreads of contagion
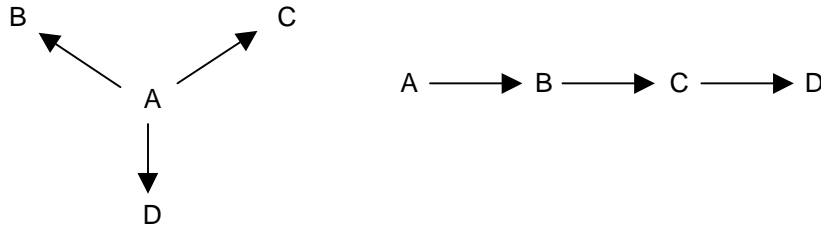
In the second scenario, the problems are transmitted from one unit to another, (domino-style). This means that A contaminates unit B, unit B contaminates unit C, and so on. In this variant, one has to think of a banking crisis where the trouble starts in one bank and then spills over from one bank to another. The failure of one institution triggers a chain-reaction, because if one bank is the creditor of a bank in distress the creditors' claims lose their value.

The literature on financial crises is still at an early stage and thus are the terms used in the context of contagion not very standardised. Different papers often point towards different directions, some explaining contagion with real links while others offer a financial explanation of contagion.[12]

One way to identify contagion effects is to focus on changes in correlations between financial variables across countries. If a shock to one market results in an *increased* correlation between that and another country's market, this is interpreted if not as contagion, then at least as a structural break in the fundamental relationship between these markets. Cross-market linkages may be fundamentally different after a shock to one market during times of turmoil, for example due to irrational panic or changes in expectations among investors. Although this approach is only consistent with a narrow interpretation of contagion, excluding, for example, constant contagion phenomena over turbulent times, it remains appealing because it is hard to construct a

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[12] World Bank

model that explains *increases* in correlation based merely on co-movements within fundamental areas.[13]

5.3. Linkages and propagation mechanisms

The most commonly used reason for the spread of financial market shocks across countries is *trade linkages*. Trade links can explain contagion because of the possibility of competitive devaluations. According to this hypothesis, in the face of a devaluation in a trading partner or competitor country, the government of a country may attempt to safeguard the country's competitiveness by devaluing its currency. If investors believe this decision to be highly likely, they would cut the demand for the country's assets, therefore triggering a crisis, a devaluation and, in the process, validating their own expectations. Thus, in the end, the crisis may be a self-fulfilling phenomenon that occurs despite the government's initial intention not to devalue.

A second factor that could cause spillover effects in financial systems is *financial linkages*. They explain contagion in several ways, each associated with one particular theory. First, there are direct financial linkages, which refer to direct cross-country investments which tie corporate and financial sector returns. The second link refers to institutional arrangements, whereby countries are treated as complementary assets and fund managers use simple "rule of thumb". In this setting, a negative shock in a particular country generates less demand for the assets of other countries. One simple transmission mechanism arises when fund managers maintain fixed weights in different countries. Hence, after the stock market drops in a particular country, managers will withdraw resources from other countries in order to rebalance their portfolios. Third, information asymmetries and herd behaviour include a series of theories based on capital market distortions that, in turn, produce co-movement across countries

Lastly there might be *global shocks,* which simultaneously affect various countries. Global shocks can occur because of macroeconomic similarities. This channel explains contagion because countries with bad fundamentals are either bound to have a crisis or may enter a multiple equilibria zone. In the first case, contagion would emerge as countries with bad fundamentals are subject to common negative shocks. In

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[13] Gelos and Sahay, (2001), page 57

the second, because of incomplete information, investors treat all countries that look alike as equal. Therefore, once a country is hit by a crisis, there is an information spillover to countries in a similar situation. Put less dramatically, when a country shows weakness, investors may pull out from countries with similar macro conditions, expecting that the same problem will arise in those countries as well. One can also mention the effects that economic developments in the United States can have on large parts of the world. When these global factors are not appropriately taken into account, one may attribute the origin of the financial turbulence to the country that is affected most strongly by the shock.[14]

It is nearly impossible to empirically distinguish between the above mentioned possibilities of systemic risk. Trade linkages are hard to separate from financial linkages, since there is usually little information available about the latter and because trade links tend to be correlated with financial links.

5.4. Systemic risk in banking markets

Testing for bank contagion consists of testing whether "bad news" or the failure of a specific bank (or group of banks) adversely affects the health of other banks.[15]

Banks, like any investor with debt liabilities, have an incentive to engage in risk-shifting behaviour when they are close to the waterline. There are however other ways in which an intermediary-based financial system is prone to risk. Since banks have a mismatch between the maturities of liquid liabilities on the one hand and illiquid assets on the other, they are vulnerable to liquidity shocks. In particular, they are prone to bank runs, in which the bank's depositors attempt to withdraw their funds at the same time. When this happens to several banks simultaneously, there is a banking panic or crisis. Banks may be seen as the victims of banking panics, but in other cases the banking system may actually be accused of creating the conditions that make a crisis impossible to avoid. One example is when the banking system creates credit, which in turn can lead to excessive borrowing, thereby creating a bubble in asset prices. The collapse of the bubble can then lead to defaults, which exacerbate the fall in prices and cause serious dislocation in the economy. Finally, it is often argued that

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[14] Hernández and Valdés (2001), page 4-6
[15] De Brandt and Hartmann, (2000), page 36

the banking system is financially fragile, in the sense that a small shock in one part of the system can trigger spillover effects in other financial markets.[16]

One can distinguish two main channels through which contagion in banking markets can work: the exposure channel and the information channel. The former relates to the potential for "domino effects" through real exposures in the interbank markets and/or in payment systems. The information channel relates to contagious withdrawals, when depositors are imperfectly informed about the type of shocks affecting banks and about their physical exposures to each other (asymmetric information). These two channels can in principle work in tandem as well as independently of each other.

Two types of classical bank run models can be distinguished. The first model addresses the issue of the instability of single banks with fractional reserve holdings. Banks transform short term deposits into long term investments, with a liquidity premium, while depositors face a pay-off externality when depositors withdraw their deposits (normally a first-come, first-served rule applies) and there is no market for investment or bank shares. The crucial element is that the fear of early withdrawals by too many depositors may trigger a run on the bank in the form of a self-fulfilling prophecy.

The second type of models describes depositor runs caused by the release of new information about the viability of bank investments, such as leading business cycle indicators. With incomplete information, a noisy signal can sometimes trigger rational but inefficient runs.[17]

5.5. Systemic risk in financial markets

Financial markets play an important and difficult role in analysing systemic risk, especially at present, when given the growing importance of financial markets even in the more bank-based European financial systems. In addition, there are a huge number of participants in major markets, so a stock market crash or a government bond market crash can have tremendously wide-spreading consequences. One could mention European stock exchange closures during the Great Depression in 1931 as a

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[16] Allen and Gale, (2000), page 271
[17] De Brandt and Hartmann, (2000), page 18-19

good illustration of this. It should be noted that systemic risk in this area has not been fully theoretically explored as yet.

The theoretical literature in this field is limited to two branches, one focusing on contagion between securities markets and the other dealing with contagious and joint currency crises using a more macroeconomic perspective. The few theoretical models really dealing with financial market contagion are mostly based on revised expectations. Information-based contagion should be distinguished from fully revealing equilibria. If agents have rational expectations and assets and goods markets are fully integrated, news about fundamentals revealed in one market will be transmitted to other markets. In the presence of asymmetric information across borders, complexity of information structures determines whether this transmission is efficient ("fully revealing") or not.[18]

5.6. Systemic risk in payment and settlement systems

There are interbank payments systems and foreign exchange and security settlement systems where payment and settlement systems reflect the physical exposures among financial institutions.[19] The interconnection of banks not only consists of interbank balances but also by making and receiving fund transfers from each other in the process of clearing payments due to or from other banks. Since such transfers are frequent in very large amounts, are processed almost immediately, and are highly concentrated among a few large participating banks, the impact of defaults is more likely to spread quickly to other banks participating in the clearing process and is considered particularly disruptive as it may cause at least temporary gridlock in the payments system.[20] There are three main types of interbank payment systems, the net settlement system, the gross settlement system and corresponding banking. Again in comparison to systemic risk in banking markets, few studies about systemic risk in payment and settlement systems exists.[21]

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[18] De Brandt and Hartmann, (2000), page 26, 28 and 31
[19] De Brandt and Hartmann, (2000), page 32
[20] Kaufman, (1996), page 13
[21] De Brandt and Hartmann, (2000), page 27

6. Empirical evidence on systemic risk

6.1. Review of contagious and systemic events

Crises have often arisen when large external imbalances developed in inflexible exchange rate systems that allow the currency to become significantly overvalued. A noteworthy feature of recent currency crises has been the extent to which instability in foreign exchange markets has been transmitted across countries. An attack on one currency has spilled over or spread contagiously to the currencies of other countries with apparently sound fundamentals.

It is useful to separate three reasons why currency crises tend to be clustered in time. *First*, crises may develop from a common cause,[22] which has been referred to as "monsoonal effects". An important factor in the Latin American debt crisis was a sharp increase in U.S. interest rates. Similarly, the weakening of the external sector in several south-east Asian countries between mid 1995 and 1997 was related to the substantial appreciation of the dollar, especially vis-à-vis the yen. *A second* reason why crises may spread across countries is that a crisis in one country may affect the macroeconomic fundamentals in another country, either because of trade and capital linkages or because of interdependencies in creditors' portfolios. Such systemic events have been cited as contributing significantly to the spread of the east Asian crisis. The *third* reason relates to the fact that a crisis in one country may lead creditors to re-evaluate the fundamentals of other countries, even if these have not objectively changed, or may lead creditors to reduce the risk in their portfolios and invest in "safer" assets.

Kaminsky and Reinhart (2000) employ a signalling model to analyse how non-crisis contagion could arise from trade links and common lender effects. They find evidence that contagion is regional, but warn of the danger in extrapolating from historical data. This is because while inter-regional trade in goods and services has increased moderately in the past few years, trade in assets has risen sharply, and hence increased the probability of simultaneous falls in asset prices across regions. They also find that the vulnerability to contagion is highly non-linear, i.e., the possibility of a domestic

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[22] For instance, major economic shifts in industrial countries that trigger crises in emerging markets.

crisis rises more than proportionately with the number of countries in crisis. However, they suggest that it is empirically difficult to differentiate the two linkages, financial versus trade, as most countries that are linked in trade also are linked financially. Nevertheless, they suggest that common lender effects were probably at work for Argentina in the Mexican crisis and for Indonesia after the 1997 Thai devaluation, as the two sets of countries' trade links were weak.

The above model includes contagion as an explanatory variable. However, other approaches take one step back and question whether contagion really exists. Early attempts include those studies that analyse cross-market correlation coefficients. These studies measure the correlation in asset and equity returns between two markets during a lull period and then test for a significant increase in this correlation coefficient after a shock. Calvo and Reinhart (1996) and Baig and Goldfajn (1998) found significant increases in the correlation of asset returns for the Mexican peso crisis and the Asian crisis respectively. Froot, O'Connell and Seasholes (1999) study whether foreign outflows can lead to price overreaction and contagion. Using the State Street Bank & Trust data, which cover almost four million trades by client institutions, they find that international portfolio inflows are slightly positively correlated across countries and are more strongly correlated within regions. In particular, the correlation of daily flows in Asia rises strongly during the Asian crisis sub-sample, but not during the Mexican crisis sub-sample.

Van Rijkeghem and Weder (2000) test for a "common lender" effect over the Mexican, Asian and Russian crises using Bank of International Settlements (BIS) data on bank flows to 30 emerging markets. They found the common lender effect during the Thai crisis to be highly statistically significant, but less significant for the Mexican crisis, and not at all significant during the Russian crisis. They suggest that the lack of a common lender effect during the Russian crisis may be due to the absence of some major players from the BIS data (e.g., data on Swiss banks) or the existence of indirect exposures and guarantees not captured by the data. Moreover, as pressures on fund withdrawals can be reflected in either quantities (flows) or prices (yields), spillovers through common lenders may be present even when they are not captured by the BIS flow data.

6.1.1. The Mexican crisis

Spillover and contagion effects also appear to have played a role in the 1994-95 Mexican crisis. The depreciation of the Mexican peso in December 1994 led to speculative pressures on other emerging market currencies, especially those of Argentina and Brazil, and to a lesser extent the Philippines.

Evidence of increased cross-country correlation in movements of equity and Brady bond returns among emerging markets in Latin America in the wake of the crisis has, together with the heterogeneity of macroeconomic fundamentals, been interpreted as indicating either herding behaviour by investors or the effect of investors selling off equities in several emerging markets in order to raise cash to meet expected increases in redemptions in other markets. This is often referred to as the "tequila effect", although whether this effect is based on fundamentals is sometimes questionable. It is suggested that events in Mexico caused investors to believe that other emerging market economies might experience similar difficulties and provoked a downturn in capital flows and a run on other currencies, even though fundamentals were essentially unchanged. Other views are that the shift in expectations generated by the Mexican crisis affected only countries with weak fundamentals. These countries were vulnerable to self-fulfilling investor pessimism, or contagion, whereas countries with strong fundamentals experienced only short-lived downturns in capital flows.[23]

Edwards (1998) examines the propagation across bond markets after the Mexican crisis, with a focus on how capital controls affect the transmission of shocks. He estimates an augmented GARCH model and shows that there were significant spillover from Mexico to Argentina, but not from Mexico to Chile.

6.1.2. The Asian crisis

The trigger for the widespread Asian crisis was the Thai authorities abandonment of the exchange rate peg on July 2, 1997. The collapse of the baht had widespread repercussions in the region. On July 11, the Philippine peso floated, followed the Malaysian ringgit and the Indonesian rupiah on July 14 and August 14, respectively. In October, the crisis even spread to countries with large reserve holdings, namely Taiwan and Hong Kong. In the week of October 20, the Hong Kong stock market

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[23] IMF, World Economic Outlook, (1998), Page 83-88

index lost approximately one-fourth of its value. On November 17, South Korea was forced to abandon the peg of the won. The following three and a half months were calmer, until around mid-May, when a political crisis in Indonesia led to a renewed wave of financial market turbulence.[24]

Gelos and Sahay (2001) find evidence for substantial systemic events in stock markets. They find impact on Russia, Poland Hungary and Czech Republic from the Asian turmoil. In addition they say that a possible explanation is that these markets were affected indirectly via the Russian market.

There are several studies on the contagion effect during the Asian crisis. Baig and Goldfajn (1999) found clear evidence of contagion during the Asian crisis. They find that cross-country correlations of sovereign bond prices increased substantially during the crisis period, which is evidence of contagion in the international markets. In addition, they argue that there was an element of financial panic at the onset of the Asian crisis. Similarly, Kaminsky and Reinhart (1999) found that particularly Japanese banks drastically curtailed their lending to all other Asian countries after the devaluation of the Thai baht.

6.1.3. The Russian crisis

Russia was in a serious economic crisis following the collapse of the rouble, the decision to unilaterally reschedule the domestic currency public debt, and impose capital controls. A crisis in eastern Europe could have affected western Europe where the current economic recovery was solid but not very rapid. The crisis in Russia led to rapid contagion to Latin America. Venezuela's and Brazil's currencies came under pressure and stock markets throughout the region were significantly down. While Latin American economies are structurally stronger than Russia's, investors became increasingly averse to risk. The concern was that a devaluation in Brazil could lead to contagion and currency devaluations in Venezuela, Argentina, Chile, Colombia and Mexico. Emerging market spreads over US-treasuries rose sharply after the Russian crisis, to about 1500 basis points, and in September came close to their highs during the 1995 Mexican peso crisis. The appetite for risk of

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[24] Gelos and Sahay, (2001), page 71

international investors had sharply fallen and there was a major retrenchment from emerging markets towards safe haven assets and from stocks towards liquidity.

Westin (1999) concludes that the contagious effects from the Russian crisis were more visible for the most dependent countries to Russia. As a result, the reduction in trade with Russia had negative consequences for countries like Belarus, Kazakhstan, Moldova and Ukraine, while the reduction in Russian trade for less dependent countries had a much more limited effect.

Baig and Goldfajn (2000) study the contagion from Russia to Brazil in late 1998. They examined cross-country correlations of stock indices, spreads on sovereign bonds and capital flows and conclude that, after the Russian crisis, panicking foreign investors triggered contagious currency crises in other emerging market countries. They conclude that the main channels of contagion during the crises of 1997-1999 were clearly located in financial sectors rather than in foreign trade.

7. Importance of linkages

A company investing in, or an investor analysing, an emerging market should be aware of the fact that certain linkages between different emerging markets can play an important role as a transmission mechanism of financial turmoil. It is only with a good knowledge of the importance of linkages that sound investment decisions can be made.

Eichengreen, Rose and Wyplosz (1997) analyse contagion in a group of 20 OECD countries. They define contagion as an increase in the likelihood of crisis in a particular country given that there is a crisis elsewhere. They conclude that contagion can be explained more because of trade links than macroeconomic similarities. Kaminsky and Reinhart (1998) follow a similar strategy and claim that financial links potentially are an important transmission mechanism, but they argue that owing to the high correlation between trade and financial links, it is difficult to distinguish between these two channels.

Hernández and Valdés (2001) present evidence on the relative importance of alternative contagion channels during the Thai, Russian, and Brazilian crises. Their analysis shows that contagion channels depend on the nature of the crisis, as measured by different financial variables. When measured by the cross-country correlation of sovereign bond spreads, financial competition (measured by the extent to which countries compete in banking centres) seems to explain almost all contagion. In this case, they find that while absolute competition was the driving force during the Thai crisis, relative competition (in which country size does not matter) appears to be the relevant channel during the Russian and Brazilian crises. However, when they measure contagion using cross-country stock market return correlations, the picture varies in two important respects. First trade links and neighbouring effects appear to be relevant contagion channels during both the Thai and Brazilian crises. In the case of the Russian crisis, financial competition is the only relevant channel. Second, the authors point out that it is not possible to conclude whether absolute or relative financial competition is more relevant.

In sum, there has been a slow shift in what is considered the empirically most relevant contagion channel. While initially macroeconomic fundamentals were considered an important variable, later on, trade and financial links appeared to be more significant.

7.1. Trade linkages with Argentina

Figure 4: Direction of exports
(% of total exports, 2001)

	Argentina	Brazil	Chile	Hungary	Malaysia	Mexico	Philippines	Poland	Russia	South Korea	Slovenia	Turkey
Partner:												
Argentina	..	11.1%	3.6%	0.0%	0.1%	0.2%	0.0%	0.1%	0.0%	0.2%	0.0%	0.1%
Brazil	26.2%	..	5.5%	0.2%	0.2%	0.4%	0.1%	0.3%	0.2%	1.1%	0.2%	0.2%
Chile	10.3%	2.3%	..	0.0%	0.1%	0.3%	0.0%	0.0%	0.0%	0.4%	0.0%	0.1%
Hungary	0.1%	0.2%	0.0%	..	0.2%	0.1%	0.2%	2.2%	2.5%	0.2%	1.7%	0.4%
Malaysia	0.9%	0.3%	0.2%	0.2%	..	0.1%	3.9%	0.1%	0.3%	1.8%	0.1%	0.1%
Mexico	0.9%	2.9%	4.7%	0.2%	0.7%	..	0.5%	0.2%	0.1%	1.4%	0.1%	0.1%
Philippines	0.1%	0.1%	0.3%	0.2%	1.5%	0.0%	..	0.0%	0.1%	1.7%	0.0%	0.1%
Poland	0.2%	0.4%	0.1%	2.0%	0.1%	0.0%	0.0%	..	4.8%	0.2%	2.6%	0.6%
Russia	0.3%	1.5%	0.1%	1.4%	0.2%	0.0%	0.0%	2.7%	..	0.6%	3.1%	1.6%
South Korea	1.2%	1.4%	3.2%	0.1%	3.3%	0.2%	3.6%	0.1%	1.0%	..	0.1%	0.4%
Slovenia	0.0%	0.1%	0.0%	1.0%	0.0%	0.0%	0.0%	0.4%	0.1%	0.0%	..	0.3%
Turkey	0.3%	0.5%	0.5%	0.6%	0.4%	0.0%	0.0%	0.5%	3.6%	0.5%	0.5%	..
US	10.5%	23.2%	18.2%	5.6%	20.2%	83.8%	28.4%	2.9%	7.2%	20.9%	2.7%	10.3%
EU	16.5%	25.5%	25.3%	74.0%	13.6%	3.8%	16.6%	68.6%	38.7%	13.1%	62.5%	54.2%
Japan	1.3%	3.7%	12.4%	0.6%	13.6%	1.1%	16.6%	0.3%	3.0%	11.0%	0.1%	0.5%

Source: Direction of Trade Statistics and own calculations

As can be seen in figure 4 are the countries that have a significant amount of their exports going to Argentina, not surprisingly, Brazil and Chile. This gives incentives to believe that these two countries could be most severely affected by an economic slowdown or crisis in Argentina. Noteworthy is that only 0.2% of Mexico's total exports goes to Argentina. Interesting is also that of Argentina's total exports is 17% directed to the EU countries, while the corresponding figure for US is 11%. This means that the EU countries are more affected by changes in Argentina's export sector then US. It can be seen in figure 4 that most countries export most to the countries which is geographically closer.

Figure 5: Direction of imports
(% of total imports, 2001)

	Argentina	Brazil	Chile	Hungary	Malaysia	Mexico	Philippines	Poland	Russia	South Korea	Slovenia	Turkey
Partner:												
Argentina	..	12.0%	18.8%	0.1%	0.4%	0.2%	0.1%	0.1%	0.3%	0.3%	0.1%	0.2%
Brazil	30.6%	..	8.8%	0.7%	0.3%	1.3%	0.3%	0.6%	2.5%	0.8%	0.4%	0.7%
Chile	2.9%	1.6%	..	0.0%	0.1%	0.6%	0.1%	0.0%	0.0%	0.5%	0.1%	0.2%
Hungary	0.0%	0.2%	0.0%	..	0.0%	0.1%	0.1%	1.4%	1.2%	0.1%	3.1%	0.4%
Malaysia	0.3%	0.4%	0.6%	1.0%	..	0.5%	3.3%	0.2%	0.4%	2.9%	0.3%	0.8%
Mexico	1.3%	1.4%	3.5%	0.4%	0.2%	..	0.1%	0.2%	0.1%	0.2%	0.1%	0.1%
Philippines	0.0%	0.2%	0.2%	0.6%	2.4%	0.2%	..	0.1%	0.1%	1.3%	0.1%	0.0%
Poland	0.1%	0.2%	0.1%	2.3%	0.1%	0.1%	0.0%	..	2.6%	0.0%	1.4%	0.4%
Russia	0.0%	0.4%	0.2%	6.8%	0.2%	0.1%	0.1%	8.5%	..	1.4%	2.7%	6.7%
South Korea	1.4%	2.6%	3.5%	0.9%	3.9%	1.5%	6.3%	0.7%	2.1%	..	0.6%	1.6%
Slovenia	0.0%	0.1%	0.0%	0.5%	0.0%	0.0%	0.0%	0.5%	0.7%	0.0%	..	0.1%
Turkey	0.1%	0.1%	0.1%	0.5%	0.1%	0.0%	0.0%	0.5%	1.4%	0.1%	0.8%	..
US	18.8%	24.4%	17.7%	3.7%	15.9%	71.8%	18.5%	2.1%	8.7%	15.9%	2.8%	7.0%
EU	22.3%	26.0%	20.1%	60.0%	12.6%	10.3%	9.4%	66.7%	40.3%	10.6%	68.0%	45.5%
Japan	2.5%	4.5%	3.2%	4.4%	19.3%	3.0%	20.3%	0.9%	2.2%	18.9%	1.5%	1.8%

Source: Direction of Trade Statistics and own calculations

The pattern in figure 5 is much the same as for the figures of export directions. Brazil and Chile have 12% and 17%, respectively, of total imports coming from Argentina. Also here are the EU more import partners for Argentina than US.

One can conclude that Argentina's neighbouring countries are the most exposed to changes in Argentina's export and import volumes. A financial crisis in Argentina can therefore result in export decreases in these countries when Argentina's import demand decreases. On the other hand can financial turbulence in Argentina lead to a depreciating exchange rate, which in turn makes imports from Argentina cheaper.

The trade direction figures should, however, be interpreted with a view on the respective countries' openness. An open economy is more prone to spillover effects via trade links. As can be seen in figure 6, is Brazil the least open country among the twelve. This downgrade the trade linkage risk that Brazil has to Argentina, since Brazil's economy, all in all, has a relatively small trade exposure.

Figure 6: Openness

(export + import as % of GDP, average 1997-2001)

Country	Openness
Malaysia	212%
Slovenia	115%
Hungary	109%
Philippines	106%
South Korea	81%
Mexico	62%
Turkey	60%
Chile	60%
Russia	59%
Poland	58%
Argentina	22%
Brazil	22%

Source: World Economic Outlook and own calculations

8.   Analysis of the Argentine crisis

8.1. Correlation between bond markets

**Figure 7: Correlation between selected emerging market's
and Argentine bond yields in 2001**

	Brazil	Chile	Hungary	Malaysia	Mexico	Philippines	Poland	Russia	Korea	Slovenia	Turkey
January	0.92	0.77	0.67	0.72	0.73	0.64	0.70	0.17	0.70	0.67	0.01
February	0.96	0.82	0.92	0.88	0.82	0.86	0.92	0.60	0.93	0.92	0.50
March	0.72	-0.04	0.59	0.16	0.19	0.25	0.58	0.28	0.22	0.59	0.54
April	0.85	-0.47	-0.23	-0.24	-0.11	-0.36	0.39	-0.47	-0.42	0.31	0.70
May	0.93	0.42	-0.04	0.70	0.06	0.04	0.80	-0.66	-0.03	0.75	-0.05
June	0.94	0.65	0.16	0.74	-0.04	-0.04	0.73	-0.46	-0.13	0.72	-0.49
July	0.89	-0.02	0.11	0.63	0.10	0.29	0.16	0.25	-0.16	0.16	0.39
August	0.85	-0.71	-0.46	0.13	0.19	0.87	-0.67	0.84	-0.48	-0.61	0.89
September	0.69	-0.63	-0.43	-0.28	0.16	0.75	-0.60	0.84	-0.46	-0.55	0.57
October	0.61	0.13	-0.37	-0.13	0.27	0.49	-0.51	0.29	-0.33	-0.44	0.05
November	0.08	-0.39	-0.69	-0.67	-0.30	-0.20	-0.77	-0.59	-0.70	-0.77	-0.66
December	-0.80	-0.22	0.13	-0.51	-0.64	-0.87	-0.11	-0.84	-0.25	-0.17	-0.86

Source: Bloomberg and own calculations

When looking at the three Latin American emerging markets in figure 7, and figure 14 in the appendix, which show the correlation between bond yields, one can distinguish some interesting shifts in correlation. During the first months of 2001 all three countries show great correlation to Argentina, but there is a break for Chile and Mexico with a start in the beginning of March. This can be seen in the view of the worsening conditions in Argentina at this time which raised bond yields (see figure 8). Brazil continues to show strong correlation to Argentina until September when an even more turmoil period in Argentina begins. These findings can be interpreted as Chile and Mexico were not affected in a large extent to the heavily increase in Argentine bond yields. Brazil on the other hand, which has greater financial and trade links to Argentina, were more affected. However, when the crisis situation in Argentina peaked in the end of the year, Brazil's bond markets did no longer show tendencies of being affected.

The bond yield developments in the selected Asian emerging markets show strong correlation towards Argentina during the first months of 2001. However, the correlation decreases during the year and no signs of contagious effects can be viewed (see figure 7, and figure 15 in appendix).

The above analysis of the Asian emerging markets can in broad also be applied to the selected eastern European emerging markets. One exception to this is the case of Slovenia where a rather strong correlation can be seen in first half of 2001. It is, however, difficult to draw any conclusions on this finding.

When viewing the results for Turkey and Russia one interesting shift in trends occur. Although correlation with Argentina in bond markets is low for a large part of the year a break occurs in August and September with higher correlation values. One must of course be careful when interpreting the correlation between Russia and Turkey vis-à-vis Argentina because of the period of turmoil that Turkey experienced during 2001 and that this in turn might have affected Russia. This sudden jump in correlation can however be seen as spillover effects from the Argentine crisis.

Figure 8: Bond yield developments
(index January 2001 = 100)
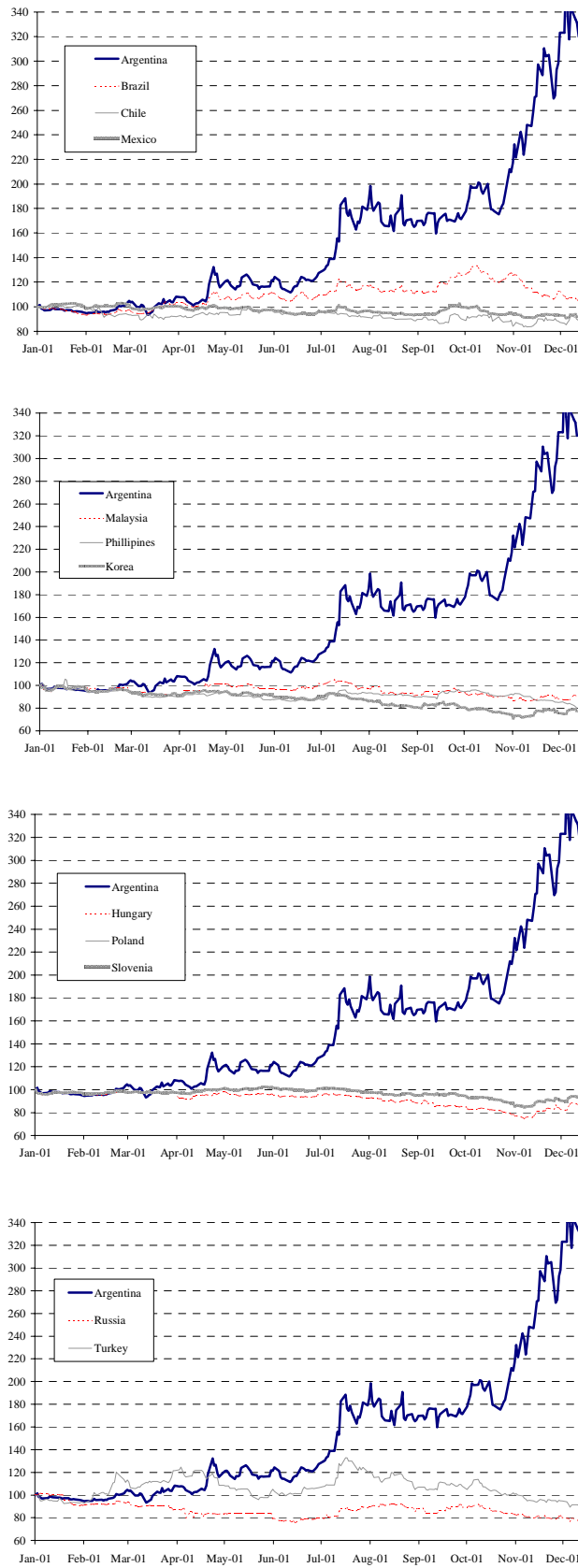
Source: Bloomberg and own calculations

8.2. Correlation between stock markets

**Figure 9: Correlation between selected emerging market's
and Argentine stock markets in 2001**

	Brazil	Chile	Hungary	Malaysia	Mexico	Plilippines	Poland	Russia	Korea	Slovenia	Turkey
January	0.82	0.39	0.63	-0.29	0.43	0.37	0.01	0.22	-0.05	0.34	0.26
February	0.94	0.93	0.71	-0.11	0.78	0.83	0.05	0.54	0.32	0.80	0.40
Marcl	0.92	0.90	0.54	0.37	0.85	0.67	0.12	0.62	0.13	0.69	0.65
April	0.89	0.80	0.90	0.57	0.82	0.67	0.86	0.16	-0.04	0.85	0.76
May	0.74	-0.18	0.59	0.51	0.45	0.63	0.44	0.54	0.66	-0.21
June	0.53	-0.25	-0.01	0.13	-0.01	0.11	0.00	-0.23	0.33	0.23	-0.33
July	0.71	-0.30	0.44	-0.67	-0.14	0.40	0.70	-0.19	-0.53	-0.47	0.40
August	0.86	-0.37	0.40	-0.93	0.32	0.77	0.86	0.60	-0.73	-0.81	0.87
September	0.81	-0.26	0.47	-0.68	0.65	0.82	0.84	0.74	0.12	-0.76	0.83
October	0.91	0.82	0.39	0.60	0.88	0.89	0.62	0.70	0.70	-0.52	0.82
November	0.53	0.80	-0.29	0.82	0.73	0.84	-0.09	0.26	0.44	-0.42	0.23
December	-0.08	0.08	-0.25	0.35	0.14	0.42	-0.23	-0.02	0.13	-0.13	-0.06

Source: Bloomberg and own calculations

The correlation between the stock market developments in Brazil, Chile and Mexico in relation to Argentina show similarities with the bond yield correlations. The correlation in the first months of the year is high but with a start in May, when the Argentine stock markets started showing losses, the situation in Chile and Mexico shows more positive trends (see figure 9, and figure 16 in appendix). This can be interpreted as no signs of contagion from Argentina on these countries. Towards the end of the year when the Argentine stock market was stabilising (see figure 10), stronger correlation is shown again. Brazil shows more similar developments towards Argentina than the other Latin American emerging markets under review. The correlation is high up until November when the Argentine stock markets stabilised but the Brazil stock market developed positively.

When looking at the correlation between Argentina and the selected emerging markets in Asia and eastern Europe, no common trends and breaks can be distinguished (see figure 9, and figure 16 in appendix). This can be interpreted as a lack of contagious effects from the Argentine stock market to the above mentioned countries. Some similarities can be seen in figure 9 where developments during certain periods are rather similar. This is though more likely to be developments in line with the lions share of the worlds stock markets during this period.

Turkey and Russia show similar interesting trends as the correlation with Argentine bond yields. An increase in correlation with Argentine stock markets can be seen during the period between August and October. As earlier mentioned should these results be viewed in relation to the financial disturbances in Turkey at this time.

Figure 10: Stock market developments
(index January 2001 = 100)
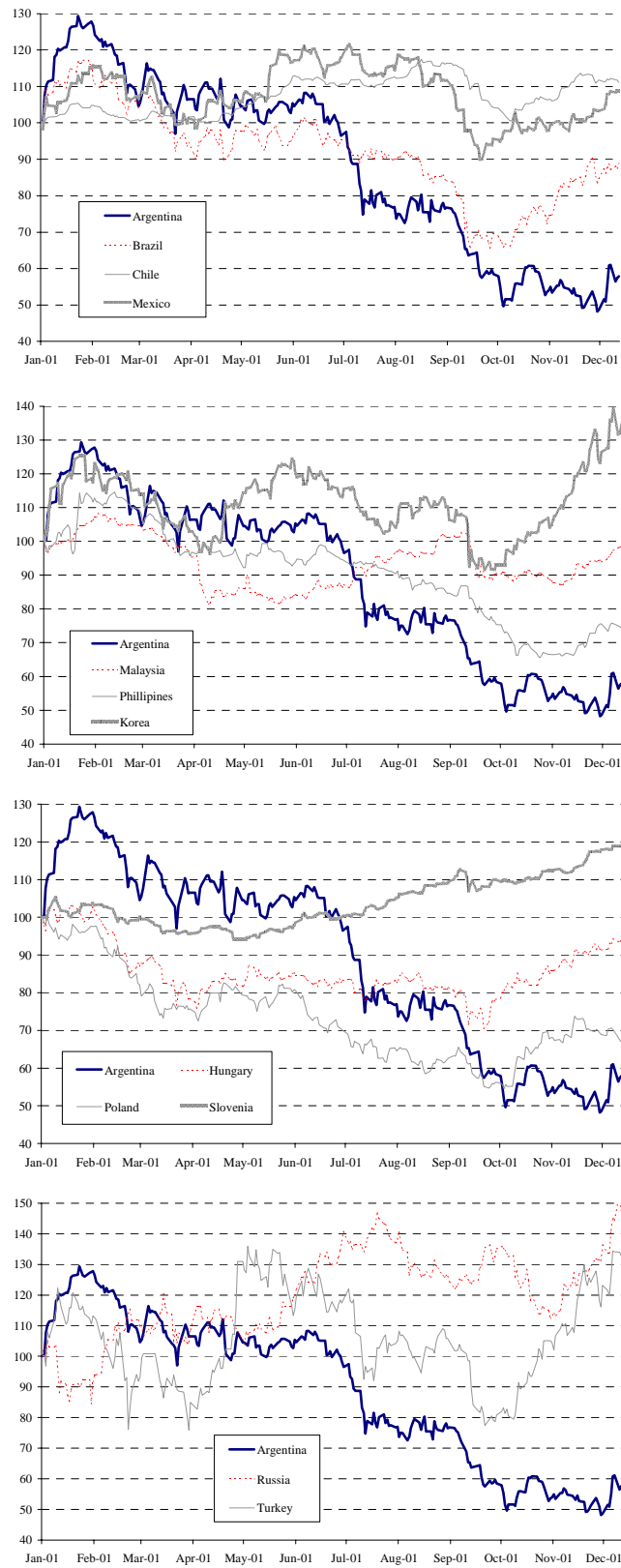
Source: Bloomberg and own calculations

8.3. Correlation between exchange rates

**Figure 11: Correlation between selected emerging market's
and Argentine exchange rates in 2001**

	Brazil	Chile	Hungary	Malaysia	Mexico	Plilippines	Poland	Russia	Korea	Slovenia	Turkey
January	0.05	0.47	0.69	0.06	-0.21	0.02	0.65	-0.64	-0.63	0.67	0.62
February	-0.17	0.74	0.80	0.31	-0.73	-0.06	0.87	-0.77	-0.82	0.75	0.46
Marcl	0.56	0.67	0.50	0.23	-0.47	-0.20	0.06	0.16	-0.07	0.44	0.65
April	0.87	0.78	0.73	-0.06	-0.72	0.29	-0.18	0.71	0.74	0.71	0.76
May	0.88	0.79	0.56	-0.15	-0.76	0.86	-0.37	0.78	0.60	0.67	0.73
June	0.46	0.56	0.00	-0.11	-0.35	0.56	-0.32	0.37	-0.05	0.19	0.36
July	0.52	0.81	-0.23	-0.09	0.14	0.71	0.57	0.42	0.09	0.21	0.62
August	0.68	0.92	-0.57	-0.09	0.47	0.71	0.81	0.84	0.07	-0.45	0.76
September	0.49	0.80	-0.41	-0.07	0.38	0.19	0.67	0.64	-0.20	-0.51	0.50
October	-0.11	0.12	-0.05	-0.04	0.16	0.35	0.13	-0.13	0.25	0.02	-0.14
November	-0.21	-0.06	0.14	-0.15	0.31	0.14	0.06	0.22	0.05	-0.04	-0.10
December	-0.76	-0.67	-0.21	-0.08	-0.27	0.10	-0.48	0.74	-0.49	0.29	-0.69

Source: Bloomberg and own calculations

Also when looking at correlation between exchange rates one can distinguish behaviours with similarities to the results above. Brazil and Chile show some resemblance in developments towards Argentina during some periods of the year, but when the Argentine crisis peaked in the end of 2001, developments in Brazilian and Chilean exchange rates showed different movements (see figure 11 and 12). The comovement between Mexico and Argentina is week during 2001, with Mexico showing a slight appreciating trend.

The results from the data-set of the Asian emerging markets show no signs of systemic risk effects from the Argentine exchange rate market.

The eastern European exchange rates show rather high correlation in relation to the Argentine 12-month forward rate during the first months of 2001. After that, low or negative correlation is experienced except in Poland where a period from July to September again show high correlation. This has been seen by some market analysts as contagion from the Argentine crisis.

The Russian exchange rate shows no signs of being affected by the Argentine forward rate depreciation. Turkey show high correlation up until September, but any conclusions from this are difficult to draw since the Turkish lira depreciated sharply after it was floated in the mid of February 2001.

Figure 12: Exchange rate developments
(index January 2001 = 100)

Source: Bloomberg and own calculations

8.4. Bond yield volatility

Figure 13: Emerging market sovereign bond yields
(in basis points)
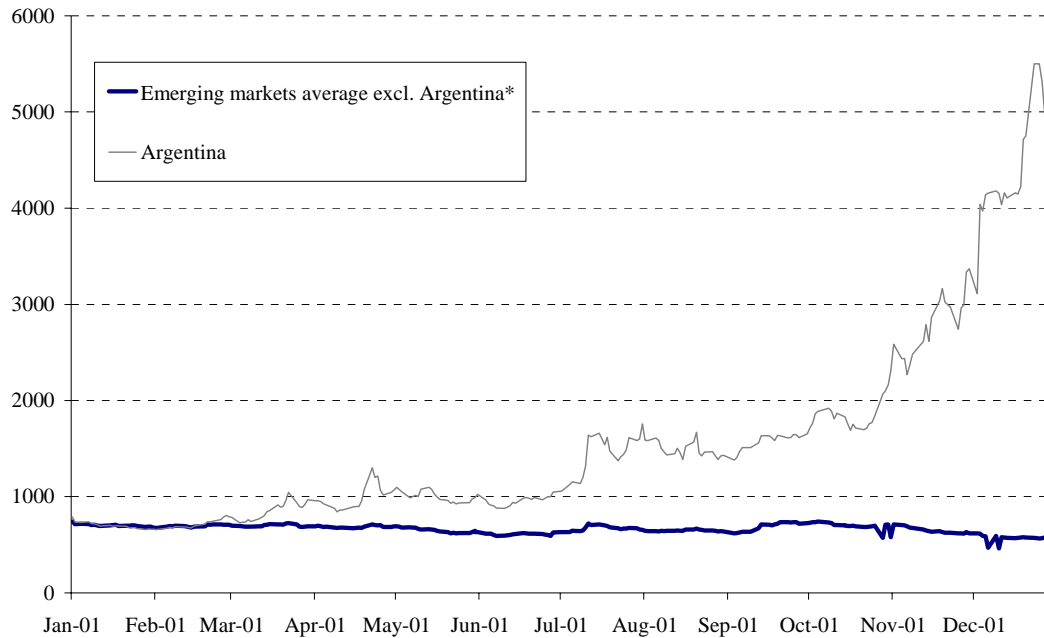
Source: JP Morgan and Chase.
* Emerging market average is arithmetic mean of all emerging markets excluding Argentina.

Figure 14: Daily changes of EMBI global bond yield spreads
(in basis points)
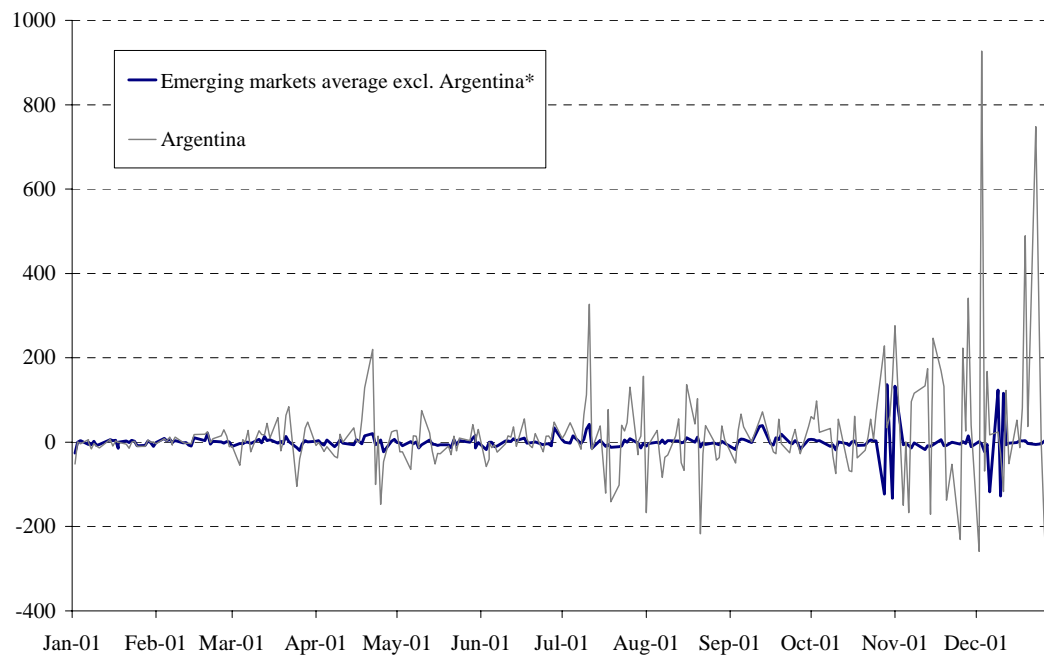
Source: JP Morgan and Chase, and own calculations.
* Emerging market average is arithmetic mean of all emerging markets excluding Argentina.
Note: EMBI Global tracks total returns for U.S. dollar-denominated Brady Bonds, Eurobonds, traded loans, and local market debt instruments issued by sovereign and quasi-sovereign entities.

Figure 13 displays the daily changes in JP Morgan's global emerging market bond index (EMBI). The results indicate muted effects on other emerging markets from the apparent turmoil period in Argentina. Some movements in the emerging market's average can be interpreted as signs of contagion, especially towards the end of 2001. These movements might, however, result from other events and therefore should conclusions be drawn with caution.

8.5. Summary of the analysis of the Argentine crisis

The Argentine crisis that erupted in 2001 spread in a limited extend to other emerging markets during 2001. Some co-movements, especially in other Latin American markets, can, however, be interpreted as spillover effects. The muted systemic effects can be the result of that investors differentiated between Argentina and other emerging markets, most likely because Argentina's special situation with a currency board against the dollar.

Emerging markets remained popular among investors during 2001, since growth potentials were still seen as being high. Also companies continued to expand in emerging markets, attracted by low investment and operational costs.

Baring in mind previous emerging market crises, where financial turmoil in one market sometimes strongly affected others, one could argue that more caution could be warranted when investing in emerging markets. Indeed investments in emerging markets can lead to great gains, but previous experience tells us that there are also higher risks involved.

9.　Conclusions

The theories about through which channels systemic risk is transmitted shows varying results. While initially macroeconomic fundamentals were considered an important variable, later on, trade and financial links appeared to be more important. Isolating the relevant transmission channels is of key importance from a policy perspective, since appropriate prescriptions may vary substantially depending on the nature of what drives systemic risk. For instance, if trade linkages were the channels for systemic risk, countries and companies would have few alternatives other than to diversify their trade base or to fix irrevocably their foreign exchange rate. At an international level, cross-country co-operation, for instance in the form of a monetary union, would be a useful device. However, if financial links were to be blamed for contagious events, countries should attempt other measures such as imposing prudential capital account regulations. Furthermore, at the international level, direct regulation in industrialised countries' capital markets could improve the state of affairs, although such regulation may have other adverse effects.

Systemic events have been found in all recent emerging market crises. The magnitude has been of various size and the elements in the financial markets that have been effected have varied. The results from the correlation exercise between Argentina and 12 selected emerging markets in different regions show muted contagion during 2001. Some shifts in correlation can, however, be seen as effects from the Argentine turmoil. The shifts often occur in a similar way in the emerging markets in the same regions and the neighbouring Latin American emerging markets can be said as being most affected. These possibly contagious effects exists during the first nine months of 2001 while the last three months, when the Argentine crisis boomed, had little effect in general.

Companies investing or raising capital in emerging markets must be aware of the systemic risk that can exist between emerging markets financial systems. Even though an emerging market is seen as a well functioning economy can jitters from other equivalent markets spread quickly, because of sound linkages or just because investors sometimes do not make a distinction between different emerging markets. It

is only when company and bank leaders are aware of this risk that an exposure to an emerging market should be considered.

The concept of systemic risk is also important for politicians when analysing the own country's financial situation and when establishing supervisory regulation. One way to limit companies' and banks' risk exposure from spillover between emerging markets is to set up a well functioning corporate governance system.

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Databases

Bloomberg

IMF's Direction of Trade Statistics

IMF's International Financial Statistics

JP Morgan and Chase

World Economic Outlook

Appendix

Weekly correlation matrixes

Figure 15: Weekly correlation between selected emerging market's and Argentine long term bond yields in 2001

	Brazil	Chile	Hungary	Malaysia	Mexico	Philippines	Poland	Russia	Korea	Slovenia	Turkey
01/01-05/01	0.91	0.57	0.24	0.38	0.54	0.62	0.29	0.44	0.33	0.21	0.10
08/01-12/01	0.90	0.74	0.62	0.66	0.64	0.57	0.64	0.11	0.62	0.60	-0.05
15/01-19/01	0.93	0.84	0.81	0.84	0.80	0.61	0.83	-0.11	0.82	0.82	-0.09
22/01-26/01	0.94	0.87	0.89	0.90	0.85	0.69	0.89	0.14	0.91	0.89	0.01
29/01-02/02	0.94	0.87	0.90	0.90	0.85	0.78	0.91	0.36	0.92	0.91	0.15
05/02-09/02	0.97	0.87	0.92	0.90	0.85	0.86	0.92	0.53	0.94	0.91	0.37
12/02-16/02	0.98	0.85	0.93	0.89	0.82	0.89	0.93	0.66	0.95	0.92	0.58
19/02-23/02	0.97	0.79	0.93	0.89	0.81	0.88	0.92	0.68	0.94	0.92	0.62
26/02-02/03	0.92	0.59	0.86	0.77	0.71	0.76	0.86	0.60	0.82	0.88	0.63
05/03-09/03	0.79	0.25	0.76	0.49	0.40	0.50	0.76	0.47	0.57	0.78	0.60
12/03-16/03	0.70	0.07	0.67	0.32	0.24	0.40	0.65	0.40	0.39	0.67	0.45
19/03-23/03	0.62	-0.24	0.48	-0.05	0.00	0.12	0.48	0.21	0.02	0.49	0.48
26/03-30/03	0.68	-0.45	0.37	-0.34	-0.05	-0.18	0.33	-0.07	-0.32	0.31	0.60
02/04-06/04	0.78	-0.55	-0.10	-0.49	-0.10	-0.39	0.26	-0.34	-0.51	0.21	0.73
09/04-13/04	0.83	-0.57	-0.30	-0.50	-0.19	-0.42	0.22	-0.42	-0.53	0.11	0.76
16/04-20/04	0.86	-0.54	-0.32	-0.34	-0.20	-0.44	0.35	-0.51	-0.48	0.26	0.77
23/04-27/04	0.91	-0.28	-0.22	0.25	0.03	-0.25	0.65	-0.59	-0.22	0.57	0.59
30/04-04/05	0.93	-0.05	-0.02	0.53	0.05	-0.05	0.78	-0.65	-0.08	0.71	0.43
07/05-11/05	0.93	0.20	-0.02	0.63	-0.01	0.02	0.80	-0.67	-0.11	0.74	0.20
14/05-18/05	0.94	0.57	-0.08	0.70	0.05	0.02	0.82	-0.67	-0.08	0.76	-0.11
21/05-25/05	0.94	0.64	-0.07	0.78	0.06	0.07	0.80	-0.65	0.01	0.76	-0.34
28/05-01/06	0.93	0.67	-0.01	0.82	0.16	0.12	0.78	-0.66	0.09	0.76	-0.37
04/06-08/06	0.94	0.69	0.01	0.80	0.07	0.07	0.79	-0.64	-0.01	0.77	-0.44
11/06-15/06	0.95	0.68	0.12	0.77	-0.02	0.02	0.76	-0.49	-0.05	0.76	-0.49
18/06-22/06	0.94	0.65	0.22	0.71	-0.11	-0.10	0.73	-0.38	-0.18	0.71	-0.53
25/06-29/06	0.92	0.57	0.33	0.65	-0.11	-0.17	0.64	-0.29	-0.30	0.61	-0.53
02/07-06/07	0.90	0.51	0.42	0.65	-0.09	-0.21	0.58	-0.20	-0.31	0.56	-0.40
09/07-13/07	0.88	0.21	0.22	0.70	0.02	0.10	0.42	-0.03	-0.11	0.40	0.03
16/07-20/07	0.89	-0.16	0.06	0.67	0.25	0.51	0.09	0.44	-0.01	0.08	0.77
23/07-27/07	0.88	-0.42	-0.10	0.57	0.19	0.60	-0.23	0.60	-0.15	-0.19	0.93
30/07-03/08	0.89	-0.59	-0.31	0.40	0.18	0.74	-0.52	0.72	-0.34	-0.45	0.93
06/08-10/08	0.87	-0.69	-0.44	0.30	0.17	0.85	-0.66	0.81	-0.46	-0.60	0.90
13/08-17/08	0.85	-0.74	-0.49	0.14	0.21	0.89	-0.69	0.84	-0.49	-0.64	0.89
20/08-24/08	0.84	-0.75	-0.51	-0.01	0.20	0.91	-0.70	0.88	-0.52	-0.65	0.88
27/08-31/08	0.84	-0.72	-0.48	-0.10	0.20	0.90	-0.67	0.92	-0.49	-0.62	0.83
03/09-07/09	0.82	-0.69	-0.46	-0.18	0.23	0.87	-0.64	0.92	-0.47	-0.58	0.75
10/09-14/09	0.74	-0.67	-0.45	-0.27	0.19	0.80	-0.61	0.87	-0.46	-0.55	0.62
17/09-21/09	0.69	-0.61	-0.42	-0.33	0.14	0.73	-0.58	0.83	-0.44	-0.52	0.51
24/09-28/09	0.51	-0.54	-0.39	-0.35	0.07	0.59	-0.57	0.76	-0.45	-0.53	0.41
01/10-05/10	0.40	-0.32	-0.33	-0.28	0.09	0.39	-0.50	0.62	-0.40	-0.46	0.25
08/10-12/10	0.59	0.15	-0.29	-0.07	0.31	0.50	-0.42	0.36	-0.23	-0.35	0.09
15/10-19/10	0.70	0.33	-0.39	-0.07	0.37	0.57	-0.54	0.23	-0.30	-0.45	-0.02
22/10-26/10	0.69	0.34	-0.38	-0.05	0.34	0.55	-0.51	0.16	-0.29	-0.42	0.01
29/10-02/11	0.69	0.03	-0.59	-0.31	0.16	0.38	-0.70	-0.15	-0.55	-0.66	-0.22
05/11-09/11	0.55	-0.38	-0.81	-0.66	-0.12	0.21	-0.87	-0.45	-0.81	-0.87	-0.51
12/11-16/11	0.19	-0.55	-0.82	-0.78	-0.36	-0.12	-0.87	-0.61	-0.82	-0.87	-0.67
19/11-23/11	-0.20	-0.40	-0.64	-0.70	-0.41	-0.46	-0.72	-0.69	-0.64	-0.73	-0.76
26/11-30/11	-0.43	-0.32	-0.48	-0.63	-0.47	-0.63	-0.62	-0.74	-0.54	-0.63	-0.81
03/12-07/12	-0.63	-0.35	-0.29	-0.67	-0.58	-0.78	-0.50	-0.77	-0.52	-0.51	-0.83
10/12-14/12	-0.80	-0.24	0.01	-0.62	-0.65	-0.86	-0.29	-0.84	-0.41	-0.33	-0.86
17/12-21/12	-0.88	-0.23	0.23	-0.49	-0.69	-0.90	-0.06	-0.87	-0.23	-0.13	-0.88
24/12-28/12	-0.88	-0.11	0.46	-0.32	-0.65	-0.91	0.28	-0.88	0.04	0.17	-0.86

Source: Bloomberg and own calculations

Figure 16: Weekly correlation between selected emerging market's and Argentine stock markets in 2001

	Brazil	Chile	Hungary	Malaysia	Mexico	Plilippines	Poland	Russia	Korea	Slovenia	Turkey
01/01-05/01	0.68	-0.15	0.53	-0.07	0.56	-0.06	-0.26	0.59	0.57	-0.37	0.48
08/01-12/01	0.76	0.16	0.57	-0.26	0.36	0.24	-0.02	0.19	-0.14	0.32	0.32
15/01-19/01	0.85	0.50	0.65	-0.42	0.31	0.46	0.10	0.03	-0.44	0.56	0.16
22/01-26/01	0.90	0.76	0.71	-0.39	0.43	0.62	0.15	0.12	-0.26	0.63	0.16
29/01-02/02	0.93	0.89	0.74	-0.30	0.58	0.77	0.18	0.29	0.08	0.72	0.17
05/02-09/02	0.93	0.93	0.76	-0.18	0.73	0.86	0.17	0.42	0.25	0.79	0.25
12/02-16/02	0.94	0.93	0.73	-0.10	0.79	0.85	0.05	0.55	0.36	0.81	0.36
19/02-23/02	0.94	0.93	0.68	-0.04	0.84	0.83	-0.05	0.65	0.39	0.81	0.55
26/02-02/03	0.94	0.92	0.63	0.02	0.87	0.78	-0.04	0.72	0.35	0.79	0.64
05/03-09/03	0.94	0.92	0.52	0.14	0.86	0.73	-0.09	0.72	0.30	0.74	0.61
12/03-16/03	0.93	0.92	0.45	0.34	0.86	0.69	-0.04	0.71	0.23	0.66	0.62
19/03-23/03	0.92	0.90	0.51	0.51	0.84	0.64	0.20	0.60	0.03	0.62	0.67
26/03-30/03	0.89	0.87	0.64	0.60	0.81	0.60	0.47	0.38	-0.11	0.68	0.71
02/04-06/04	0.88	0.85	0.84	0.61	0.79	0.59	0.78	0.17	-0.21	0.78	0.79
09/04-13/04	0.90	0.84	0.93	0.52	0.80	0.60	0.91	0.07	-0.26	0.86	0.84
16/04-20/04	0.89	0.84	0.94	0.54	0.84	0.66	0.91	0.17	-0.09	0.88	0.84
23/04-27/04	0.89	0.71	0.91	0.60	0.84	0.79	0.85	0.24	0.32	0.88	0.63
30/04-04/05	0.85	0.40	0.87	0.61	0.81	0.77	0.79	0.12	0.49	0.85	0.20
07/05-11/05	0.82	-0.07	0.77	0.57	0.70	0.75	0.67	0.01	0.59	0.78	-0.11
14/05-18/05	0.75	-0.37	0.57	0.52	0.50	0.64	0.49	-0.12	0.59	0.64	-0.30
21/05-25/05	0.66	-0.41	0.39	0.45	0.17	0.51	0.20	-0.29	0.52	0.53	-0.38
28/05-01/06	0.67	-0.37	0.35	0.43	0.06	0.52	0.07	-0.28	0.49	0.50	-0.37
04/06-08/06	0.67	-0.29	0.23	0.35	0.01	0.44	-0.05	-0.26	0.48	0.39	-0.37
11/06-15/06	0.50	-0.16	-0.06	0.05	0.04	0.00	-0.14	-0.15	0.36	0.30	-0.30
18/06-22/06	0.47	-0.20	-0.11	0.01	0.02	-0.09	0.00	-0.14	0.28	0.18	-0.30
25/06-29/06	0.45	-0.32	-0.19	0.04	-0.10	-0.02	0.18	-0.34	0.17	0.01	-0.36
02/07-06/07	0.54	-0.37	-0.10	-0.34	-0.24	0.19	0.48	-0.41	-0.17	-0.18	-0.27
09/07-13/07	0.70	-0.36	0.42	-0.65	-0.26	0.32	0.70	-0.36	-0.53	-0.37	0.18
16/07-20/07	0.74	-0.25	0.70	-0.77	-0.11	0.43	0.75	-0.14	-0.67	-0.55	0.67
23/07-27/07	0.82	-0.25	0.65	-0.85	-0.03	0.56	0.82	0.04	-0.70	-0.65	0.84
30/07-03/08	0.85	-0.29	0.59	-0.90	0.05	0.70	0.84	0.21	-0.72	-0.74	0.86
06/08-10/08	0.85	-0.32	0.44	-0.93	0.12	0.76	0.85	0.48	-0.72	-0.80	0.86
13/08-17/08	0.87	-0.38	0.35	-0.93	0.32	0.78	0.86	0.65	-0.75	-0.83	0.87
20/08-24/08	0.86	-0.41	0.35	-0.94	0.51	0.78	0.87	0.76	-0.74	-0.83	0.89
27/08-31/08	0.86	-0.41	0.33	-0.91	0.53	0.79	0.88	0.78	-0.72	-0.81	0.87
03/09-07/09	0.84	-0.47	0.27	-0.89	0.55	0.80	0.89	0.76	-0.46	-0.78	0.86
10/09-14/09	0.78	-0.47	0.36	-0.87	0.55	0.82	0.85	0.73	-0.01	-0.78	0.82
17/09-21/09	0.77	-0.28	0.55	-0.69	0.68	0.81	0.83	0.76	0.33	-0.77	0.81
24/09-28/09	0.84	0.18	0.69	-0.29	0.83	0.83	0.81	0.72	0.63	-0.70	0.84
01/10-05/10	0.90	0.59	0.63	0.22	0.90	0.88	0.80	0.71	0.78	-0.63	0.84
08/10-12/10	0.93	0.80	0.44	0.57	0.88	0.91	0.78	0.73	0.73	-0.53	0.84
15/10-19/10	0.93	0.87	0.36	0.71	0.87	0.91	0.64	0.72	0.70	-0.50	0.86
22/10-26/10	0.91	0.93	0.28	0.77	0.87	0.87	0.49	0.70	0.64	-0.46	0.82
29/10-02/11	0.88	0.94	0.10	0.82	0.86	0.87	0.22	0.60	0.57	-0.46	0.66
05/11-09/11	0.83	0.94	-0.09	0.83	0.85	0.87	0.03	0.46	0.52	-0.46	0.48
12/11-16/11	0.66	0.90	-0.27	0.86	0.81	0.86	-0.09	0.28	0.44	-0.40	0.34
19/11-23/11	0.41	0.75	-0.42	0.84	0.71	0.84	-0.18	0.18	0.40	-0.39	0.09
26/11-30/11	0.10	0.55	-0.53	0.75	0.49	0.76	-0.24	0.01	0.34	-0.41	-0.15
03/12-07/12	-0.23	0.27	-0.63	0.52	-0.03	0.63	-0.31	-0.19	0.32	-0.46	-0.34
10/12-14/12	-0.34	-0.04	-0.56	0.14	-0.25	0.40	-0.36	-0.26	0.24	-0.43	-0.34
17/12-21/12	-0.07	-0.05	-0.15	0.19	0.12	0.24	-0.22	-0.07	0.08	-0.05	-0.02
24/12-28/12	0.23	0.12	0.23	0.50	0.59	0.38	-0.08	0.34	-0.08	0.32	0.34

Source: Bloomberg and own calculations

Figure 17: Weekly correlation between selected emerging market's and Argentine exchange rates in 2001

	Brazil	Chile	Hungary	Malaysia	Mexico	Philippines	Poland	Russia	Korea	Slovenia	Turkey
01/01-05/01	0.43	0.61	0.50	-0.16	0.20	0.56	0.33	-0.40	-0.21	0.50	0.61
08/01-12/01	0.17	0.42	0.62	-0.06	-0.09	0.16	0.54	-0.57	-0.53	0.61	0.60
15/01-19/01	-0.08	0.32	0.75	0.12	-0.34	-0.28	0.76	-0.72	-0.78	0.73	0.65
22/01-26/01	-0.20	0.45	0.82	0.22	-0.44	-0.24	0.85	-0.78	-0.86	0.79	0.65
29/01-02/02	-0.14	0.62	0.80	0.29	-0.52	-0.21	0.85	-0.81	-0.85	0.76	0.57
05/02-09/02	-0.19	0.74	0.80	0.32	-0.66	-0.13	0.86	-0.83	-0.82	0.76	0.56
12/02-16/02	-0.30	0.77	0.83	0.38	-0.83	-0.03	0.90	-0.84	-0.83	0.78	0.52
19/02-23/02	-0.18	0.75	0.81	0.30	-0.80	0.02	0.89	-0.75	-0.83	0.74	0.34
26/02-02/03	0.15	0.68	0.72	0.27	-0.68	-0.04	0.72	-0.47	-0.73	0.63	0.37
05/03-09/03	0.39	0.66	0.51	0.34	-0.51	-0.16	0.30	-0.12	-0.50	0.42	0.59
12/03-16/03	0.58	0.71	0.40	0.32	-0.43	-0.29	-0.07	0.17	-0.21	0.33	0.74
19/03-23/03	0.67	0.70	0.47	0.23	-0.45	-0.29	-0.18	0.35	0.14	0.42	0.74
26/03-30/03	0.71	0.63	0.58	-0.04	-0.44	-0.13	0.00	0.47	0.53	0.54	0.60
02/04-06/04	0.81	0.72	0.69	-0.01	-0.63	-0.05	-0.04	0.63	0.70	0.66	0.70
09/04-13/04	0.85	0.77	0.73	0.00	-0.70	0.07	-0.16	0.70	0.76	0.72	0.76
16/04-20/04	0.88	0.80	0.77	-0.08	-0.75	0.33	-0.23	0.74	0.78	0.76	0.79
23/04-27/04	0.91	0.81	0.72	-0.13	-0.79	0.73	-0.28	0.76	0.73	0.71	0.79
30/04-04/05	0.92	0.81	0.71	-0.19	-0.81	0.83	-0.34	0.80	0.72	0.70	0.78
07/05-11/05	0.91	0.80	0.64	-0.17	-0.80	0.87	-0.41	0.81	0.69	0.68	0.76
14/05-18/05	0.90	0.80	0.53	-0.16	-0.79	0.87	-0.42	0.81	0.63	0.68	0.73
21/05-25/05	0.85	0.78	0.47	-0.10	-0.72	0.85	-0.38	0.75	0.54	0.65	0.68
28/05-01/06	0.80	0.79	0.45	-0.13	-0.68	0.83	-0.29	0.73	0.37	0.61	0.67
04/06-08/06	0.68	0.74	0.31	-0.10	-0.59	0.77	-0.37	0.62	0.18	0.46	0.58
11/06-15/06	0.46	0.58	0.03	-0.08	-0.39	0.59	-0.46	0.41	-0.01	0.16	0.40
18/06-22/06	0.33	0.42	-0.16	-0.14	-0.18	0.39	-0.26	0.20	-0.20	0.02	0.21
25/06-29/06	0.32	0.46	-0.28	-0.12	-0.18	0.43	-0.20	0.17	-0.23	0.05	0.20
02/07-06/07	0.31	0.63	-0.36	-0.10	-0.17	0.57	0.09	0.24	-0.19	0.21	0.30
09/07-13/07	0.46	0.79	-0.18	0.05	0.01	0.69	0.59	0.33	-0.05	0.29	0.59
16/07-20/07	0.61	0.88	-0.01	-0.12	0.34	0.75	0.77	0.41	0.22	0.25	0.77
23/07-27/07	0.63	0.90	-0.29	-0.17	0.31	0.80	0.78	0.59	0.30	0.14	0.77
30/07-03/08	0.65	0.92	-0.48	-0.10	0.37	0.81	0.79	0.75	0.32	-0.03	0.75
06/08-10/08	0.68	0.93	-0.57	-0.10	0.47	0.83	0.81	0.83	0.14	-0.30	0.77
13/08-17/08	0.69	0.92	-0.60	-0.10	0.51	0.76	0.81	0.87	0.04	-0.50	0.77
20/08-24/08	0.69	0.91	-0.60	-0.07	0.48	0.62	0.82	0.87	0.00	-0.63	0.76
27/08-31/08	0.66	0.91	-0.56	-0.10	0.46	0.50	0.81	0.83	-0.07	-0.62	0.73
03/09-07/09	0.61	0.90	-0.50	-0.07	0.51	0.37	0.79	0.76	-0.16	-0.58	0.69
10/09-14/09	0.53	0.86	-0.40	-0.05	0.43	0.21	0.75	0.70	-0.26	-0.53	0.58
17/09-21/09	0.50	0.79	-0.37	-0.09	0.35	0.10	0.67	0.62	-0.25	-0.50	0.44
24/09-28/09	0.32	0.65	-0.39	-0.07	0.24	0.10	0.48	0.47	-0.12	-0.43	0.28
01/10-05/10	0.07	0.46	-0.41	-0.06	0.13	0.17	-0.02	0.28	0.09	-0.29	0.10
08/10-12/10	0.03	0.34	-0.17	0.05	0.14	0.31	-0.28	0.10	0.31	-0.02	0.05
15/10-19/10	-0.17	0.01	0.19	-0.02	0.14	0.47	0.22	-0.27	0.35	0.23	-0.23
22/10-26/10	-0.28	-0.18	0.15	-0.07	0.18	0.47	0.42	-0.46	0.26	0.17	-0.38
29/10-02/11	-0.18	-0.12	0.03	-0.14	0.31	0.27	0.43	-0.33	0.20	-0.09	-0.27
05/11-09/11	-0.04	0.02	0.00	-0.15	0.43	-0.02	0.25	-0.04	0.24	-0.32	-0.08
12/11-16/11	-0.12	0.04	0.05	-0.12	0.41	0.03	0.11	0.13	0.17	-0.19	-0.03
19/11-23/11	-0.25	-0.05	0.23	-0.17	0.27	0.22	-0.07	0.41	0.01	0.12	-0.06
26/11-30/11	-0.44	-0.22	0.32	-0.15	0.10	0.29	-0.19	0.56	-0.26	0.28	-0.18
03/12-07/12	-0.65	-0.45	0.15	-0.16	-0.09	0.30	-0.32	0.65	-0.52	0.30	-0.46
10/12-14/12	-0.79	-0.69	-0.09	-0.09	-0.24	0.32	-0.41	0.74	-0.64	0.35	-0.74
17/12-21/12	-0.83	-0.78	-0.41	-0.01	-0.34	0.16	-0.56	0.81	-0.59	0.28	-0.83
24/12-28/12	-0.77	-0.74	-0.44	-0.06	-0.37	-0.29	-0.60	0.75	-0.28	0.23	-0.74

Source: Bloomberg and own calculations

Macroeconomic indicators

Argentina

	1995	1996	1997	1998	1999	2000	2001	2002*
Activity				percent change				
Real GDP growth	-2.8	5.5	8.1	3.8	-3.4	-0.8	-3.7	-12.5
Real domestic demand	-5.5	6.5	9.7	3.9	-4.6	-1.1	-5.8	-15.1
Real private consumption	-4.0	7.3	8.7	2.5	-4.0	-0.5	-4.6	-10.8
Real gross fixed capital formation	-13.0	8.8	17.7	6.5	-12.6	-6.8	-14.3	-24.3
Inflation	3.4	0.2	0.5	0.9	-1.2	-0.9	-1.1	27.5
Unemployment rate	16.7	16.4	14.0	12.5	13.8	14.7	16.9	26.2
Monetary Sector								
Base money (M0)	1.6	14.6	12.8	0.0	1.6	-9.1	-20.9	..
Broad money (M3)	-4.3	20.0	26.9	10.3	2.3	4.4	-9.2	4.0
				billion USD				
FX reserves at year end	14.5	18.3	22.3	24.8	26.3	25.1	13.1	14.7
External Sector				in percent of GDP				
Current account balance	-1.7	-2.6	-4.2	-4.9	-4.2	-3.1	-2.1	4.2
Trade balance	-0.2	-0.7	-2.2	-2.6	-1.7	-0.6	1.2	6.1
Public Sector								
General government balance	-2.3	-3.2	-2.1	-2.1	-4.2	-3.6	-5.7	-5.8
General government primary balance	-0.4	-1.1	0.3	0.5	-0.8	0.5	-0.8	1.0
Savings, Investments and Debt								
Gross fixed capital formation	17.9	18.1	19.4	19.9	18.0	16.2	14.1	12.7
Gross public fixed capital formation	2.1	1.4	1.6	1.6	1.5	1.1	1.3	1.3
Foreign direct investment inflows	1.7	2.3	2.8	2.3	3.2	3.0	2.2	1.6

Sources: IMF World Economic Outlook and International Financial Statistics.
* projection

Brazil

	1995	1996	1997	1998	1999	2000	2001	2002*
Activity				percent change				
Real GDP growth	4.2	2.6	3.3	0.2	0.8	4.4	1.5	2.5
Real domestic demand	6.4	3.0	4.0	-0.1	-1.3	4.5	0.5	2.3
Real private consumption	7.4	3.7	3.1	-1.4	-0.3	3.6	-0.3	2.2
Real gross fixed capital formation	7.3	1.2	9.3	-0.3	-7.2	4.5	1.9	3.0
Inflation	66.0	15.8	6.9	3.2	4.9	7.0	6.8	6.1
Unemployment rate	4.7	5.4	5.7	7.6	7.6	7.1	6.2	6.4
Monetary Sector								
Base money (M0)	25.7	29.9	22.3	7.5	13.6	18.9	12.1	..
Broad money (M3)	27.3	9.4	24.7	9.5	8.1	3.2	9.3	6.8
				billion USD				
FX reserves at year end	49.9	58.5	51.0	42.8	34.9	32.6	35.4	32.2
External Sector				in percent of GDP				
Current account balance	-2.6	-3.0	-3.8	-4.2	-4.8	-4.1	-4.6	-3.7
Trade balance	-9.5	-8.9	-9.9	-9.6	-11.9	-12.4	-14.4	-13.8
Public Sector								
General government balance	-7.1	-5.9	-6.1	-7.9	-10.0	-4.5	-5.2	-4.0
General government primary balance	0.4	-0.1	-1.0	0.0	3.2	3.5	3.7	3.5
Savings, Investments and Debt								
Gross fixed capital formation	20.5	19.3	19.9	19.7	19.1	19.4	19.4	19.5
Gross public fixed capital formation	2.5	2.3	2.0	2.8	1.8	1.9	2.4	2.5
Foreign direct investment inflows	0.8	1.5	2.2	3.3	5.1	5.1	4.9	3.1

Sources: IMF World Economic Outlook and International Financial Statistics.
* projection

Macroeconomic indicators

Chile

	1995	1996	1997	1998	1999	2000	2001	2002*
Activity				percent change				
Real GDP growth	10.8	7.4	6.6	3.2	-1.0	4.4	2.8	3.0
Real domestic demand	11.3	8.5	7.6	3.6	-4.7	3.9	2.7	4.3
Real private consumption	9.8	9.4	7.5	3.7	-3.0	3.2	3.1	3.8
Real gross fixed capital formation	23.5	8.9	10.7	3.4	-17.3	3.3	-2.3	4.3
Inflation	8.2	7.4	6.1	5.1	3.3	3.8	3.6	2.3
Unemployment rate	7.4	6.5	6.1	6.2	9.7	9.2	9.2	8.5
Monetary Sector								
Base money (M0)	22.2	16.2	20.2	-13.3	32.8	5.0	5.2	..
Broad money (M3)	21.0	17.0	16.4	9.9	16.1	9.9	11.6	6.3
				billion USD				
FX reserves at year end	14.2	14.9	17.4	15.7	14.5	14.7	14.2	14.6
External Sector				in percent of GDP				
Current account balance	-1.9	-4.6	-4.5	-5.2	-0.1	-1.3	-1.4	-1.8
Trade balance	1.8	-2.2	-2.7	-4.2	1.8	1.1	1.9	1.7
Public Sector								
General government balance	3.3	2.4	1.9	-0.1	-2.2	-0.9	-0.9	-1.2
General government primary balance	4.0	2.9	2.3	0.6	-1.9	-0.5	-0.7	-0.9
Savings, Investments and Debt								
Gross fixed capital formation	23.9	24.9	25.5	26.0	21.9	22.3	23.1	23.5
Gross public fixed capital formation	3.8	4.7	4.8	5.5	4.0	3.5	3.9	3.7
Foreign direct investment inflows	2.6	5.4	5.3	5.6	12.2	3.9	6.0	6.3

Sources: IMF World Economic Outlook and International Financial Statistics.
* projection

Hungary

	1995	1996	1997	1998	1999	2000	2001	2002*
Activity				percent change				
Real GDP growth	1.5	1.3	4.6	4.9	4.5	5.2	3.8	3.5
Real domestic demand	-4.1	0.6	4.0	7.8	4.3	5.1	6.3	3.0
Real private consumption	-7.1	-3.4	1.7	4.9	4.6	3.4	5.4	2.1
Real gross fixed capital formation	-4.3	6.7	9.2	13.3	6.6	6.3	5.2	4.0
Inflation	28.3	23.5	18.3	14.3	10.0	9.8	9.2	5.4
Unemployment rate	10.2	9.9	8.7	7.8	7.7	6.4	5.6	5.5
Monetary Sector								
Base money (M0)	3.8	22.3	23.5	17.2	19.2	11.4	16.8	..
Broad money (M3)	20.2	22.1	19.7	15.3	16.5	13.9	11.2	8.9
				billion USD				
FX reserves at year end	12.0	9.7	8.4	9.3	11.0	11.2	10.7	12.1
External Sector				in percent of GDP				
Current account balance	-5.6	-3.7	-2.1	-4.9	-4.3	-2.9	-2.4	-2.9
Trade balance	-1.3	-1.1	0.0	-2.1	-2.5	-4.1	-4.5	-4.1
Public Sector								
General government balance	-6.2	-3.1	-4.8	-4.8	-3.7	-3.7	-3.3	-3.2
General government primary balance	2.7	6.1	5.4	3.1	3.8	2.5	2.2	1.3
Savings, Investments and Debt								
Gross fixed capital formation	20.0	21.4	22.2	23.6	23.7	24.4	24.8	24.9
Gross public fixed capital formation	5.2	4.6	4.5	4.7	4.6	5.0	5.4	5.1
Foreign direct investment inflows	10.1	4.0	4.0	3.0	3.1	3.0	3.2	2.9

Sources: IMF World Economic Outlook and International Financial Statistics.
* projection

Macroeconomic indicators

Malaysia

	1995	1996	1997	1998	1999	2000	2001	2002*
Activity				percent change				
Real GDP growth	9.8	10.0	7.3	-7.4	6.1	8.3	0.4	3.0
Real domestic demand	14.6	5.7	7.5	-25.2	2.3	15.7	0.2	5.2
Real private consumption	11.7	6.9	4.3	-10.2	3.3	12.2	2.8	5.0
Real gross fixed capital formation	22.8	8.2	9.2	-43.0	-5.9	24.1	-2.1	4.7
Inflation	3.5	3.5	2.6	5.1	2.8	1.6	1.4	1.8
Unemployment rate	2.8	2.5	2.5	3.2	3.4	3.1	3.7	3.7
Monetary Sector								
Base money (M0)	13.2	23.7	11.7	-29.4	29.2	6.7	4.0	..
Broad money (M3)	18.2	13.2	19.5	1.4	7.1	6.3	1.6	6.1
				billion USD				
FX reserves at year end	23.9	27.1	20.9	25.7	30.6	29.6	30.5	32.3
External Sector				in percent of GDP				
Current account balance	-9.7	-4.4	-5.9	13.2	15.9	9.4	8.2	5.8
Trade balance	-3.9	1.4	0.9	22.0	25.1	20.0	18.5	16.2
Public Sector								
General government balance	2.2	2.3	4.1	-0.3	-3.1	-4.9	-4.0	-4.1
Savings, Investments and Debt								
Gross fixed capital formation	43.6	42.5	43.1	26.8	22.1	25.6	25.1	27.4
Gross public fixed capital formation	12.4	11.2	11.3	11.3	11.5	12.8	15.2	15.0
Foreign direct investment inflows	6.6	7.2	6.3	3.8	4.9	4.2	0.6	3.5

Sources: IMF World Economic Outlook and International Financial Statistics.
* projection

Mexico

	1995	1996	1997	1998	1999	2000	2001	2002*
Activity				percent change				
Real GDP growth	-6.2	5.2	6.8	5.0	3.6	6.6	-0.3	1.7
Real domestic demand	-14.0	5.6	9.6	6.2	4.1	8.4	0.4	0.9
Real private consumption	-9.5	2.2	6.5	5.4	4.3	8.3	3.4	1.5
Real gross fixed capital formation	-29.0	16.4	21.0	10.3	7.7	11.4	-5.9	2.9
Inflation	35.0	34.4	20.6	15.9	16.6	9.5	6.4	4.3
Unemployment rate	3.2	3.2	3.2	3.2	3.2	3.0	3.0	2.9
Monetary Sector								
Base money (M0)	3.5	36.9	32.0	15.4	28.3	14.0	0.0	..
Broad money (M3)	37.4	38.3	27.2	24.0	13.4	4.9	11.6	6.2
				billion USD				
FX reserves at year end	16.9	19.4	28.8	31.8	31.8	35.5	44.7	52.8
External Sector				in percent of GDP				
Current account balance	-0.6	-0.7	-1.9	-3.8	-2.9	-3.1	-2.8	-3.0
Trade balance	2.7	2.1	-0.1	-2.0	-1.6	-1.9	-2.4	-2.6
Public Sector								
General government balance	-0.2	-11.2	-6.9	-8.3	-7.2	-3.7	-3.8	-3.9
General government primary balance	4.4	3.3	2.3	0.2	0.9	1.2	1.0	0.4
Savings, Investments and Debt								
Gross fixed capital formation	16.2	17.9	19.5	20.9	21.2	21.2	19.6	20.0
Gross public fixed capital formation	3.3	3.7	3.6	3.3	3.8	3.8	3.2	3.3
Foreign direct investment inflows	3.3	2.8	3.2	2.7	2.6	2.1	4.0	2.1

Sources: IMF World Economic Outlook and International Financial Statistics.
* projection

Macroeconomic indicators

Philippines

	1995	1996	1997	1998	1999	2000	2001	2002*
Activity				percent change				
Real GDP growth	4.7	5.8	5.2	-0.6	3.4	4.0	3.4	4.0
Real domestic demand	3.9	6.3	6.5	-1.6	2.0	2.9	3.4	3.9
Real private consumption	3.8	4.6	5.0	3.4	2.6	3.5	3.4	3.7
Real gross fixed capital formation	4.7	12.0	11.5	-11.2	-2.3	0.0	-0.6	4.3
Inflation	8.0	9.0	5.9	9.7	6.6	4.3	6.1	5.0
Unemployment rate	9.5	8.5	8.7	10.1	9.8	11.2	11.2	10.5
Monetary Sector								
Base money (M0)	21.7	19.8	14.2	7.4	38.3	-1.3	4.1	..
Broad money (M3)	25.3	15.8	20.9	7.4	17.0	6.6	6.8	10.0
				billion USD				
FX reserves at year end	6.6	10.3	7.5	9.5	13.5	13.4	14.0	12.9
External Sector				in percent of GDP				
Current account balance	-2.7	-4.8	-5.3	2.4	9.7	12.1	5.6	3.6
Trade balance	-7.8	-8.8	-10.3	-6.6	0.2	6.1	-0.7	-2.2
Public Sector								
General government balance	-1.4	-0.4	-0.8	-2.7	-4.4	-4.6	-4.6	-3.9
Savings, Investments and Debt								
Gross fixed capital formation	22.2	23.4	24.4	21.1	19.1	18.1	17.0	17.1
Gross public fixed capital formation	7.8	4.8	5.4	4.9	4.4	3.5	3.6	2.4
Foreign direct investment inflows	2.0	1.8	1.5	3.5	2.5	2.7	2.2	1.9

Sources: IMF World Economic Outlook and International Financial Statistics.
* projection

Poland

	1995	1996	1997	1998	1999	2000	2001	2002*
Activity				percent change				
Real GDP growth	6.8	6.0	6.8	4.8	4.1	4.1	1.1	1.4
Real domestic demand	6.7	9.6	9.4	6.5	5.0	2.7	-1.5	-0.7
Real private consumption	3.8	8.6	6.9	4.9	5.4	3.2	2.0	-1.8
Real gross fixed capital formation	16.5	19.7	21.7	14.2	6.5	3.0	-10.2	1.0
Inflation	27.9	19.9	14.9	11.8	7.3	10.1	5.4	3.2
Unemployment rate	10.6	11.0	11.5	10.1	12.0	13.9	16.3	17.1
Monetary Sector								
Base money (M0)	36.4	39.8	17.9	16.2	23.1	-6.4	14.0	..
Broad money (M3)	34.9	31.1	29.0	25.2	15.1	15.9	13.7	4.7
				billion USD				
FX reserves at year end	14.8	17.9	20.5	27.5	26.5	26.7	25.8	26.3
External Sector				in percent of GDP				
Current account balance	4.2	-1.0	-3.0	-4.3	-7.5	-6.3	-4.0	-4.2
Trade balance	2.3	-1.6	-4.3	-5.2	-6.4	-5.3	-2.2	-1.2
Public Sector								
General government balance	-3.0	-3.3	-3.2	-3.3	-3.4	-3.1	-5.3	-5.7
General government primary balance	1.5	0.4	15.4	-0.1	-0.4	-0.5	-2.5	-2.9
Savings, Investments and Debt								
Gross fixed capital formation	18.6	20.7	23.5	25.1	25.5	25.1	21.9	21.9
Gross public fixed capital formation	3.3	3.3	3.0	3.1	3.0	3.1	3.3	3.6
Foreign direct investment inflows	0.9	1.9	2.1	3.2	4.2	5.3	3.7	2.3

Sources: IMF World Economic Outlook and International Financial Statistics.
* projection

Macroeconomic indicators

Russia

	1995	1996	1997	1998	1999	2000	2001	2002*
Activity				percent change				
Real GDP growth	-4.2	-3.4	0.9	-4.9	5.4	9.0	5.0	4.4
Real domestic demand	-2.7	-7.7	1.1	-12.5	6.5	13.1	9.4	6.1
Real private consumption	-4.4	-4.5	4.5	-4.3	0.9	11.9	9.1	4.0
Real gross fixed capital formation	-5.8	-19.3	-6.6	-6.6	7.1	25.2	14.1	11.9
Inflation	198.0	47.9	14.7	27.8	85.7	20.8	20.7	14.1
Unemployment rate	8.1	9.3	10.8	11.6	12.6	10.4	8.7	8.1
Monetary Sector								
Base money (M0)	120.7	27.2	55.0	14.9	53.7	66.9	35.6	..
Broad money (M3)	138.6	30.5	30.0	19.8	57.2	62.4	37.9	20.1
				billion USD				
FX reserves at year end	14.9	12.0	13.7	8.5	9.1	24.8	33.1	39.3
External Sector				in percent of GDP				
Current account balance	1.4	0.9	-0.1	-0.6	11.8	17.4	11.3	7.2
Trade balance	3.4	4.2	3.0	7.2	16.7	20.5	12.9	7.5
Public Sector								
General government balance	-6.1	-8.9	-7.6	-6.9	-0.2	4.1	2.8	0.4
General government primary balance	-2.5	-3.0	-2.8	-3.0	3.2	6.6	5.5	3.0
Savings, Investments and Debt								
Gross fixed capital formation	21.3	21.2	19.8	17.7	15.8	16.5	18.9	22.2
Gross public fixed capital formation	11.5	10.9	12.1	12.4	8.5	8.0	7.4	7.6
Foreign direct investment inflows	0.6	0.6	1.1	0.9	1.5	1.0	1.0	1.9

Sources: IMF World Economic Outlook and International Financial Statistics.
* projection

South Korea

	1995	1996	1997	1998	1999	2000	2001	2002*
Activity				percent change				
Real GDP growth	8.9	6.8	5.0	-6.7	10.9	9.3	3.0	5.0
Real domestic demand	9.3	7.8	-0.8	-19.6	14.5	8.1	1.9	6.4
Real private consumption	9.6	7.1	3.5	-11.4	10.6	7.9	4.2	6.1
Real gross fixed capital formation	11.9	7.3	-2.2	-21.2	3.7	11.4	-1.7	7.4
Inflation	4.5	4.9	4.4	7.5	0.8	2.3	4.1	2.7
Unemployment rate	2.0	2.0	2.6	6.8	6.3	4.1	3.7	3.5
Monetary Sector								
Base money (M0)	19.6	1.7	-11.4	1.6	24.7	5.9	13.8	..
Broad money (M3)	15.6	15.8	14.1	27.0	27.4	25.4	13.2	-100.0
				billion USD				
FX reserves at year end	32.7	34.1	20.4	52.0	74.0	96.2	102.8	109.2
External Sector				in percent of GDP				
Current account balance	-1.7	-4.4	-1.7	12.7	6.0	2.7	2.0	1.5
Trade balance	-1.5	-4.1	-1.0	13.3	6.9	3.1	2.3	1.8
Public Sector								
General government balance	1.3	1.0	-0.9	-3.8	-2.7	2.7	2.9	2.5
Savings, Investments and Debt								
Gross fixed capital formation	36.7	36.8	35.1	29.8	27.8	28.4	27.1	26.5
Gross public fixed capital formation	4.9	5.4	5.7	6.1	5.3	5.3	5.4	5.9
Foreign direct investment inflows	0.4	0.4	0.6	1.6	1.1	0.8	0.1	0.2

Sources: IMF World Economic Outlook and International Financial Statistics.
* projection

Macroeconomic indicators

Slovenia

	1995	1996	1997	1998	1999	2000	2001	2002*
Activity				percent change				
Real GDP growth	4.1	3.5	4.6	3.8	5.2	4.6	3.0	2.6
Real domestic demand	12.6	1.9	4.9	6.1	9.2	0.6	1.0	0.2
Real private consumption	9.1	2.0	2.8	3.3	6.1	0.8	1.7	1.5
Real gross fixed capital formation	27.6	5.0	11.6	11.3	19.1	0.2	-1.9	-7.0
Inflation	13.5	9.9	8.4	8.0	6.1	8.9	8.4	6.5
Unemployment rate	7.4	7.3	7.4	7.9	7.6	7.0	6.6	6.7
Monetary Sector								
Base money (M0)	24.8	18.4	18.1	25.2	26.6	6.1	19.9	..
Broad money (M3)	40.0	25.3	19.7	23.2	17.3	15.2	14.0	13.8
				billion USD				
FX reserves at year end	1.8	2.3	3.3	3.6	3.2	3.2	3.8	4.5
External Sector				in percent of GDP				
Current account balance	-0.5	0.2	0.1	-0.8	-3.9	-3.4	-0.4	-0.3
Trade balance	-2.0	-1.0	-0.8	-1.5	-4.4	-3.5	-1.3	-1.6
Public Sector								
General government balance	-0.2	-0.2	-1.7	-0.6	-0.6	-1.4	-1.4	-2.6
General government primary balance	0.9	1.1	-0.5	0.7	0.8	0.1	0.2	-1.3
Savings, Investments and Debt								
Gross fixed capital formation	23.3	23.4	24.1	25.6	28.2	28.3	28.1	27.9
Gross public fixed capital formation	4.2	4.2	4.2	4.3	4.6	4.1	4.2	4.0
Foreign direct investment inflows	0.9	1.0	2.1	1.3	0.9	1.0	2.1	2.0

Sources: IMF World Economic Outlook and International Financial Statistics.
* projection

Turkey

	1995	1996	1997	1998	1999	2000	2001	2002*
Activity				percent change				
Real GDP growth	6.9	6.9	7.6	3.1	-4.7	7.4	-6.2	3.6
Real domestic demand	11.4	7.6	9.0	0.6	-4.0	10.0	-8.2	6.2
Real private consumption	4.8	8.5	8.4	0.6	-3.1	6.9	-5.3	5.0
Real gross fixed capital formation	9.1	14.1	14.8	-3.9	-16.0	16.9	-14.3	10.2
Inflation	93.6	82.3	85.7	84.6	64.9	54.9	54.4	49.1
Unemployment rate	7.1	6.2	6.5	6.6	7.5	6.6	8.1	8.6
Monetary Sector								
Base money (M0)	68.3	129.5	69.1	63.1	77.0	53.5	51.9	..
Broad money (M3)	102.0	122.6	98.4	89.5	98.7	39.6	56.5	29.6
				billion USD				
FX reserves at year end	12.6	16.6	18.8	19.7	23.5	22.7	18.5	21.6
External Sector				in percent of GDP				
Current account balance	-0.5	-1.4	-1.4	1.0	-0.7	-4.9	1.4	-1.2
Trade balance	-4.2	-5.1	-5.2	-3.3	-5.0	-9.1	-3.6	-5.2
Public Sector								
General government balance	-5.8	-11.0	-10.1	-9.8	-14.0	-14.8	-24.8	-17.3
General government primary balance	3.1	1.4	1.1	6.4	7.1	7.3	0.8	2.2
Savings, Investments and Debt								
Gross fixed capital formation	23.3	25.5	26.4	23.9	20.6	22.1	19.5	18.1
Gross public fixed capital formation	3.8	4.8	5.7	6.0	6.0	5.9	4.9	3.7
Foreign direct investment inflows	0.5	0.5	0.4	0.5	0.4	0.5	2.0	0.9

Sources: IMF World Economic Outlook and International Financial Statistics.
* projection