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# At Different Speeds: Recovering from the Asian Crisis

## *On the importance of policy complementarities for growth*

**Bruno Rocha**

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**Abstract**[1]

This paper begins with a short review and discussion of the literature on policy complementarities and its implications in terms of (sustainable) growth strategies and the possible emergence of a new policymaking paradigm. Thereafter, it analyses the effect on growth of complementarities in structural policies in the specific context of a post-crisis recovery. The application of this framework to the Asian crisis can be regarded as a natural experiment. As the result of computing a complementarity indicator and a reform level indicator adjusted for complementarity for the most affected economies—Indonesia, the Republic of Korea, Malaysia, and Thailand—this study finds that these indicators, for which a comprehensive group of policy areas was considered, are clearly related to higher immediate resilience and to faster recoveries. The results suggest that while augmenting the levels of the so-called orthodox policies is necessary, it is not sufficient to generate high sustainable growth trajectories, as they must be complemented with other policies and evolve in a parallel way.

**Keywords:** second-best, complementarity, structural reforms, growth, resilience, recovery, Asian crisis.

[1] A presentation of this paper is available at http://ecoledoctorale.sciences-po.fr/master/gouv_eco/asian_crisis.pdf.

## I. INTRODUCTION

In the 80s and 90s, a consensually accepted pack of liberal reforms—*stabilise*, *liberalise,* and *privatise*—was implemented in many developing countries. Rodrik (2004) recalls that in Latin America, fiscal discipline, privatisation and openness to trade have produced an economic performance that does not even begin to match the performance under import substitution; a "puzzle of major proportions", in his own words. Today, after several crises in emerging economies and somewhat disappointing growth rates, the insufficiency or the failure of such recipes seems to constitute a not lesser consensus.

In many senses, one can regard the East Asian crisis as one more episode in the not very shining story of the failure of that orthodox, and rather simplistic, reform agenda. The most affected countries—Indonesia, the Republic of Korea (hereafter Korea), Malaysia, and Thailand[2]—were the most rapidly growing economies in the world. Just before the crisis, in 1996, the growth rates ranged from 5.9 percent in Thailand to 10 percent in Malaysia; in 1995, the lowest rate of growth in these four economies was no less than 8.4, in Indonesia (see table 1 and figures 1a to 1d). Moreover, the so-called "Asian tigers" had remarkable economic indicators (table 2). Moderate fiscal deficits in the early 90s were virtually eliminated by 1996. Inflation was low. Ambitious privatisation programs were undertaken in Indonesia and Thailand. Also, by then the four countries had already discarded the pure import-substitution strategy of the 60s in favour of policies promoting trade openness (even though none of them constituted a perfect model of integration in global trade). And, in accordance with the conventional agenda, the capital account was liberalised.

However, many things were missing. Many complementary reforms—good bankruptcy laws, social safety nets, and adequate investment in infrastructures, for instance—were not put in place. These missing links are important to explain not only the onset of the crisis, but also its impact in the different countries, and the speed of the recoveries. Using the East Asian crisis as a case study provides us with a sort of natural experiment, since we intend to analyse immediate responses and growth trajectories after an event and pre-event situations that were, in general terms, similar in the countries considered here. (Nonetheless, although this paper contains a very short memo in which some important aspects of the crisis are put in evidence, this is not an article on the East Asian crisis in itself; the papers, official reports, and books on the issue are already countless and one may even think that there is not much more to say about it.)

This remainder of this paper is divided in two sections. The first section reviews—both at the theoretical and the empirical level—the literature on the importance of policy complementarities for growth and discusses its implications in terms of growth strategies, in tandem with the emergence of a new, more open and realistic policymaking paradigm. The second section provides an introductory approach to the issue of (missing) policy complementarities in the four considered countries (in section III.B), sketches a stylised picture of the recovery process (III.C), and finally presents a quantitative analysis relating immediate resilience and recovery speeds to computed policy indicators (III.D)—especially a complementarity indicator and a reform level

[2] Less affected countries include Hong-Kong, China; the Philippines; Singapore; and Taipei,China.

indicator adjusted for complementarity. The paper ends with a brief synopsis and some final thoughts.

## II. SECOND-BEST, POLICY COMPLEMENTARITIES AND GROWTH

### A. Theoretical Background

As Bergstrom (2002) points up, one of the more disconcerting results in the theory of welfare economics was articulated by Lipsey and Lancaster in 1956 in their paper "The General Theory of Second Best". They demonstrated that if there are distortions in more than one market, removing a distortion in a single market may not be beneficial if distortions remain in other markets. This theory generates a disheartening result: piecemeal reforms do not necessarily increase welfare and can even reduce it; the only way to unambiguously ensure an increase in welfare would be to eliminate all the distortions at once. In 1970, Foster and Sonnenschein proved that under reasonably general circumstances, at least one kind of piecemeal reform—a radial one (that is, made of proportional reductions in all distortions)—would improve welfare. Rader (1976) generalised this result, making it less dependent on initial conditions[3].

However, a direct application of this highly theoretical approach to policymaking involves extreme and possibly insurmountable difficulties. The information requirements would be immense and even the definition of proportional reduction in very different policy areas would be extremely difficult to do.

A less demanding framework is thus required. According to Braga de Macedo and Oliveira Martins (2006), to engage several reforms in parallel reflects the idea that reforms are mutually interdependent and therefore complementary. This goes back to the 19th century economist Francis Edgeworth, to whom the notion of complementarity is due: activities are Edgeworth complements if doing (more of) any one of them increases the returns to doing (more of) the others. The concept has been generalised in such a way that it does not require any particular differentiability or convexity assumptions—the modern concept of supermodularity[4] stipulates that a change in only a coordinate of a system is less than the change associated with a parallel move across several dimensions. In other words, raising one variable increases the return to raising another.

The basic idea is easy to formalise. Assume an objective function $F$ depending on two policy instruments ($x$, $y$). A given policy can have two possible states, either reform ($x$) or no-reform ($\bar{x}$). The two policies are complementary if:

$$F(x, \bar{y}) - F(\bar{x}, \bar{y}) \leq F(x, y) - F(\bar{x}, y).$$

[3] Foster and Sonnenschein required that the production possibility set be the intersection of a half-space with the non-negative orthant (for this to be the case, not only must there be constant returns to scale, but essentially there also must be no more than one non-produced factor of production). They also required convexity of preferences and normality of all goods. Rader's theorem dispenses with all these assumptions (Bergstrom, 2002).

[4] Milgron and Roberts (1995) provide a short but very clear review on the concept of supermodularity (pp.181–190). See also Amir (2003).

This means that, for *y*, the return of moving from minimum ($\underline{x}$, $\underline{y}$) to ($\underline{x}$,*y*) is less than the move from ($\underline{x}$, *y*) to the maximum (*x, y*) (and symmetrically for *x*). Or, what is the same thing, the return from making reform *y* (or *x*) is greater when reform *x* (or *y*) is already in place. For *n* policies, *F* is supermodular if the relations above hold for every pair of reform areas. In such a system, optimising can be achieved by increasing all reforms in parallel (but not necessarily in the same proportion, as in radial reductions in distortions).

## B. Complementarities and Policymaking

One can think of many practical examples illustrating the importance of policy complementarities. In transition countries, for instance, if the economy is more liberalised (that is, the proportion of prices determined by the market increases dramatically) but a policy of stabilisation is not undertaken simultaneously, inflation will accelerate. This happens because demand pressures become immediately real and measurable. Or consider that a country is very open to capital flows, but allows inflation to grow. Foreign capital can therefore fly out massively (maybe in the context of a financial panic), and this can lead to higher interest rates.

Also, if a country liberalises the financial sector but does not have good exit mechanisms—or good bankruptcy laws—its financial system will accumulate bad debts. Moreover, if good exit mechanisms are not complemented with good entry mechanisms, the reallocation of resources will be blocked, with negative consequences in terms of growth and employment. Neither figure A nor table A were intended to be exhaustive, but nevertheless they provide several examples of policy complementarities. Virtually all possible pair combinations of policies can be understood as being complementary.

By stepping out of a more Walrasian world—that of more efficient static allocations of resources—or perhaps by adding some Schumpeter to it, it is possible to integrate dynamic efficiency (or technical progress) in this framework. For example, a low inflation environment can permit larger investment horizons and therefore contribute—if the financial sector is sound and competitive—to augment the number of financed R&D projects. Also, low inflation can help to keep the currency strong, making it easier to buy research and equipment goods (if tariffs on imports are not high) in the more developed countries, as well as top-level formation in Europe and the United States. Successful technical progress strategies will help to produce the same with less inputs, thus putting a downward pressure on inflation.

Although the concept of complementarity is based on powerful economic arguments and is doubtless true in its main simple and intuitive idea, as Macedo and Martins note, in the vast literature relating the design and scope of reforms to economic performance, little attention has been paid to this concept. However, it is also true that the subject is attracting the attention of an increasing number of economists.

Azis and Wescott (1997), for instance, have found that Washington Consensus-type individual policies are of little help in promoting fast growth[5]. But while some economists

[5] To this respect, Hausmann, Pritchett and Rodrik (2004) provide a rather simple but very eloquent finding. Analysing data from 1950 on, the authors identified 83 episodes of growth acceleration. They found that *(i)* the vast majority (85%) of growth take-offs are not preceded or

tended, as they say, to see this as the end of the story, their work suggests that this is just the beginning of it. They have demonstrated, using both an outcomes-based probability analysis approach and a standard regression approach, that favourable *combinations* of policies can significantly increase a developing country's economic growth performance. The probability that a developing country experienced fast per capita income growth over the period 1985–95 was in the range of 0.20 to 0.35 if the country had only a single high-quality policy. But this probability jumped to the range of 0.55 to 0.90 when there was complementarity at a high quality level among three key policy areas—trade openness, macroeconomic stability, and the degree of government involvement in economic activity. They have also demonstrated econometrically that although none of these three policies individually is significant in explaining the pace of economic growth, collectively they are significant (and robust) in explaining growth when they are summarised in the policy complementarity variable that they define.

The authors concluded that while the types of policies in the Washington Consensus are generally the right policies for developing countries to pursue, progress along a multifaceted set of policy dimensions is more critical than it was perhaps thought to be. In fact, as they point up, it is possible to imagine cases in which adopting some Washington Consensus-type policies, but neglecting to implement other important policies, might actually lead to a growth outcome that could be inferior to the case of making fewer reforms.

Importantly, the authors note that, whereas they suggest a set of three core policies that appear to greatly improve a country's chances of exhibiting rapid economic growth, and that their findings support the overall logic of the Washington Consensus, there may be other policy combinations that are even more effective in promoting growth.

More recently, Macedo and Martins (2006) carried out econometric tests focusing on transition economies, that is, Eastern European countries (EU and non-EU members) and former Soviet Union countries. The tested equation was:

$$GDP\ growth = f\ (Initial\ conditions,\ CPI\ growth,\ RL,\ RC,\ \Delta RL,\ \Delta RC),$$

where initial conditions are simply the initial level of GDP per capita before the transition (1989), *RL* (reform level) stands for the simple average of nine sectorial indicators (taken from the EBRD *Transition Report*) [6], and *RC* constitutes an index of reform complementarity (captured through the inverse of a Hirschmann-Herfindhal indicator; the same index will be utilised below in this paper). The results confirm that the countries having a higher reform level tend to have higher GDP growth, but the variation of *RL* displays a negative sign. Thus, an increment of reforms usually induces a negative impact on growth, which is typically the second-best result. Over the long run, when reform becomes more broad-based, higher levels of reforms are related to higher growth rates. The complementarity indicator displays a symmetric pattern, as its level displays a negative sign while its variation has the expected positive sign. Indeed, a high

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accompanied by economic liberalisation reforms; *(ii)* and the vast majority (84%) of liberalisation reforms do not produce growth take-offs.

[6] Large-scale privatisation, small-scale privatisation, governance and enterprise restructuring, price liberalisation, trade and foreign exchange system, competition policy, banking reform and interest rate liberalisation, securities markets and non-bank financial institutions, and infrastructure. The EBRD indicators are ranked from 1 (no-reform) to 4+ (full reform).

complementarity by itself does not necessarily lead to higher output growth, because in the authors' sample, unreformed countries may have had for some period higher complementarity than did reforming ones[7]. In brief, only the level of reforms and the changes in their complementarity have a positive impact on growth. Therefore, the former effect provides a long-run target for reforms, while the latter provides guidance on the conduct of the transition process.

For the new EU members, the reform process was characterised by a significant decrease of complementarity or coherence at the beginning of the transition. According to the authors, not all reform areas could be changed at the same time, so complementarity decreased. Once again, this is typically a second-best situation, which can entail a loss of welfare. Therefore this transitional cost should be reflected in income losses at the beginning of the transition, a theoretical intuition that is indeed verified in the authors' sample for the new EU members[8], as the relationship between the average level reforms *RL* and GDP growth shows an initial decline followed by an increase until the end of the policy cycle. In fact, GDP growth and *RC* have the same evolution: they both decrease at the beginning of the transition and increase in the latter stages of the policy cycle.

Roberto Chang et al. (2005) studied how the effect of trade openness on economic growth depends on complementary reforms that help a country take advantage of international competition. The authors present significant panel evidence, using a non-linear growth regression specification that interacts a proxy of trade openness with proxies of educational investment, financial depth, inflation stabilisation, public infrastructure, governance, labour-market flexibility, ease of firm entry, and ease of firm exit. An interesting pattern of reform complementarity emerges: the coefficient on the interaction between the trade volume ratio and, in turn, the secondary enrolment rate, the private domestic credit ratio, and the number of phone lines per capita is positive and significant. This indicates that the growth effect of an increase in openness depends positively on the progress made in each of these areas. That is, more openness results in a larger increase in economic growth when the investment in human capital is stronger, financial markets are deeper, and public infrastructure is more readily available. The shared explanation for these results is related to the competitiveness of domestic firms in international markets: when domestic firms find a better educated labour force and less costly credit and communications, they are able to compete with foreign firms and expand their markets effectively.

The estimated coefficients on the interaction between the trade volume ratio and, in turn, the proxies for governance, labour-market flexibility, and firm-entry flexibility are also positive and statistically significant. The beneficial impact of an increase in trade openness on economic growth is larger when society has a more efficient, accountable, and honest government and where the rule of law is more respected. Likewise, the positive growth effect of trade opening is stronger when flexible labour markets make it easier for domestic firms to transform and adjust to changing environments, particularly

[7] An economy can have a very high *RC* and a very low *RL*, that is, an economic system can have a very high complementarity and adopt extremely market-unfriendly policies; autarchic state-planned economies constitute a good example. See section III.C.1.
[8] Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovak Republic, and Slovenia.

those in highly competitive foreign markets. The results also point out the importance of unrestricted firm renewal in order for trade opening to have a positive impact on growth.[9]

Evidently, this framework can and should be applied to more developed economies. Orszag and Snower (1999) argue that the disappointing small effect of many past reform measures on unemployment in Europe is due to the failure of many European governments to implement broad-based reform strategies that exploit economic complementarities. For instance, such strategies could work through the mutual reinforcing effects between policies that promote the firms' search for workers (say, by putting in place tax reforms that raise the reward to hiring) and the workers' search of jobs (by reducing their unemployment benefits). These authors expand the analysis integrating "political complementarities", which arise when the capacity to gain political support for one policy depends on the implementation of other policies. It is only when a broad set of policies is all implemented in conjunction with one another that the policies become politically feasible and economically effective. Under these circumstances, incremental, small-scale adjustments of existing policy packages are doomed to failure. The authors conclude by asserting that "perhaps the only way to tackle the European unemployment problem is to have the courage to think big and broad" (Orszag and Snower, 1999: 8).

### C. What Approach for Growth Strategies?

We have seen that, by simultaneously eliminating all distortions, welfare will increase unambiguously. The best possible economic growth rate is achieved by eliminating all obstacles that stand in its way. However, this is not realistic. Hausmann, Rodrik and Velasco (2005) recall that such a strategy requires not only having complete knowledge of all prevailing distortions; it also demands that we have the capacity to remove them all in their entirety.

A second strategy would be to simply ignore the second-best theory and undertake whatever reforms seem to be feasible, practical, politically doable, or enforceable through conditionality. This is, still according to these authors, the "do as much as you can, as best as you can" approach, which implicitly relies on the notions that (i) any reform is good; (ii) the more areas reformed, the better; and (iii) the deeper the reform in any area, the better. In the words of Rodrik (2004), that "opportunistic strategy may end up being targeted on areas of reform that are not particularly significant for economic growth at that point in time and that produce low economic returns" (p. 6). He also says that this strategy has been commonly accepted at the international financial organisations, namely the World Bank: "Scratch any number of Country Assistance Strategy documents of the World Bank, and this is the strategic approach that you will find lurking underneath" (p. 6).

If one wants to take into account economic theory and therefore guarantee that partial reform will have good results, it will be necessary to select those areas where the second-best interactions across markets magnify the direct positive effects rather than

[9] To this respect, it is worthwhile to mention the report of the Independent Evaluation Group at the World Bank: "Complementary measures such as competition policy, reducing labor market rigidities and improving the regulatory environment did not always accompany trade reforms recommended by the World Bank. If developing countries are to reap larger gains from trade liberalization, the reforms need to be combined better with investments and institution building and measures to mitigate adverse affects" (Independent Evaluation Group, World Bank, 2006).

weaken or reverse them. But, as Rodrik also points up, in any real economy, figuring out these interactions (and quantifying them) ex ante is extremely complicated.

Hausmann, Rodrik and Velasco propose thus an alternative and practical "diagnostic" approach: to focus on the most binding constraints. The best option would then be to focus on the reforms where the direct effects can be largely guessed to be large. Therefore, there will be less to worry that second-best interactions will greatly diminish or possibly reverse the welfare effects. The elementary principle to follow is: "go for the reforms that alleviate the most binding constraints, and hence produce the biggest bang for the reform buck. Rather than utilise a spray-gun approach, in the hope that we will somehow hit the target, focus on the bottlenecks directly" (Hausmann, Rodrik and Velasco, 2005:7). In practise, the authors' approach starts by focusing not on specific distortions (the full list of which is unknowable), but on the proximate determinants of economic growth (saving, investment, education, productivity, infrastructure, etc.). Once we know where to focus, we then look for associated economic distortions whose removal would make the largest contribution to alleviating the constraints on growth. More schematically, economic growth depends on the returns to capital accumulation (*lato sensu*), their private appropriability, and on the cost of financing accumulation. The first stage of the diagnostic analysis aims to uncover which of these three factors pose the greatest impediment to higher growth. In some economies, the constraint may lie in low returns, in others it may be poor appropriability, and yet in others too high cost of finance. The next stage of the diagnostic analysis is to uncover the specific distortions that lie behind the most severe of these constraints. If the problem seems to be poor appropriability, is that due to high taxes, corruption, or macro instability? If the problem is with the high cost of finance, is that due to fiscal deficits or poor intermediation?[10]

These authors have advanced in rejecting the widely applied orthodox paradigm based on one-size-fits-all policies. It is not exaggerated to say that their proposal constitutes a step further—maybe a decisive one—towards a much more open and realistic policymaking paradigm, which is based on country-specific solutions. Nevertheless, it must be noted this is not to hold that market-friendly policies or conventional solutions are not needed to ignite growth—it may be the case that a country needs a more orthodox policy agenda, as the same authors suggest for Brazil. What is more, combining orthodox and unorthodox elements has proved to be, in several cases around the world, a good choice; India, Korea, and Vietnam seem to be good examples.

But while the authors' focus is on starting a growth process, sustaining it is a whole different chapter of the story. On recalling the "growth and crash" experience of the Dominican Republic, Rodrik (2004) justly adds that "igniting growth may not require the full laundry list of reforms promoted, but sustaining it and endowing the economy with resilience to adverse shocks require addressing over time the institutional and governance constraints that will inevitably become more binding in a growing economy" (p. 12); therefore sustaining growth is more difficult than igniting it (2003).

A few things are to be held in mind here. Even if the targeting of the binding constraints is well done, some, or many distortions will remain. They could be regarded as not being very important in a first moment, simply because they are not visible. However, the evaluation of estimated welfare losses arising from the remaining distortions should be

[10] The authors present and analyse three examples (Brazil, Dominican Republic, and El Salvador) in a detailed manner. The diagnostics are different for each one of these countries.

made with a medium or long time horizon, especially taking into account the risks that those distortions imply. A high growth can be ignited, but one should ask: how sustainable is that growth process? For instance, when an economy is growing, nobody pays much attention to the necessity of putting in place good bankruptcy laws and well staffed bankruptcy courts, because both are not needed. In a high growth period, failures are not that frequent. But in the event of a crisis—say, a financial panic (a non-innocent example in the context of this paper)—the absence of such a key reform will amplify and deepen the recession. Capital flights will be larger and more abrupt because creditors will know that they will not be able to recover their loans; on the other hand, the reallocation of resources from closed firms to new or more efficient companies will be prevented. In the crisis, the previously invisible distortion will reveal itself.

Also, the conjugation or interaction of high growth with a set of remaining distortions can create new distortions (or a new and more perverse structure of incentives). Imagine that a poor country manages to increase dramatically its growth rate in a short space of time. The strategy was, say, augmenting its trade openness to take advantage of strong comparative advantages and growth in richer neighbouring countries. Thus this country specialises in a labour-intensive, low-tech, fragmented, light industry sector (thus limiting, in a decisive manner, its long run growth prospects). As the working population will get more jobs and higher wages, it will start to consume more, buying better houses and hi-tech products, travelling, and so on. But as the financial system does not work well, it is laxly regulated and protected from external competition, and it is also incestuously connected to the government, the domestic banks have neither the capacity nor the incentives to respond correctly to the new demand for credit. Loans to consumers (as well as loans to firms) will grow—also for political convenience—with the banks not having in mind that debtors rely on a salary which, in its turn, depends on the evolution of international prices of that export good, whose added value is insignificant. This would constitute a risky situation. This merely hypothetical example aims to show that a distortion which was inexistent or incipient before the growth take-off—in the sense here that demand for credit was virtually inexistent—can, when stimulated by rapid growth and bad institutions or incentives, emerge and expand to worrying proportions.

In short, in a first moment it is acceptable to put aside the “spray-gun approach” and focus on a given bottleneck, just to trigger growth. Thereafter, policymakers should think about making complementary reforms—that is, adopting a more *supermodular* strategy. The underlying idea is that there is a link between high coherence (or, just the same, high complementarity) and sustainable growth.

## III. POLICY COMPLEMENTARITIES AND THE EAST ASIAN RECOVERY

### A. Memo on the East Asian Crisis

Although this paper is not intended to make a detailed description of the East Asian crisis of 1997–1998 or to discuss its mechanisms, it is useful, for the purposes of this

article, and before delving again into its core issue, to recall and highlight some key aspects of that devastating episode[11].

As we have seen above, according to the conventional analytical wisdom, the economy in these countries seemed to work well. Growth was high and macroeconomic indicators were sound. Unlike in the Latin American episodes in the early 80s, the Asian economies had neither high budget deficits nor were pursuing expansionary monetary policies. Also, public debt was very low (even if compared with many OECD countries): 24 percent of GDP in Indonesia and 4 percent in Thailand, for instance (in France and the United States public debt in 2005 was 66 and 65 percent of GDP, respectively). However, a more careful look at the balance sheets of banks and companies would have revealed a different situation: the crisis was precipitated by savings-investments imbalances in the private sector, namely an excessively large short-term external borrowing, denominated in dollars.

Thus, in the years preceding the crisis, (private) capital was flying in (see table 3); the relative importance of bank loans was very large and growing (figure 2). Accordingly, reserves were growing as well. The total amount of reserves in the four countries studied in this paper—Indonesia, Korea, Malaysia, and Thailand (hereafter Asia-4)—was almost three times bigger in 1996 than it was in 1990.

There were some reasons why these private capital inflows were so high. In the first place, economic growth was strong, which gave more confidence to international investors. Fairly liberalised capital accounts made it much easier for domestic banks and corporations to finance domestic investments with foreign capital. Also, interest rates were significantly higher in these countries than they were in developed economies. Moreover, nominal exchange rates were effectively pegged to the dollar, which reduced perceived risk for investors.

The "moral hazard" effect is another factor we should consider if we are to understand the more important aspects of the Asian crisis. This is to say that investors felt protected by either explicit or implicit guarantees. However, the importance of moral hazard in the crisis is far from being consensual. While some held that the Mexican bailout in 1995—the 50 billion dollars rescue operation prepared by the IMF and the Clinton Administration—created moral hazard on a global scale[12], others claimed that much of the lending was directed to non-bank enterprises and was not protected by any kind of guarantees. However, it is also doubtless true that many loans in Mexico were not covered by guarantees; in addition, Mexico's package of loans was seven times its quota, or lending limit, at the IMF. The operation was unprecedented in size. Therefore, the assumption according to which the expectation of a bail-out needs not be on an explicit promise or policy by the government does not seem unrealistic. If formal rules

[11] Chang and Velasco (1998), Radelet and Sachs (1998), and Furman and Stiglitz (1998) provide extensive analyses of the Asian crisis. These were the main references used in writing this section.

[12] To this respect, M. Friedman could not be more assertive: "The Mexican bailout helped fuel the East Asian crisis that erupted two years later. It encouraged individuals and financial institutions to make loans to and invest in the East Asian countries, drawn by high domestic interest rates and returns to investment and reassured about currency risk by the belief that the IMF would bail them out if the unexpected happened and the exchange pegs broke" (1999).

were broken before, why could not they be broken again?[13] Hence it seems reasonable to consider moral hazard as an important ingredient in the complex mix of interlinked factors at the heart of the Asian crisis.

Moreover, the private debt in Asian-4 was increasingly a short-term one. In seven years, the proportion of the short-term debt, which was already very high, rose by almost eleven percentage points. In the last two columns of table 4, we can observe that the ratio of short-term debt to international reserves increased very rapidly in only three years. In Indonesia, Korea, and Thailand the ratio was largely over one, which is potentially very dangerous (concretely if creditors decide not to roll over the debt). In sum, two sources of vulnerability coexisted: domestic banks borrowed in foreign exchange and lent in local currencies, implying a greater exposure to losses in the event of depreciation; secondly, these banks borrowed in short-term maturities and lent with longer payback periods, which implies a greater exposure to the risk of a run.

**Box 1. Trigger Events, Contagion, and Added Panic**

**Failures**

- Korea: failure of *chaebols* (Hanbo Steel in January 97 was the first)
- Thailand: failure of finance companies (quasi-banks)

**Contagion effects**

- Hit Indonesia, Malaysia, Philippines
  (many creditors treated the region as a whole)

**Political instability (not in Malaysia)**

- Changes of government, non-credible statements and decisions

**IMF tutelage (not in Malaysia)**

- Immediate suspensions or closures of financial institutions (more panic)
- Higher interest rates to defend currencies (additional contraction)
- Budget surpluses (additional contraction)

The rest of the story is known—a quick facts listing can be found in Box 1. According to Radelet and Sachs (1998), the existing macro and microeconomic imbalances were not strong enough to warrant a crisis of the magnitude that was seen in East Asia. They blame a mixture of panic on the part of the international lenders, policy mistakes at the very beginning of the crisis by local governments, and poorly designed international rescue programs, for triggering a full-fledged financial panic and massive withdrawal of

[13] In fact, as Radelet and Sachs (1998) observe, the Asian crisis prompted the largest financial bailouts in history. The loan to Korea was nearly twenty times its IMF quota.

foreign capital[14], which deepened the crisis more than was either necessary or inevitable.

## B. A Complementarities-Based Approach to some Aspects of the Asian Crisis

In June 1997 Azis and Wescott wrote prophetically, "We suspect that it is better to make policy progress on some fronts rather than do nothing, but national authorities must recognise that policy gaps in critical areas can cause improvements in economic growth to be imperceptible, and, in a worst case scenario, could cause problems if reforms are not staged carefully. In particular, countries that have liberalised their capital markets and that receive large amounts of foreign capital inflows must be careful to make sure that they do not backslide in other critical areas" (p. 16).

The Asian crisis can thus be regarded as a case of an abrupt end of an unbalanced or unsustainable growth trajectory, in the sense that some important—and complementary—key policy areas were not taken into consideration before the crisis.

An obvious lack of complementarity in the Asian-4 countries was to have quite liberalised capital accounts—Williamson et al. (2003) classified the capital accounts in these four countries, as of the first half of 1997, as being "largely liberalised"—and to allow for strong credit creation, without having put in place good supervision mechanisms. Banks were operating in a weak institutional environment and, as a result, were clearly under-supervised. What is more, many banks maintained incestuous relations with large companies and governments. And if one includes the moral hazard effect in the decision-making process of banks operating in such an opaque context, the amount of expected over-investment will be even larger[15]. To put it simply, "there were ample conditions for excessive risk taking, poor banking judgment, and even outright fraud" (Radelet and Sachs, 1998: 16).

However, while this seems a rather straightforward remark to make, it was not until recently that many economists realised that institutions do matter. Institutions establish a stable structure to human interactions or incentives. But in many cases stability does not coincide with efficiency—bad institutions do not align private incentives with social welfare; for that reason, poor institutions can generate incoherent policies that only serve to benefit networks of private interests, which will not coincide with the (long-term) social interests. Importantly, these incoherent policies may materialise either into low long-run growth rates (as may be the cases of Brazil or the Philippines), for instance, or into high but unsustainable growth rates (as it happened in the Asian-4 countries).

[14] In Asian-4 and the Philippines, total net private flows amounted to 93 billion dollars in 1996 and -12 billion in 1997. See also table 4.

[15] The moral hazard problem can be limited by the usual elements of a well functioning regulatory and supervisory system: punishment for the managers and stockholders of insolvent financial institutions; adequate accounting and disclosure requirements; adequate capital standards; prompt corrective action; careful monitoring of the institutions' risk management procedures, and monitoring of financial institutions to enforce compliance with the regulations. However, there are often strong political forces in emerging market countries which resist putting these kinds of measures into place. What we had seen in the Asian crisis countries is that the political will to adequately regulate and supervise financial institutions was especially weak because politicians and their family members were often the actual owners of financial institutions (Mishkin, 1999).

This sort of higher-level or primary incoherence—the lack of a good institutional environment, in broad terms—may then generate an endless number of policy inconsistencies. The Asian crisis is fertile in providing examples. As we have seen in the previous section, the monetary response to the capital inflows between 1994 and 1996 was given mainly through sterilisation (to counterbalance the effect of reserve inflows on the monetary base through open-market operations). However, there was an alternative available: to increase reserve requirements for banks (to reduce the money multiplier). Also, higher reserve requirements ensure that a bank will have enough money to cover bad loans, reducing its vulnerability. But when the president's family—like in Indonesia—owns banks and, moreover, there is the feeling that the economy is growing and possible bad loans are somewhat guaranteed, why would the (non-independent) central bank want to put limits on the business of commercial banks? And, in fact, reserve requirements were imprudently low, not only in Indonesia, but also in Korea, Malaysia, and Thailand.

Another missing link is related with the growing specialisation in non-tradable sectors. Figure 4 shows an important appreciation of the real exchange rate (RER) in the Asian-4 economies until the very beginning of the crisis (June 1997), which was caused, especially since 1994, by the appreciation of the dollar, to which these countries' currencies were effectively pegged[16]. Such a bad specialisation resulted in the loss of competitiveness (in figure 5 it is possible to observe a tendency for current accounts to be larger after 1993), as well as a smaller capacity of those economies to attract reserves. The financial sector amplified this specialisation, as much of the credit was being directed to speculative investments in real markets (shopping centres, luxury office buildings, etc.), rather than to the exports sector.

As Radelet and Sachs clearly pointed up, the utilisation of short-term foreign currency borrowing to finance domestic investments in real estate and other non-tradable sectors was "particularly dangerous". However, this inadequate allocation of capital in unproductive activities did not draw the attention of policymakers (not even that of the international community, namely the IMF). Nothing was done to counterbalance that not very promising, to say the least, specialisation. If a country decides that, in a given moment, it needs a strong currency—say, to attract foreign capital, to fight inflation, and even to be able to buy equipment goods and top-level education abroad—it must put in place complementary policies that stimulate the investment and the competitiveness of the exports sectors and reduce the (short-term) attractiveness of non-tradable sectors, e.g., through differentiated tax treatments and/or good competition policies that reduce the upward price pressures in the non-tradable sectors (which always happen when RER appreciates). Furman and Stiglitz (1998) state that "it was apparent that there was a significant amount of non-productive speculative real estate lending; imposing sharp restrictions on this lending would have simultaneously dampened investment and strengthened the banking system" (Furman and Stiglitz, 1998: 28).

A key feature in more coherent economic systems is the existence of good exit mechanisms. Good bankruptcy laws make crises less likely (or can even avoid crises happening) and surely contribute to faster recoveries and sound growth.

[16] Real exchange rate appreciation is a good predictor of currency crises. Frankel and Rose (1996) and several post-1998 empirical works confirm this link.

In its general terms, we accept the view of Radelet and Sachs, according to which the crisis resulted from vulnerability to financial panic that arose from certain weaknesses in these economies, combined with policy missteps and accidents that triggered a full-fledged financial panic and massive withdrawal of foreign capital; the crisis was a case of multiple equilibria. If creditors believe that they will not be able to recover, in a reasonable time lag, what they have loaned to a bankrupt (or even only temporarily illiquid) borrower—because bankruptcy laws are bad, *de jure* or *de facto*—then a creditors' run (a 'grab race') will probably occur, since each creditor will rush to be the first to demand full repayment[17]. Furthermore, the absence of appropriate debt workout mechanisms that allow the coordination of creditors will help to create a situation of panic.

A good bankruptcy law is important in an (at least) equally important way. It does not impede plant dynamics and therefore leads to a faster and more efficient reallocation of resources, which is of particular significance in the context of a post-crisis recovery process[18]. Over the past years, there have been studies documenting that the resource re-allocation process from exiting producers to entering producers explains a substantial portion of total factor productivity (TFP) changes at the aggregate level. Most of the studies find that exiting producers exhibit persistently declining productivity while entering producers that survive the market selection process exhibit rapidly increasing productivity. This pattern suggests that policies that prevent the efficient reallocation of resources via entry and exit could be potentially very costly with the cost possibly growing over time. On the contrary, the reforms of bankruptcy policy, which induce inefficient firms to exit with a lower cost and allocate released resources to efficient entrants or incumbents, would enhance the rate of aggregate productivity growth (Lim and Hahn, 2003). Bergoeing et al. (2002) compare the experiences of Mexico and Chile in the 1980s and note that, being both affected by similar shocks—the 80s debt crises—Chile was able to recover and "find" a decade that turned out to be lost for Mexico. They argue that a key element in Chile's ability to recover was a bankruptcy law that facilitated the retrenchment of weak firms and the creation of stronger companies.

A similar comparison can be made within the Asian-4 countries. Although this is an aspect that will be developed later in this paper, it is worth mentioning here that Indonesia, the country with the slowest recovery, and Korea, the country with by far the fastest one, have respectively the worst and the best bankruptcy systems in Asian-4.

[17] Lack of transparency also plays a role here. If depositors have difficulty distinguishing sound from unsound institutions, they may trigger runs on healthy banks (Chang and Velasco, 1998). Hence bad bankruptcy laws and information problems join together to make crises more probable. Interestingly, Indonesia was the country where the immediate impact of the crisis was bigger: its GDP per capita decreased 14.3 percent in 1998. This large impact is certainly related to the fact that Indonesia had the worst bankruptcy law and the worst and least transparent institutional environment within the Asian-4 group.

[18] Bergoeing et al. (2004) consider that slow and costly recoveries are the result of impediments to the natural process of resource reallocation. These impediments can result from government policy interventions, such as excessive labour protection, directed credit to inefficient sectors, entry barriers to the establishment of new plants and firms, and burdensome bankruptcy laws. By reducing the extent of restructuring, these obstacles alter the recovery path that follows aggregate shocks, inducing economic stagnation. The authors present convincing cross-country evidence.

Indonesia's bankruptcy law, drafted by the Dutch in 1905, remained unchanged in 1997. Remarkably, in the nearly 50 years since the Dutch departed the archipelago, Indonesia had never translated its bankruptcy law from Dutch into the native language. Declarations of bankruptcy were extremely rare in Indonesia. As a consequence of the non-use of the bankruptcy law, judges and lawyers lacked experience in bankruptcy matters (Walker, 2000). On the contrary, Korea had a medium-quality bankruptcy system at the time of the crisis and improved it in the immediate post-crisis years.

A crucial piece in the intricate puzzle of economic coherence is the existence of social safety nets, namely in the form of a system of unemployment benefits. In its absence, the hardship imposed on job losers and their families during a crisis will be larger and, as a consequence, aggregate consumption and consequently aggregate output can decrease more. Unemployment benefits act therefore as an automatic stabiliser. In poorer countries, where households spend a very large proportion of their budget in food, the adjustment to a job loss situation will be probably made through the reduction or elimination of education expenses, which is bad for the human capital accumulation, and therefore for growth, of a given country; this is the scenario described in Chetty and Looney (2005). These authors compared large panel datasets on the United States and Indonesia and came to find that the mean and median consumption drop associated with unemployment in both economies is roughly 10 percent; such a similarity is remarkable, given that Indonesia has no formal unemployment insurance system whereas the United States insures 50 percent of the pre-unemployment wage for most individuals. However, in the Indonesian sample, the average household devotes nearly 70 percent of its budget to food, compared with 20 percent in the United States; then the authors examined the methods households use to mitigate the income loss associated with unemployment and found that in Indonesia parents appear to sharply reduce expenditures on children's education during idiosyncratic unemployment spells. Therefore, the welfare costs of transitory unemployment shocks, which are prevalent in developing economies, could be particularly large and long lived.

What is more, a system of unemployment benefits improves labour allocation, in the sense that it enables the worker to find better jobs. In the specific circumstances of a crisis episode that violently signals the need to rapidly abandon a given specialisation pattern—say, in non-tradable sectors like real estate—the existence of unemployment benefits can facilitate the workers' decision to abandon the non-tradable sector and try to find a job in a more dynamic sector or even to create their own small firm. Workers' resistance to change is lessened by the availability of unemployment benefits.

However, in the so-called Asian tigers, unemployment insurance was dismissed as superfluous because growth was high and the rates of unemployment were low. This was another invisible incoherency, only revealed when the crisis made its appearance. It has been said many times that the fiscal costs of implementing unemployment benefits systems in developing economies are prohibitive for those countries. But, as Lee (1998) points up, unemployment insurance is self-financing, with schemes based on contributions from workers, from employers, or a combination of both—fiscal costs to government need not arise unless it makes the choice to subsidise. Governments would need to intervene to establish a system of benefits to make coverage as broad as possible and to compensate for the almost total absence of private insurance. The author makes the point that at very modest levels of required contributions, the effects of unemployment insurance on labour costs and hence on demand for labour would be negligible. He adds that ILO assessments show that if Indonesia, Korea, and Thailand

had introduced unemployment insurance in 1991, that is, six years before crisis onset, an average required contribution rate of between 0.3 and 0.4 per cent of payroll from 1991 to 2000 would have sufficed to provide all insured job losers over this period, including during the crisis, with 12 months of benefits.

Once more, comparisons within Asian-4 seem to be fruitful. Korea, the country where the impact of the crisis was the smallest in terms of falling GDP per capita in 1998, and where the recovery was the fastest, was also the only country that had introduced, before the crisis (in 1995), a relatively incipient unemployment insurance scheme, which was expanded in 1998 in response to the colossal increase in unemployment resulting from the financial crisis[19]. This aspect will be further developed in a later section (III.D.2.a.ii) of this article.

## C. Deep Impact, Different Recoveries

We turn now to a very brief description of what we want to explain: the different impacts of the crisis in Asian-4 and recovery speeds. While some other variables are mentioned in order to make the picture a bit more complete, our main focus hereafter is on real GDP per capita (GDPpc at constant 2000 USD).

The hardest hit country was Indonesia. In 1998, its real GDP per capita decreased 14.3 percent (see table 1). In Thailand and Malaysia, GDPpc decreased 11.4 and 9.6 percent, respectively. Among the Asian-4 countries, Korea was the least affected, with a diminution of only 7.5 percent.

In Indonesia, one in every five formal-sector jobs was terminated in 1998, which left five million workers with bleak future prospects (Lee, 1998). In Korea and Thailand, unemployment jumped from 2.6 and 0.9 percent in 1997, respectively, to 7 and 3.4 percent in the following year (in Malaysia unemployment rose from 2.5 percent to 3.2 percent)[20]. Poverty rates also grew across the region.

Griffith-Jones and Gottschalk (2006) justly state that a key cost is forgone output. They have estimated the output loss for Asian-4 at 917 billion dollars for the 1997–2002 period. The largest losses in relative terms—that is, adjusted by the GDP sizes of their economies—were incurred by Thailand and Indonesia: 157 and 133 percent of their 2002 GDP, respectively. Malaysia incurred a loss of 69 percent. The loss in Korea was no larger than 26 percent. That simple ratio gives us a general impression of the depth of the crisis and, at the same time, the velocity of the post-crisis growth until 2002.

Figure 6 shows that it was only in 2004 that Indonesia finally recovered its pre-crisis level of output per capita. By then, GDPpc in Korea was already 27 percent higher than in 1997; in Thailand and Malaysia, the GDPpc was 12 and 9 percent, respectively. Interestingly, Malaysia experienced a faster recovery than did Thailand until 2001, but then Thailand overcame Malaysia and, by accelerating its growth in the sub-period 2002–04, took second place in the run.

[19] As of 1998 only four Asian economies—the People's Republic of China; Hong Kong, China; Korea; and Mongolia—had any form of unemployment benefit scheme. Benefit rates were generally modest. Coverage was comprehensive in Hong Kong, China only. In Korea, half of all employees were covered while elsewhere, coverage extended only to a minority of formal sector employees (ILO, 2000).

[20] Source: *World Development Indicators*, World Bank.

The average growth rate of GDPpc between 1998 and 2004 in Korea was 5.1 percent. In Thailand, it was of 3.8 percent. Malaysia and Indonesia have both the smaller average growth rates: 2.7 percent (figures 1e to 1h)[21].

From these elements, we can sketch a quite stylised picture: Korea started and finished in first place; Malaysia started second but finished third, changing positions in 2002 with Thailand (or already in 2001, according to figure 8b, in which the initial losses in GDPpc are not considered); Indonesia started last and reached 2004 in the very same position. Our thesis is that such a pattern is related to the coherence of the economic systems in these countries—that is, to the degree of complementarity of the policies that were adopted. And to that we turn now.

## D. Coherence and Recovery in Asian-4

### 1. Measuring Coherence

Trying to make a comprehensive portrait of a given economy and its evolution across a number of dimensions and of years is not an easy task. There are data limitations: sometimes data just do fit exactly in the concept that we want to see described; others times, simply there is not any data.

To make such a portrait, several data sources were used, namely: the very wide-ranging *Economic Freedom of the World* reports of the Fraser Institute, the *Index of Economic Freedom* of the Heritage Foundation, and World Bank data (*World Development Indicators* and *Governance Indicators*)[22].

The dimensions considered here are 17 and can be divided in three blocks:

(i) A *basic* economic block [EB1], which represents roughly the somewhat *typical* receipt inspired on the Washington Consensus and has nine policy areas (liberalisation of prices, less government intervention, stabilisation, financial markets' openness and deregulation, ease of entry mechanisms, labour market deregulation, trade liberalisation, access of nationals to foreign capital markets and foreign access to domestic capital markets—that is, ease of capital flows, and attractiveness to foreign direct investment);

(ii) an *extended* economic block [EB2], which consists of adding to EB1 three key dimensions (exit mechanisms, social safety nets—specifically the existence of unemployment benefits schemes, and infrastructure); and additionally

(iii) an institutional quality block [IQB] having five dimensions (property rights, political stability, voice and accountability, control of corruption, and government effectiveness).

The above mentioned data sources allow us to rank the Asian-4 countries for all EB1 and IQB policy areas, and also for infrastructure availability in EB2 (a simple infrastructure index was built for the purposes of this article, based on World Bank

[21] The average growth rates for the same period were also calculated for GDPpc in PPP. Results are not significantly different (not reported).
[22] See the Appendix for a detailed explanation on the way the ratings in each area were built.

data[23]). Given the absence of readily usable data for unemployment benefits schemes and bankruptcy laws for the totality of the time period considered in this article, these two areas were rated, using available data as well as information contained in several reports and articles. All elements were converted to a 0–10 scale.

As in Macedo and Martins (2006), I calculated, for each block, the respective *RL* (reform level—the simple average of the respective sectorial indicators $R_i$) and an index *RC* of reform complementarity (captured through the inverse of a Hirschmann-Herfindhal indicator[24]). Therefore:

$$RC = \frac{1}{\sum_i \left(\frac{R_i}{RL \,.N}\right)^2},$$

where *N* is the number of policy areas (for EB2, for instance, *N* = 12). As before 2000 the Fraser Institute data, in its more detailed form, are available on a five-year basis, it was possible to calculate *RC* and *RL* for 1995. However, because it is important to isolate the immediate pre-crisis moment, I calculated *RC* and *RL* for 1997, using 1995 data to give a rating to five policy areas in EB1 (fully, in two cases, and partially, in the other three[25]). However, the year of 1995 can also be regarded as a good snapshot of the pre-crisis situation, as the policymaking choices did not change much between 1995 and 1997. *RC* and *RL* were also calculated for 2000, 2002 and 2003. *RC* was also converted to a 0–10 scale.

It is important to emphasize a mathematical property of *RC*: it does not change with *RL*. For instance, a country could have $RC_{EB1}$ = 10 and $RL_{EB1}$ = 1 (if $RL_i$ = 1, $\forall i \in [1,9]$). Or, what is exactly the same, an economic system can be highly coherent, but have extremely market-unfriendly policies; one can think of autarchic state-planed economies as an example. Conversely, *RL* can be high and *RC* can be low. So, it is appropriate to calculate an indicator that captures both the reform level and complementarity—a reform level indicator *adjusted* for complementarity:

$$ARL = \frac{RL.RC}{10}, \quad ARL \in [0,10].$$

Additionally, and having again in mind that institutions do matter, I also computed an indicator that intends to measure the general quality of a given economic system:

$$GQ = \frac{ARL_{EB2} + ARL_{IQB}}{2}, \quad GQ \in [0,10]^{26}.$$

[23] The variables used to compute this index are electric power consumption, percentage of paved roads, proportion of Internet users, and telephone mainlines per thousand people. High-income OECD countries are the benchmark (that is, R = 10). See table 5a for 2002 data.

[24] I also calculated *RC* as the inverse of a Gini coefficient (not reported). As expected, results are not significantly different.

[25] Respectively: labour market, capital flows, financial system, trade policy, and entry mechanisms.

[26] Using $ARL_{IQB}$ to calculate *GQ* corresponds to assuming that $RC_{IQB}$ is relevant. We do not know that. At the first glance, expanding this methodology to explore the idea of coherence of politico-

## 2. Looking at Data

### a. Individual Policies

By throwing a first glance at the data (see table 5), one can already highlight some aspects. Before the crisis, (direct) government intervention in those economies—measured by the relative importance of government enterprises and investment in total investment—was low (except for Malaysia). Inflation was low in all countries. Trade liberalisation was high in Korea and Malaysia and medium in Indonesia and Thailand. Financial systems were only medially deregulated and open to competition; the respective indicator ranged from 4.5 (of a maximum of ten) in Malaysia to 6.1 in Korea. Ease of capital flows was above 7.3 in Indonesia, Malaysia and Thailand; only in Korea that indicator was not high, reaching no more than 4.7.

Korea had the best infrastructure (6.3), exit mechanisms (4.5), and unemployment safety net (4.0). Malaysia ranked second and first (*ex aequo*) in the former two areas, respectively; on the contrary, Indonesia ranked last.

It is also easy to observe that Malaysia and Korea had the most proper institutional environment: property rights were well protected (6.8 and 7.8, respectively) and controls of corruption were the highest in Asian-4 (6.5 and 5.2). And, once more, Indonesia had the worst situation: bad protection of property rights (3.9), a poor control of corruption (3.1), and lacking political stability (2.1).

It is interesting to notice that Malaysia—the only country that did not fall under the tutelage of the International Monetary Fund (IMF)—responded to the crisis in a very specific manner, clearly diminishing the importance of market mechanisms in its economy. Between 1997 and 2000, price controls had increased, the labour market lost a great deal of its prior flexibility, regulations on economic activity increased (also in the financial sector), and restrictions on capital flows were imposed (conversely, Korea augmented, and quite sharply, its ease of capital flows). Also in Malaysia, the degree to which property rights were protected decreased from 6.8 in 1997 to 5.3 in 2000 (meanwhile, in Thailand, it grew from 5.9 to 6.1).

As expected, in 2000, compared to 1997, all Asian-4 countries had increased their trade degree of liberalisation. This was a logical way to profit from the strong devaluation of Asian-4 currencies that came along with the crisis.

#### i. Exit Mechanisms

After having seen in section III.B how crucial good exit mechanisms and social safety nets (namely in the form of unemployment benefits) can be in the context of a post-crisis recovery, it is important now to describe the main features of these two reform areas in the Asian-4 countries. The fact that the respective ratings had to be given by the author of this article only reinforces the need to proceed—although very briefly—to such a description for the sake of transparency.

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institutional systems seems appealing and can possibly constitute a promising line of theoretical and empirical work. However, such work is clearly out of the objectives of this paper. In this particular case, as $RC_{IQB}$ is very high in the four countries (that is, the five dimensions of IQB have similar levels), $ARL_{IQB}$ and $RL_{IQB}$ are rather similar.

As of 1997, Indonesia had not a minimally effective bankruptcy law (see section III.B). In a response to the crisis that troubled the country, the Indonesian Bankruptcy Regulation was amended in 1998 (in Bahasa Indonesia, the Indonesian language) and a special commercial court to handle bankruptcies was established. However, the revised Indonesian bankruptcy law has never been implemented in a way that creditors view as transparent. People wish to avoid courts because they are considered expensive, notoriously unpredictable, and unreliable. There is a pervasive culture of corruption at all levels and also the perception that government may step in at any point to rearrange the process to suit what it considers its interest (Gamble, 1998; Walker, 2000; Ruru, 2001).

By comparing the ease of closing a business[27] in 2005 in the UK (our benchmark in this domain) with that of Indonesia, one can have a basis to attribute a "grade" to the Indonesian bankruptcy system. In the UK, the average duration to complete a bankruptcy procedure was one year, while in Indonesia it was 5.5 years; the cost of the process, as a percentage of real estate, was of 4 percent in the UK and 18 percent in Indonesia; finally, the recovery rate (how many cents on the dollar claimants—creditors, tax authorities, and employees—recover from an insolvent firm) was of 85.3 in the UK and 13.1 in Indonesia. Therefore, it is reasonable to attribute a grade 3 in 2003. The ratings from 1995 to 2002 reflect a supposed linear tendency of improvement (or, what is roughly the same, a learning-by-doing effect).

The Thai law, enacted in 1940, was also obsolete. However, it was not until the eruption of the Asian crisis and the ensuing economic turmoil that the need for reform became a priority (Wong et al., 2000). Before that, the liquidation of enterprises was so cumbersome and lengthy that creditors rarely obtained recovery—some bankruptcy cases in Thailand have continued for more than 20 years. Such difficulties were compounded by the lack of a specialised bankruptcy court. By the time judgment was secured, few, if any, assets of the debtor remained to be recovered. Not surprisingly, creditors rarely utilised the Thai bankruptcy regime (Walker, 2000).

Legislation putting in place a new bankruptcy court and reforming bankruptcy procedures was enacted in 1998 and in 1999. For instance, this has given debtors and creditors the alternative of negotiating reorganisation plans through the courts. These reforms seemed to be what the Thai economy was waiting for: in tandem with a surge in court cases of corporate reorganisation, bankruptcy cases also soared from 6,993 cases in 1998 to a peak of 42,413 cases in 2002; that year also recorded the largest bankruptcy debt claims from creditors, 1.387 billion baht (Vongvipanond, 2004). The comparison with our benchmark results in a grade of 4, an evaluation which suggests that even though some important reforms were successfully undertaken, other measures are still to be taken.

Malaysia's bankruptcy law is based on English law and comes under the Bankruptcy Act of 1967. It was used with frequency before the crisis, and only a few changes were introduced after the crisis. According to our benchmarking exercise, the Malaysia bankruptcy system is graded 5 in 10.

[27] Source: *Doing Business*, Word Bank. The topic *closing a business* "identifies weaknesses in existing bankruptcy law and the main procedural and administrative bottlenecks in the bankruptcy process".

Korea made dramatic changes in its bankruptcy law in 1998 and 1999, achieving an almost state-of-the-art law in early 2005 (as reflected in a grade of 9). Lim and Hahn (2003) point up that "the most crucial element in the post-crisis court-administered bankruptcy system was the court's establishment and tight enforcement of an economic efficiency criterion in selecting qualified firms for judicial bankruptcy procedures. Instead of basing the system on economic efficiency, the pre-reform system was based on high social value and prospects for rehabilitation. (…) The new criterion greatly contributed to removing the *de facto* exit barrier placed on large firms that had existed in the in-court bankruptcy system prior to the crisis". The authors have shown that, prior to the crisis, "producers [in Korea] with persistently declining productivity were more likely to be accepted into a rehabilitation procedure as long as they exhibited 'high social value' such as a large output or employment share in the economy".

### ii. Unemployment Protection

As of 2003 (the last year of our time sample), neither Malaysia nor Indonesia nor Thailand had unemployment benefits systems[28]. This should not constitute a surprise, since "workers who are fortunate enough to be covered by unemployment benefits are mainly concentrated in industrialised countries" (ILO, 2000). Korea established an unemployment benefits scheme in 1995 and improved it not only as an immediate response to the crisis[29], but also in the following years[30]. It expanded the system to all firms, included temporary workers, shortened the compulsory contribution for eligibility, and extended the duration of unemployment benefits. Coverage grew at a regular pace from 44 percent of total wage earners in 2000 to 50 percent in 2003[31].

We can thus say that Korea has a medium-level unemployment insurance system: much better than the other Asian-4 countries, but not as generous or wide-covering as in many European Union countries, for instance. A very rapid, but anyway elucidative comparison helps us to better understand this point. In Korea, the benefit is equal to half of the insured's wage earnings and it is payable for a period ranging from 3 to 8 months (only for those with more than 10 years of coverage or aged 50 or more); in Portugal, for example, the unemployment benefit corresponds to 65 percent of the wage earnings and its duration varies between one year and 30 months (for those aged 50 or more)[32]. The way this policy area was classified is therefore consistent with this comparison, and also with the resolute tendency for improvement undertaken by Korea after the crisis. All the other countries were rated zero[33].

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[28] Thailand implemented an unemployment benefits scheme in 2004.

[29] This expansion "was part of a quid pro quo conceded by government and employers' organizations in order to obtain the agreement of workers' organizations to legislative changes designed to facilitate lay-offs in specified circumstances" (ILO, 2000).

[30] Amendments to the law were introduced in 1997, 1999, and 2002.

[31] Source: *The Supplement Survey of the Economically Active Population Survey*, Korean National Statistical Office.

[32] According to the International Labour Organisation, the most generous unemployment protection systems are to be found in Austria, Belgium, Denmark, Finland, France, Germany, Iceland, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, and Switzerland.

[33] In an alternative scenario, a single point was attributed to these three countries because they had severance pay regulations. Severance pay was higher in Indonesia (9 months salary for an employee that has worked for four years in a firm) and Thailand (6 months) than in Malaysia (2 months), but the share of informal workers (60–70 percent in Indonesia, 50 percent in Thailand) was much larger in the two countries than in Malaysia (30 percent), so it is reasonable to consider

### b. Indicators

By analysing the computed indicators—*RC*, *RL*, and *ARL* (and *GQ*)—for 1997, a snapshot of the immediate pre-crisis situation, it is possible to have a somewhat different look that can help us to understand why the crisis was deeper (in terms of diminution of GDPpc) in some countries than it was in others.

The approach "do as much as you can" applied to [EB1] would signalise Korea (and Indonesia) as the 'worst student' because its $RL_{EB1}$ was the smallest among Asian-4. But the alignment between $RL_{EB1;\ 1997}$ and GDPpc growth in 1998 is very low (see table 6), meaning that such an approach is not a good choice if one is to improve an economy's resilience to shocks.

As a matter of fact, to rank these four countries by their $RL_{EB2}$, $RC_{EB2}$, or $ARL_{EB2}$ (or *GQ*) and the smallness of their GDPpc losses in 1998 results exactly in the same order: Korea in the first position, then Malaysia, Thailand, and finally Indonesia. Quite interestingly, concerning the extended economic block [EB2], Korea had by far the highest level of complementarity. It was the most coherent economic system. That is, even if it was not as 'market-friendly' as Thailand and Malaysia, it was more complemented with good infrastructure, and also with a modest—but nevertheless existing—unemployment safety net and exit mechanisms.

Things become even more interesting when we look at the entire period 1997–2003.

In every single year between 1998 and 2002, Korea has had the highest GDPpc growth rate in Asia-4. And in the post-crisis years Korea was able to maintain very high levels of complementarity: its $RC_{EB2}$ was of 9.4 in 1997 and 9.3 in 2003, while its $ARL_{EB2}$ increased from 5.3 in 1997 to 6.4 six years later (see figure 7). Also, Korea was the only country that augmented its $RL_{EB1}$ during the considered period, which was in 1997 the lowest among Asian-4 and ended up being the highest in 2003. This suggests that the key to a faster recovery is not to retrocede on typical market-friendly policies, but to complement them with some others. Implementing such policies can imply considerable amounts of public investment, but one should compare the long-term costs of these investments with those of not executing them; such costs could include stronger vulnerability to crises, deeper recessions, and slower recoveries.

On the other hand, Malaysia, as we have already seen in section III.D.2.a on individual policies, reduced the relevance of market mechanisms in the functioning of its economy, as $RL_{EB1}$ decreased from 6.3 in 1997 to 5.4 in 2000 and 5.3 in 2003. Also, and in a quite marked manner, Malaysia reduced its levels of complementarity, from a $RC_{EB2}$ ($RC_{EB1}$) of 8.3 (9.2) just before the crisis to 7.0 (7.3) in 2003.

In the late nineties, many economists seemed to rush to praise the somewhat unorthodox reaction of Malaysia to the crisis. There is an almost common-knowledge idea according to which this nonconformist country was less hit than others in the region because it refused to fall under the tutelage of the IMF. Although the immediate

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the average protection arising from severance pay to be, eventually, more or less the same in the three countries. However, as discussed in Vodopivec and Radu (2002) and Addison and Teixeira (2001), the literature is not conclusive in showing that severance regulations have a positive effect on employment and overall productivity; importantly, one should recall that severance benefits are paid by the employer. Yet, this alternative scenario does not influence the results.

interventions of the Fund were, beyond a shadow of a doubt, inappropriate, I sincerely believe that such a vision is not totally true and may be contaminated with ideological beliefs or even a bit of romanticism. The point here is that the Malay economy reacted well to the crisis (when compared to Thailand and Indonesia) because it had, relatively, a more market-friendly environment, and was a more coherent economic system. However, in the subsequent years, Malaysia reduced sharply its A$RL_{EB1}$ and A$RL_{EB2}$ (and also $RL_{IQB}$, that is, the quality of its institutional context) because of reductions in both *RC* and *RL*. Thailand, on the contrary, adopted a different policymaking approach, keeping high levels of complementarity for [EB1] and increasing $RC_{EB2}$ to 8.4 in 2003 (figure 8 allows us to compare the trajectories of both countries). Before the crisis, A$RL_{EB2}$ in Malaysia and Thailand was 4.53 and 4.07, respectively; by 2003, the scenario was the opposite, with 4.4 for the Thai economy and only 3.46 for Malaysia. In 2001—a bad year for the global economy—complementarity was already higher in Thailand; interestingly enough, this country experienced then no more than a slowdown in its GPDpc growth, which continued to be positive (from 3.8 to 1.2 percent), while Malaysia experienced negative growth (-1.8 percent).

In fact, to have added coherence to its economy seemed to have paid off good dividends for Thailand; the Thai economy accelerated its growth and reached GDPpc growth rates in 2002 and 2003 of respectively 4.4 and 6.1 percent (see also figures 6 and 8b). In the same years, growth in Malaysia was only of 2.3 and 3.4 percent.

Indonesia was markedly the country with the lowest real GDP per capita in 1997 (906 dollars, less than one-tenth of real GDP per capita in Korea), but it was also, and almost in an equally evident way, the country with the slowest recovery (it was only in 2004 that it recovered its pre-crisis GDPpc level). Therefore, and rather intriguingly, the Indonesian economy seemed not to have benefited from any kind of catching-up effect. Our analysis also appears to shed some light on this. In Indonesia, A$RL_{EB2}$ was always the lowest among the Asian-4 countries, and it did not grow from 1997 to 2003—in this later year, it was of 3.2 (6.4 in Korea); furthermore, A$RL_{EB1}$ decreased from 5.5 to 4.3. In short, Indonesia did not undertake significant market-friendly reforms (on the contrary, its $RL_{EB1}$ decreased from 6.0 in 1997 to 5.0 in 2002, while Korea increased the same indicator from a similar initial level to 6.5) and did not improve significantly the already *per se* low coherence of its economic system.

In addition, Indonesia had very poor institutions. This represents a broad higher-level or primary incoherence, to which I make reference above[34], as it is well reflected in a very low A$RL_{IQB}$ of 2.7 for 2000 (to be compared with 5.3 in Thailand, 5.4 in Malaysia, and 6.3 in Korea); there was a poor protection of property rights (3.0 in 2000, 7.1 in Korea); furthermore, political stability was practically nonexistent. Not surprisingly, the *GQ* indicator of Indonesia was the lowest among the Asian-4 countries in 1997 (3.1) and also in 2003 (3.2).

Remarkably, Figure 9b shows that A$RL_{EB2}$ and GDPpc experienced twin evolutions. Figure 9a is much less convincing in suggesting that $RL_{EB1}$ can help to explain, to a similar extent, the different post-crisis growth trajectories within Asia-4.

To sum up, this short analysis puts in evidence not only the importance of preserving or achieving high levels of economic complementarity during a post-crisis recovery process

[34] See section III.A.

(Korea and to a smaller extent Thailand are good examples), but also shows how pernicious it can be to implement a nonconformist policy agenda that results essentially in a strong reduction of the relevance of market mechanisms in a given economy (the path chosen by Malaysia and Indonesia). Our conviction is that there was not the need to opt between a "do as much as you can" approach focused on an orthodox agenda or, on the other hand, a sort of reflexive anti-market policy package (eventually, an "undo as much as you can" approach), which will be as incomplete and myopic as the one-fits-all solution that it tried to reject in the first place.

A faster and more correct and complete reallocation of resources is crucial to any fast growth trajectory, especially in a post-crisis context; in order to achieve that, market mechanisms, as free prices or free financial markets, will of course play a key role. But while this invisible hand should not be impeded, at least not in a persistent way, it must be complemented with a more visible hand—made of social safety nets, public investment in infrastructures, or transparent institutions, for example—which is to play an equally vital role.

## IV. CONCLUSION

After having made a short literature review both at the theoretical and the empirical level on the importance of policy complementarities for growth in the first two sections of section II, which provided strong arguments and substantial evidence in favour of that hypothesis, I have discussed in section II.C its implications in terms of growth strategies, in tandem with the emergence of a new, more open and realistic policymaking paradigm.

I have applied this framework to a case study—the East Asian crisis and recovery—in an analytical exercise that can be regarded as a sort of "natural experiment". Section III.B provides an introductory approach to the issue of (missing) policy complementarities in the most affected countries—Indonesia, the Republic of Korea, Malaysia, and Thailand—paying particular attention to two key policy areas: bankruptcy systems and unemployment benefits. Thereafter, a comprehensive group of policies was used to calculate the degree of complementarity (or coherence) (*RC*) in those four countries. Also, a reform level indicator adjusted for complementarity (*ARL*) was developed. The study has found that both *RC* and *ARL* are clearly more related to higher immediate resilience and to faster recoveries than the "do as much as you can" approach, especially when such an approach is applied to more conventional and therefore stricter policy packages. Our results suggest that while augmenting the levels of typical or so-called orthodox market-friendly policies is necessary, it is not sufficient to generate high sustainable growth, as they must be complemented with other policies and evolve in a coherent way.

### Some Final Notes

In 1924, in the well-known lecture "The End of Laissez-faire", Keynes said that "capitalism, wisely managed, can probably be made more efficient for attaining economic ends than any alternative system yet in sight, but that in itself it is in many ways extremely objectionable". Although the reader's attention turns to the very appealing debate on the ways in which capitalism is or can be objectionable, one should notice the doors opened by the expression *wisely managed*.

We have witnessed the failure of simplistic liberal policy packages; now, a new paradigm seems to emerge and will be developed in the very next years. While it is true that we do not know yet how the standard policymaking approach of the next decades will look, it will almost surely be more knowledge-demanding, will value country specificities much more, and will require a more systemic approach to national economies. Will the theory of second-best be at the heart of such a paradigm? If so, governments and multilateral institutions will have to include the concept of complementarity as an input in their policy decisions and advises. As we have seen in this paper, pursuing a *linear radial* strategy would be very difficult and extremely demanding in terms of knowledge. When starting a reform strategy that deliberately results, in its initial stages, in a reduction of economic coherence, countries incur a risk. As such, this could be measured (risk = time$_*$(1-*RC*), for instance; *RC* can be calculated giving a stronger weight to policy areas associated with higher risk) and included in the decision-making process. It can be rational to bear that risk for some or even many years, as resources are scarce and policy measures imply costs (however, the international community should contribute to alleviate those costs, including the production of economic expertise). But to systematically ignore that risk can result in deep and long-lasting fragilities.

A policy recommendation? *Go complementary*!

**References**


Addison, J. T. and P. Teixeira (2001), "The Economics of Employment Protection", *IZA Discussion Paper* no. 381.

Amable, B. and D. Gatti (2006), "Labor and Product Market Reforms: Questioning Policy Complementarity", *Industrial and Corporate Change*, 15, 1, 101-122.

Amir, R. (2003), "Supermodularity and Complementarity in Economics: an Elementary Survey", *CORE-UCL Discussion Papers* no. 104.

Azis, J. and R. Wescott (1997), "Policy Complementarities and the Washington Consensus", *IMF Working Papers* no. 118.

Bergoeing, R., P. Kehoe, T. Kehoe, and R. Soto (2002), "Decades Lost and Found: Mexico and Chile since 1980", *Federal Reserve Bank of Minneapolis Quarterly Review*, 26, 1, 3-30.

Bergoeing, R., N. Loayza, and A. Repetto (2004), "Slow Recoveries", *NBER Working Papers* no. 10584.

Bergstrom, T. (2002), "Comment on Trout Rader's paper, 'The Welfare Loss from Price Distortions'", *mimeo*, University of Michigan.

Boeri T. and J. O. Martins (2000), "Varieties, Jobs and EU Enlargement", *William Davidson Institute Working Papers Series* no. 301.

Chang, R. and A. Velasco (1998), "The Asian Liquidity Crisis", *NBER Working Papers* no. 6796.

Chang R., L. Kaltani, and N. Loayza (2005), "Openness Can be Good for Growth: the Role of Policy Complementarities", *Word Bank Policy Research Paper* no. 3763.

Chetty, R. and A. Looney (2005), "Income Risk and the Benefits of Social Insurance: Evidence from Indonesia and the United States", *NBER Working Papers* no. 11708.

Dennis, A. (2006), "Trade Liberalization, Factor Market Flexibility, and Growth: the Case of Morocco and Tunisia", *Word Bank Policy Research Paper* no. 3857.

Foster, E. and H. Sonnenschein (1970), “Resource Allocation and the Public Sector”, *Econometrica*, 38, 281-297.

Frankel, J. and A. K. Rose (1996), “Currency Crashes in Emerging Markets: an Empirical Treatment”, *Journal of International Economics*, 41, 351-368.

Friedman, M. (1999), “How Asia Fell”, *Hoover Digest*, 2.

Furman, J. and J. Stiglitz (1998), “Economic Crises: Evidence and Insights from East Asia”, *Brookings Papers on Economic Activity*, 2, 1-114.

Gamble, W. (1998), “Restructuring in Asia: a Brief Survey of Asian Bankruptcy Law”, *Emerging Markets Strategies Company*.

Griffith-Jones, S. and R. Gottschalk (2006), “Financial Vulnerability in Asia”, prepared for the Asia 2015 Conference, Madrid (March).

Hausmann, R., L. Pritchett, and D. Rodrik (2004), “Growth Accelerations”, *mimeo*, Harvard University.

Hausmann, R., D. Rodrik, and A. Velasco (2005), “Growth Diagnosis”, prepared for the LACEA 10th Annual Meeting, Paris (October).

International Labour Office (2000), *World Labour Report 2000: Income Security and Social Protection in a Changing World*, Geneva.

Kim, Y. (2006), “Towards a Comprehensive Welfare State in South Korea”, *London School of Economics, Asia Research Centre Working Paper* no. 14.

Lee, E. (1998), *The Asian Financial Crisis: The Challenge for Social Policy*, International Labour Organization, Geneva.

Lim, Y. and C. H. Hahn (2003), “Bankruptcy Policy Reform and Total Factor Productivity Dynamics in Korea: Evidence from Macro Data”, *NBER Working Papers* no. 9810.

Lipsey, R.G. and K. Lancaster (1956), “The General Theory of Second Best”, *The Review of Economic Studies*, 24, 11-32.

Macedo, J. B. de and J. O. Martins (2006), "Growth, Reform Indicators and Policy Complementarities", *NBER Working Papers* no. 12544.

Milgrom, P. and J. Roberts (1995), "Complementarities and Fit Strategy, Structure, and Organisation Change in Manufacturing", *Journal of Accounting and Economics*, 19, 179-208.

Mishkin, F. (1999), "Lessons from the Asian Crisis", *Journal of International Money and Finance*, 18, 709-723.

OECD (2002), *Economic Survey of Romania*, Paris.

Orszag, J. M. and D. J. Snower (1999), "Anatomy of Policy Complementarities", *IZA Discussion Paper* no. 41.

Radelet, S. and J. Sachs (1998). "The Onset of the East Asian Financial Crisis", *NBER Working Papers* no. 6680.

Rader, T. (1976), "The Welfare Losses of Price Distortion", *Econometrica*, 44, 6, 1253-1257.

Rodrik, D. (2003), "Growth Strategies", *Johannes Kepler University of Linz, Department of Economics Working Paper* no. 317.

Rodrik, D. (2004), "Rethinking Growth Policies in the Developing World", *mimeo*, Harvard University.

Ruru, B. (2001), "Role of Indonesian Insolvency System: Case for Optimism and Case for Caution", prepared for the I Forum for Asian Insolvency Reform Insolvency Reform in Asia, Bali (February).

Topkis, M. D. (1998), *Submodularity and Complementarity*, Princeton University Press, Princeton NJ.

Vodopivec, M. and D. Raju (2002), "Income Support Systems for the Unemployed: Issues and Options", *World Bank Social Protection Discussion Paper Series*, no. 214.

Vongvipanond, P. (2004), "Thailand's Post Crisis's Institutional Change: Corporate Restructuring and Financial Institution Risk Management", prepared for the IV Forum for Asian Insolvency Reform Insolvency Reform in Asia, New Delhi (November).

Walker, J. (2000) "Building the Legal and Regulatory Framework", *Conference Series* [Proceedings] no. 44, Federal Reserve Bank of Boston.

Williamson, J., S. Griffith-Jones and Gottschalk R. (2003), "Should Capital Controls Have a Place in the Future International Monetary System?", prepared for the International Monetary Convention held by the Reinventing Bretton Woods Committee, Madrid (May).

Wong, K., C. Phunsunthorn, and T. Sucharitku (2000), "Reforming Thai Bankruptcy Laws", *Harvard Asia Quarterly*, 4.

World Bank (2006), Assessing *World Bank Support for Trade 1987-2004: An IEG Evaluation*, Independent Evaluation Group, World Bank, Washington DC. See also: www.worldbank.org/ieg/trade.

**Datasets**

Fraser Institute, *Economic Freedom of the World*: www.freetheworld.com.
Heritage Foundation, *Index of Economic Freedom*: www.heritage.org.
World Bank, *Doing Business*: www.doingbusiness.org.
World Bank, *Governance Indicators*: www.worldbank.org/wbi/governance/govdata.
World Bank, *World Development Indicators*: http://devdata.worldbank.org/query.

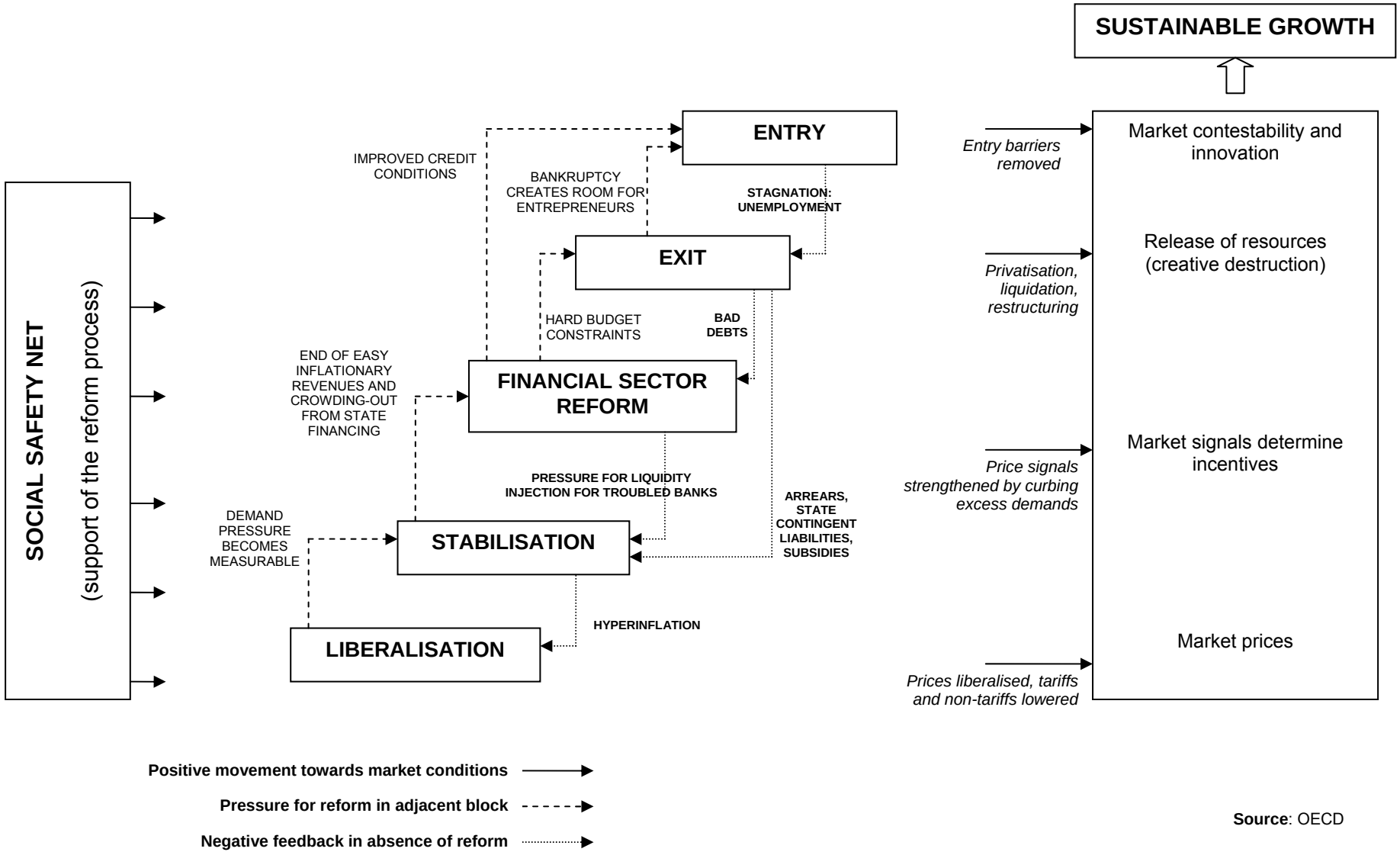
Table A. **Matrix of positive linkages during transition**

| | **Liberalisation** | **Stabilisation** | **Financial Reform** | **Mechanisms of Exit** | **Mechanisms of Entry** |
|---|---|---|---|---|---|
| **Liberalisation** (prices and tariffs) | - | Demand pressure becomes measurable | Better assessment of credit worthiness | Competitive pressures (e.g. import discipline) | Lower entry barriers |
| **Stabilisation** | Prevents hyperinflation | - | End of inflationary revenues and crowding-out of state financing | Positive real interest rates, reduction of distortionary subsidies | Stable environment for investment; level playing field |
| **Financial Reform** | Support of foreign trade liberalisation | Prevents pressure for liquidity injection for troubled banks | - | Support of hard budget constraints | Improved credit conditions and other financing sources |
| **Mechanisms of Exit** (enterprise privatisation, liquidation and restructuring) | Support of liberalisation measures (e.g. public utilities) | Prevents accumulation of arrears and public contingent liabilities | Reduces financial indiscipline and bad debts | - | Release of resources; reduction of entry barriers |
| **Mechanisms of Entry** | Import competition and export promotion | Sustains tax base and eases demand pressure | Creates viable credit opportunities for banks | Easing of resource reallocation; prevents stagnation and unemployment | - |

**Positive linkage from block A (in line) to block B (in column).**

**Source**: Macedo and Martins (2006)

Figure A. **Interdependence of reforms: a framework for transition**




**Source**: OECD

Table 1. **Growth and GDP per capita in Asian-4**

| | | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Korea | GDP growth | 8,5 | 9,2 | 7,0 | 4,7 | -6,9 | 9,5 | 8,5 | 3,8 | 7,0 | 3,1 | 4,6 |
| | GDP per capita * | 8 511 | 9 159 | 9 707 | 10 064 | 9 307 | 10 117 | 10 884 | 11 220 | 11 936 | 12 245 | 12 752 |
| | **GDP per capita growth** | **7,6** | **7,6** | **6,0** | **3,7** | **-7,5** | **8,7** | **7,6** | **3,1** | **6,4** | **2,6** | **4,1** |
| Malaysia | GDP growth | 9,2 | 9,8 | 10,0 | 7,3 | -7,4 | 6,1 | 8,9 | 0,3 | 4,4 | 5,4 | 7,1 |
| | GDP per capita * | 3 280 | 3 510 | 3 763 | 3 938 | 3 560 | 3 690 | 3 927 | 3 857 | 3 944 | 4 079 | 4 290 |
| | **GDP per capita growth** | **6,4** | **7,0** | **7,2** | **4,6** | **-9,6** | **3,7** | **6,4** | **-1,8** | **2,3** | **3,4** | **5,2** |
| Thailand | GDP growth | 9,0 | 9,2 | 5,9 | -1,4 | -10,5 | 4,5 | 4,8 | 2,2 | 5,3 | 7,0 | 6,2 |
| | GDP per capita * | 1 906 | 2 057 | 2 154 | 2 102 | 1 862 | 1 925 | 1 998 | 2 022 | 2 110 | 2 238 | 2 356 |
| | **GDP per capita growth** | **7,6** | **7,9** | **4,7** | **-2,4** | **-11,4** | **3,4** | **3,8** | **1,2** | **4,4** | **6,1** | **5,3** |
| Indonesia | GDP growth | 7,5 | 8,4 | 7,6 | 4,7 | -13,1 | 0,8 | 4,9 | 3,8 | 4,4 | 4,9 | 5,1 |
| | GDP per capita * | 774 | 827 | 878 | 906 | 777 | 773 | 800 | 820 | 844 | 874 | 906 |
| | **GDP per capita growth** | **6,0** | **6,9** | **6,2** | **3,3** | **-14,3** | **-0,6** | **3,6** | **2,5** | **3,0** | **3,5** | **3,7** |

* constant 2000 USD

**Source**: World Bank, *World Development Indicators* database

Table 2. **Macroeconomic Data**

| | Inflation | | Budget surplus (% GDP) | | Savings / GDP | | Investment / GDP | |
|---|---|---|---|---|---|---|---|---|
| | Avg 90-96 | 1996 | Avg 90-96 | 1996 | Avg 90-96 | 1996 | Avg 90-96 | 1996 |
| Korea | 6,4 | 4,9 | -0,5 | 0,2 | 35,4 | 33,9 | 36,5 | 36,8 |
| Malaysia | 4,0 | 3,6 | -0,4 | -0,5 | 34,6 | 40,6 | 37,0 | 42,2 |
| Thailand | 5,1 | 5,9 | 2,6 | 1,5 | 28,6 | 31,5 | 40,3 | 42,5 |
| Indonesia | 8,6 | 6,4 | -0,2 | 0,0 | 28,4 | 30,6 | 33,4 | 32,7 |

**Source**: IMF, JP Morgan (*in* Chang and Velasco, 1998)

Table 3. **Net Private Capital Flows (% GDP)**

| | 1994 | 1995 | 1996 | 1997 | Change 96-97 |
|---|---|---|---|---|---|
| Korea | 1,2 | 0,2 | 4,9 | -6,0 | **-10,9** |
| Malaysia | 1,2 | 6,2 | 8,4 | -3,0 | **-11,4** |
| Thailand | 14,3 | 17,3 | 14,5 | -2,0 | **-16,5** |
| Indonesia | 0,3 | 3,5 | 6,1 | 0,0 | **-6,1** |
| Philippines | 7,9 | 8,4 | 12,7 | 0,4 | **-12,3** |

**Source**: World Bank

Table 4. **Short-term Debt**

| | Short-term external debt as % of total ext. debt | | Short-term external debt to reserves ratio | |
|---|---|---|---|---|
| | June 1990 | June 1997 | June 1994 | June 1997 |
| Korea | 66,5 | 67,9 | 1,61 | 2,06 |
| Malaysia | 25,7 | 56,5 | 0,25 | 0,61 |
| Thailand | 60,2 | 65,7 | 0,99 | 1,45 |
| Indonesia | 51,6 | 59,2 | 1,73 | 1,70 |
| Philippines | 33,3 | 58,8 | 0,41 | 0,85 |

**Source**: IMF, BIS (*in* Chang and Velasco, 1998)

Table 5. **Policy Indicators**

| | | | 1995 | | | | 1997 | | | | 2000 | | | | 2002 | | | | 2003 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Ind | Thai | Malay | Kor | Ind | Thai | Malay | Kor | Ind | Thai | Malay | Kor | Ind | Thai | Malay | Kor | Ind | Thai | Malay | Kor |
| EB2 | EB1 | Liberalisation (prices) | 4,0 | 5,0 | 4,5 | 5,8 | 3,5 | 5,0 | 4,5 | 5,8 | 3,5 | 5,3 | 4,0 | 4,3 | 3,8 | 4,8 | 5,0 | 4,3 | 3,5 | 5,8 | 4,5 | 4,3 |
| | | Gov. interventation | 7,0 | 7,0 | 4,0 | 6,0 | 7,0 | 7,0 | 4,0 | 6,0 | 7,0 | 4,0 | 4,0 | 7,0 | 4,0 | 4,0 | 0,0 | 7,0 | 4,0 | 4,0 | 0,0 | 7,0 |
| | | Stabilisation | 8,0 | 8,8 | 9,0 | 8,9 | 8,7 | 8,3 | 9,5 | 9,1 | 9,3 | 9,7 | 9,7 | 9,6 | 7,7 | 9,9 | 9,6 | 9,4 | 8,7 | 9,6 | 9,8 | 9,3 |
| | | Labour market | 4,8 | 6,2 | 7,4 | 5,0 | 4,8 | 6,2 | 7,4 | 5,0 | 4,2 | 5,5 | 5,8 | 4,5 | 4,6 | 5,6 | 5,8 | 4,3 | 4,9 | 5,5 | 6,2 | 4,6 |
| | | Financial system | 5,3 | 4,8 | 4,5 | 6,1 | 5,3 | 4,8 | 4,5 | 6,1 | 3,5 | 5,3 | 2,7 | 4,4 | 3,5 | 5,3 | 2,7 | 5,6 | 3,5 | 5,3 | 2,7 | 5,6 |
| | | Entry mechanisms | 3,9 | 5,8 | 7,3 | 4,3 | 3,9 | 5,8 | 7,3 | 4,3 | 4,1 | 6,1 | 5,7 | 5,2 | 3,4 | 5,7 | 6,3 | 5,2 | 4,2 | 5,6 | 5,8 | 5,1 |
| | | Liberalisation (trade) | 5,5 | 3,2 | 7,2 | 7,2 | 5,6 | 4,7 | 7,5 | 7,6 | 7,5 | 6,8 | 8,1 | 7,8 | 7,5 | 6,7 | 8,1 | 8,0 | 8,0 | 7,0 | 8,1 | 7,8 |
| | | Capital flows | 7,5 | 7,3 | 7,3 | 4,7 | 7,5 | 7,3 | 7,3 | 4,7 | 8,1 | 7,0 | 6,6 | 7,2 | 5,8 | 7,2 | 7,6 | 7,6 | 6,8 | 6,0 | 8,4 | 7,6 |
| | | FDI | 7,5 | 5,0 | 5,0 | 5,0 | 7,5 | 7,5 | 5,0 | 5,0 | 5,0 | 7,5 | 2,5 | 7,5 | 5,0 | 5,0 | 2,5 | 7,5 | 2,5 | 5,0 | 2,5 | 7,5 |
| | | Infrastructure | 1,8 | 3,8 | 3,8 | 6,0 | 1,8 | 3,7 | 4,2 | 6,3 | 2,1 | 4,2 | 5,7 | 8,6 | 2,3 | 4,6 | 6,1 | 9,4 | 2,4 | 4,7 | 6,1 | 10,0 |
| | | Unemployment benefits | 0,0 | 0,0 | 0,0 | 4,0 | 0,0 | 0,0 | 0,0 | 4,0 | 0,0 | 0,0 | 0,0 | 5,0 | 0,0 | 0,0 | 0,0 | 5,5 | 0,0 | 0,0 | 0,0 | 5,5 |
| | | Exit mechanisms (bankruptcy) | 0,0 | 1,0 | 4,5 | 4,5 | 0,0 | 1,0 | 4,5 | 4,5 | 2,0 | 3,0 | 5,0 | 8,0 | 2,5 | 4,0 | 5,0 | 8,5 | 3,0 | 4,0 | 5,0 | 9,0 |
| IQB | | Property rights | 4,3 | 6,8 | 6,8 | 7,1 | 3,9 | 5,9 | 6,8 | 7,8 | 3,0 | 6,1 | 5,3 | 7,1 | 3,2 | 6,3 | 5,8 | 6,5 | 3,5 | 5,2 | 5,9 | 6,3 |
| | | Political stability | 4,1 | 5,4 | 6,9 | 5,3 | 2,1 | 5,6 | 5,9 | 5,5 | 1,3 | 5,5 | 5,7 | 6,0 | 2,1 | 5,9 | 5,7 | 6,0 | 2,2 | 4,7 | 5,8 | 5,9 |
| | | Voice and accountability | 2,7 | 5,0 | 4,9 | 6,4 | 2,3 | 5,2 | 4,5 | 6,4 | 4,0 | 5,5 | 4,5 | 6,5 | 4,0 | 5,4 | 4,4 | 6,3 | 4,1 | 5,5 | 4,3 | 6,5 |
| | | Control of corruption | 4,1 | 4,4 | 6,0 | 6,1 | 3,1 | 4,5 | 6,5 | 5,2 | 3,0 | 4,4 | 5,6 | 5,7 | 2,7 | 4,4 | 5,7 | 5,7 | 3,2 | 4,5 | 5,6 | 5,3 |
| | | Government effectiveness | 5,4 | 5,9 | 7,1 | 6,3 | 4,0 | 5,2 | 6,6 | 6,0 | 4,2 | 5,4 | 6,4 | 6,3 | 3,9 | 5,6 | 6,9 | 6,8 | 4,3 | 5,8 | 7,0 | 6,9 |
| EB2 | EB1 | $RL_{EB1}$ | 5,94 | 5,90 | 6,24 | 5,88 | 5,98 | 6,28 | 6,34 | 5,96 | 5,80 | 6,35 | 5,45 | 6,37 | 5,04 | 6,01 | 5,28 | 6,54 | 5,13 | 5,98 | 5,34 | 6,53 |
| | | $RC_{EB1}$ | 9,32 | 9,27 | 9,26 | 9,44 | 9,17 | 9,58 | 9,18 | 9,37 | 8,74 | 9,36 | 8,32 | 9,21 | 9,02 | 9,21 | 7,40 | 9,30 | 8,44 | 9,33 | 7,27 | 9,35 |
| | | $ARL_{EB1}$ | 5,54 | 5,47 | 5,78 | 5,55 | 5,48 | 6,02 | 5,82 | 5,58 | 5,07 | 5,95 | 4,53 | 5,87 | 4,54 | 5,53 | 3,91 | 6,09 | 4,33 | 5,58 | 3,88 | 6,10 |
| | | $RL_{EB2}$ | 4,61 | 4,82 | 5,38 | 5,62 | 4,64 | 5,10 | 5,48 | 5,70 | 4,70 | 5,37 | 4,98 | 6,58 | 4,17 | 5,22 | 4,88 | 6,85 | 4,29 | 5,21 | 4,93 | 6,94 |
| | | $RC_{EB2}$ | 7,23 | 7,78 | 8,31 | 9,43 | 7,11 | 7,97 | 8,28 | 9,36 | 7,34 | 8,25 | 7,82 | 9,28 | 7,82 | 8,33 | 7,13 | 9,32 | 7,43 | 8,44 | 7,03 | 9,28 |
| | | $ARL_{EB2}$ | 3,33 | 3,75 | 4,46 | 5,30 | 3,30 | 4,07 | 4,53 | 5,33 | 3,45 | 4,43 | 3,89 | 6,11 | 3,26 | 4,35 | 3,48 | 6,39 | 3,19 | 4,40 | 3,46 | 6,44 |
| IQB | | $RL_{IQB}$ | 4,10 | 5,50 | 6,35 | 6,25 | 3,06 | 5,28 | 6,04 | 6,17 | 3,09 | 5,38 | 5,49 | 6,32 | 3,18 | 5,52 | 5,73 | 6,27 | 3,46 | 5,12 | 5,69 | 6,18 |
| | | $RC_{IQB}$ | 9,49 | 9,73 | 9,80 | 9,89 | 9,24 | 9,90 | 9,78 | 9,73 | 8,78 | 9,87 | 9,84 | 9,93 | 9,38 | 9,85 | 9,77 | 9,95 | 9,46 | 9,89 | 9,72 | 9,91 |
| | | $ARL_{IQB}$ | 3,89 | 5,35 | 6,22 | 6,18 | 2,83 | 5,22 | 5,91 | 6,01 | 2,71 | 5,31 | 5,40 | 6,27 | 2,99 | 5,43 | 5,60 | 6,24 | 3,28 | 5,07 | 5,53 | 6,13 |
| | | $GQ$ | 3,61 | 4,55 | 5,34 | 5,74 | 3,06 | 4,65 | 5,22 | 5,67 | 3,08 | 4,87 | 4,65 | 6,19 | 3,13 | 4,89 | 4,54 | 6,31 | 3,23 | 4,73 | 4,50 | 6,28 |

**Note**: World Bank data used to compute IQB indicators for 1995, 1997 and 2003 refer respectively to 1996, 1998 and 2004

Table 5a: a simple **Infrastructure Index, 2002**

| | Electric power consumption | | Telephone mainlines | | Paved roads | | Internet users | | Index* |
|---|---|---|---|---|---|---|---|---|---|
| | kwh per capita | 0-10 (a) | per 1 000 people | 0-10 (b) | % of total roads | 0-10 (c) | per 1 000 people | 0-10 (d) | 0-10 |
| High-income OECD | **8 769** | **10** | **590** | **10** | **78** | **10** | **408** | **10** | **10** |
| Korea | 6 171 | 7,0 | 489 | 8,3 | 77 | 9,9 | 500 | 12,3 | **9,4** |
| Malaysia | 2 832 | 3,2 | 190 | 3,2 | 78 | 10,0 | 320 | 7,8 | **6,1** |
| Thailand | 1 626 | 1,9 | 105 | 1,8 | 99 | 12,7 | 78 | 1,9 | **4,6** |
| Indonesia | 411 | 0,5 | 37 | 0,6 | 58 | 7,4 | 21 | 0,5 | **2,3** |

* simple average of (a) (b) (c) (d)
**Source**: author's elaboration based on World Bank, *World Development Indicators* database

Table 5b. **Closing a Business in January 2005**

| | Time | | Cost | | Recovery rate | | Bankruptcity process |
|---|---|---|---|---|---|---|---|
| | years | rating 0-10 (a) | % of estate | rating 0-10 (b) | cents on the dollar | rating 0-10 (c) | general rating 0-10 |
| France | 1,9 | | 9,0 | | 47,7 | | |
| USA | 2,0 | | 7,0 | | 76,3 | | |
| **UK** (benchmark) | **1,0** | **10** | **6,0** | **10** | **85,3** | **10** | **10** |
| Korea | 1,5 | 8 | 4,0 | 10 | 81,7 | 9 | **9** |
| Malaysia | 2,2 | 6 | 14,0 | 5 | 38,8 | 4 | **5** |
| Thailand | 2,7 | 5 | 36,0 | 2 | 44,0 | 5 | **4** |
| Indonesia | 5,5 | 1 | 18,0 | 6 | 13,1 | 2 | **3** |

* simple average of (a) (b) (c)
**Source**: author's elaboration based on World Bank, *Doing Business* database

Table 6. **Deep Impact and Policy Indicators**

| | | **EB1 in 1997** | | | **EB2 in 1997** | | | **IQB in 1997** | | | *GQ* in 1997 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | GDPpc growth in 1998 | *RL* | *RC* | *ARL* | *RL* | *RC* | *ARL* | *RL* | *RC* | *ARL* | |
| Korea | -7,5 | 5,96 | 9,37 | 5,58 | 5,70 | 9,36 | 5,33 | 6,17 | 9,73 | 6,01 | 5,67 |
| Malaysia | -9,6 | 6,34 | 9,18 | 5,82 | 5,48 | 8,28 | 4,53 | 6,04 | 9,78 | 5,91 | 5,22 |
| Thailand | -11,4 | 6,28 | 9,58 | 6,02 | 5,10 | 7,97 | 4,07 | 5,28 | 9,90 | 5,22 | 4,65 |
| Indonesia | -14,3 | 5,98 | 9,17 | 5,48 | 4,64 | 7,11 | 3,30 | 3,06 | 9,24 | 2,83 | 3,06 |
| | *correlation* | **0,06** | **0,22** | **0,15** | **0,99** | **0,98** | **1,00** | **0,94** | **0,68** | **0,93** | **0,98** |

**Source**: author's elaboration

Figure 1. **GDP per capita Average Annual Growth Rate, 1987–97 and 1998–2004**

Figure 1a. **Korea 1987-97**

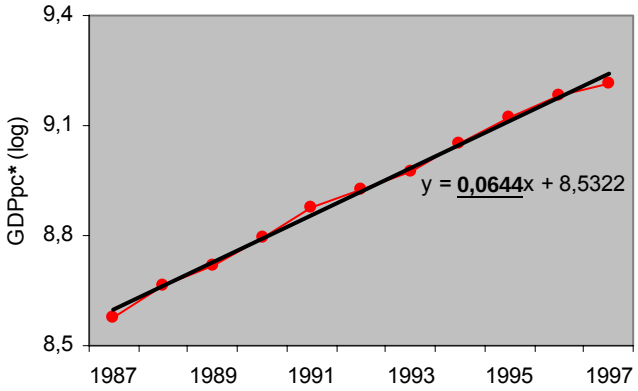



Figure 1c. **Thailand 1987-97**

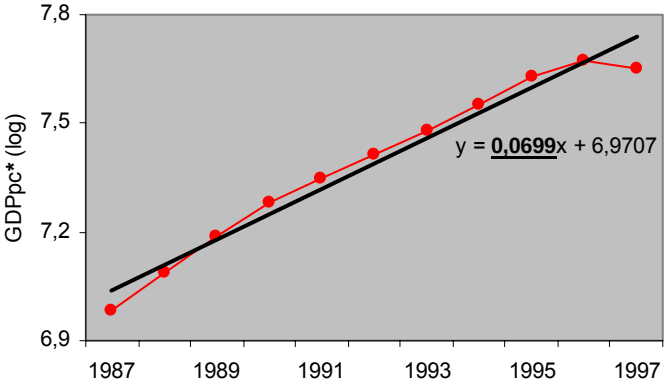



Figure 1b. **Malaysia 1987-97**

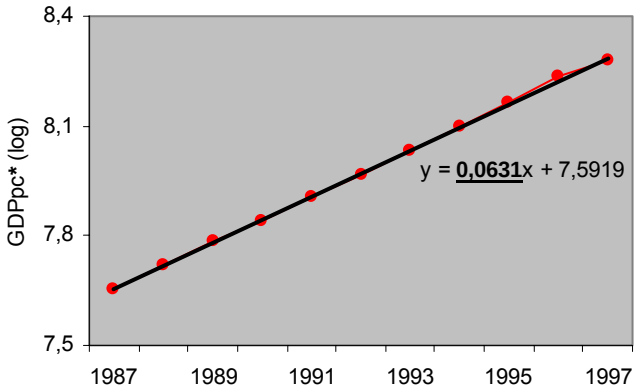
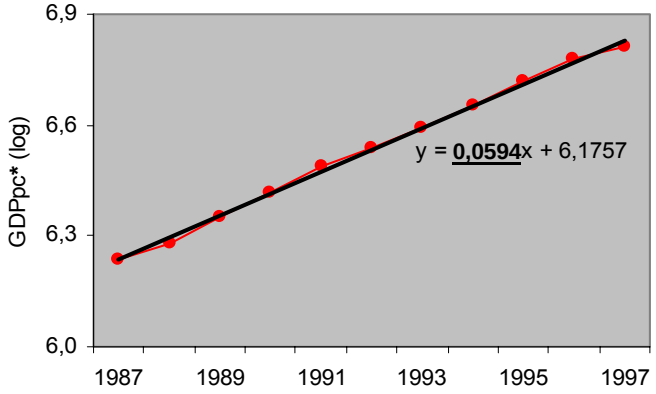



Figure 1d. **Indonesia 1987-97**




**Note:** * constant 2000 USD

**Source:** author's elaboration based on World Bank, *World Development Indicators* database

Figure 1. **GDP per capita Average Annual Growth Rate, 1987–97 and 1998–2004** (cont'd)

Figure 1e. **Korea 1998-2004**

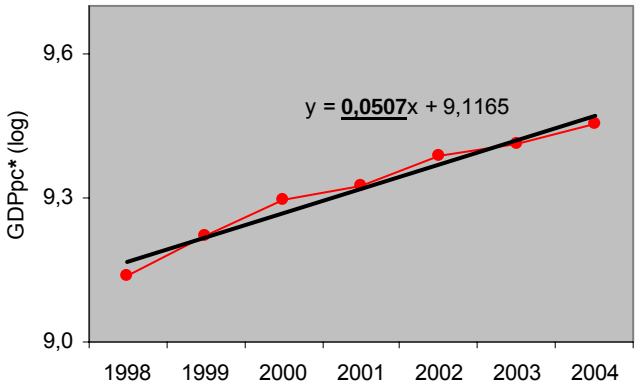



Figure 1g. **Thailand 1998-2004**

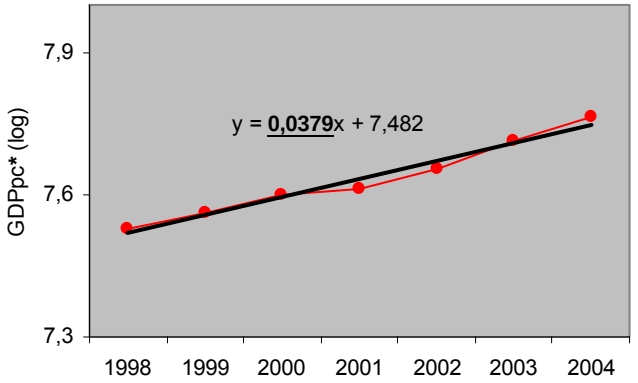



Figure 1f. **Malaysia 1998-2004**

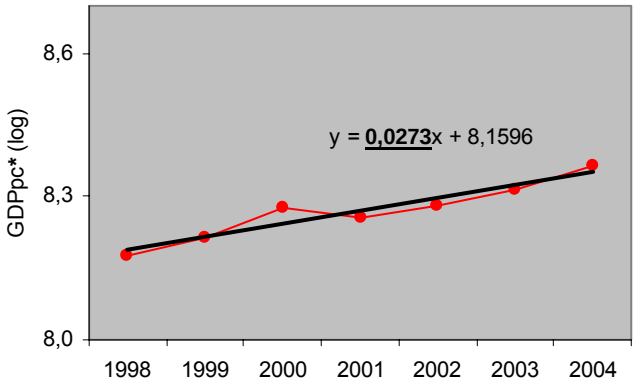
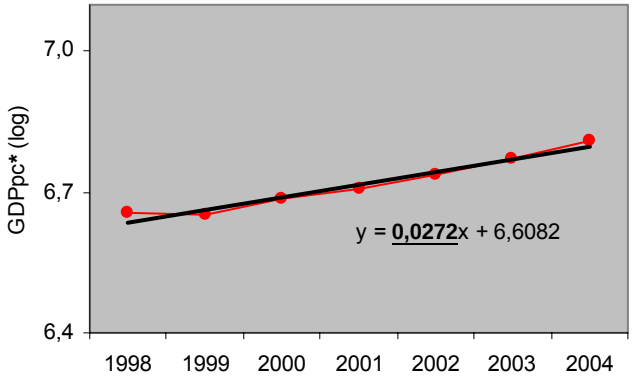


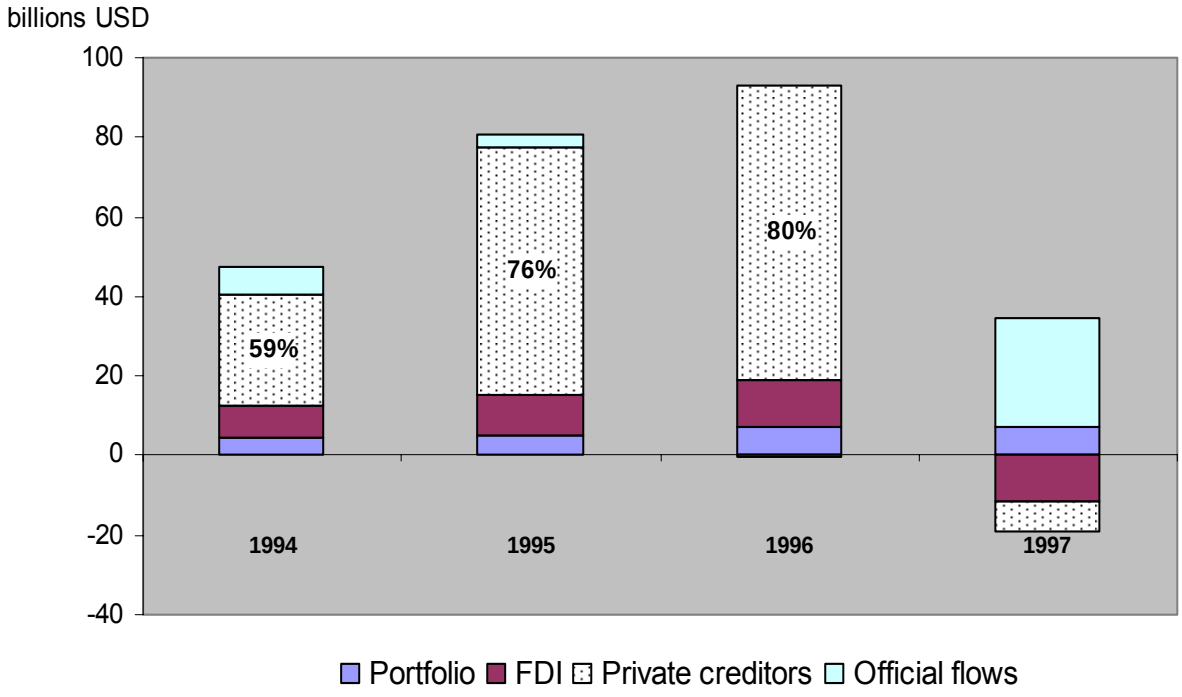

Figure 1h. **Indonesia 1998-2004**




**Note:** * constant 2000 USD

**Source:** author's elaboration based on World Bank, *World Development Indicators* database

Figure 2. **Net Capital Flows in Asian-4 and Philippines**




**Source**: IIF

Figure 3. **Chronology of Devaluations**

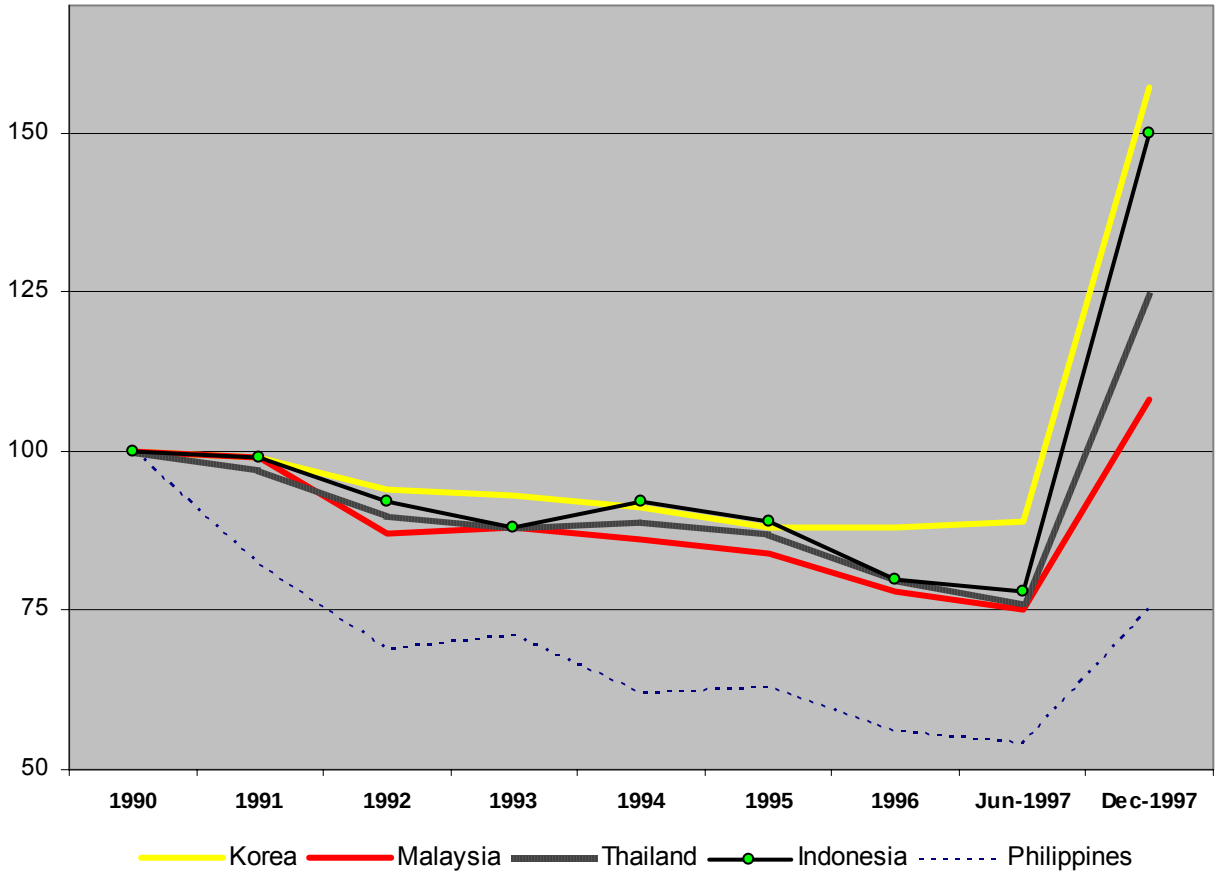
**June 30, 1997**
"We will never devaluate our currency!" (Thailand's Prime Minister)
**July 2**
floating baht (immediate depreciation of 20%)

**July 14**
floating ringgit

**August 14**
floating rupiah

**November 20**
Korea increases the limit for daily depreciation from 2.5% to 10%
**December 16**
floating won

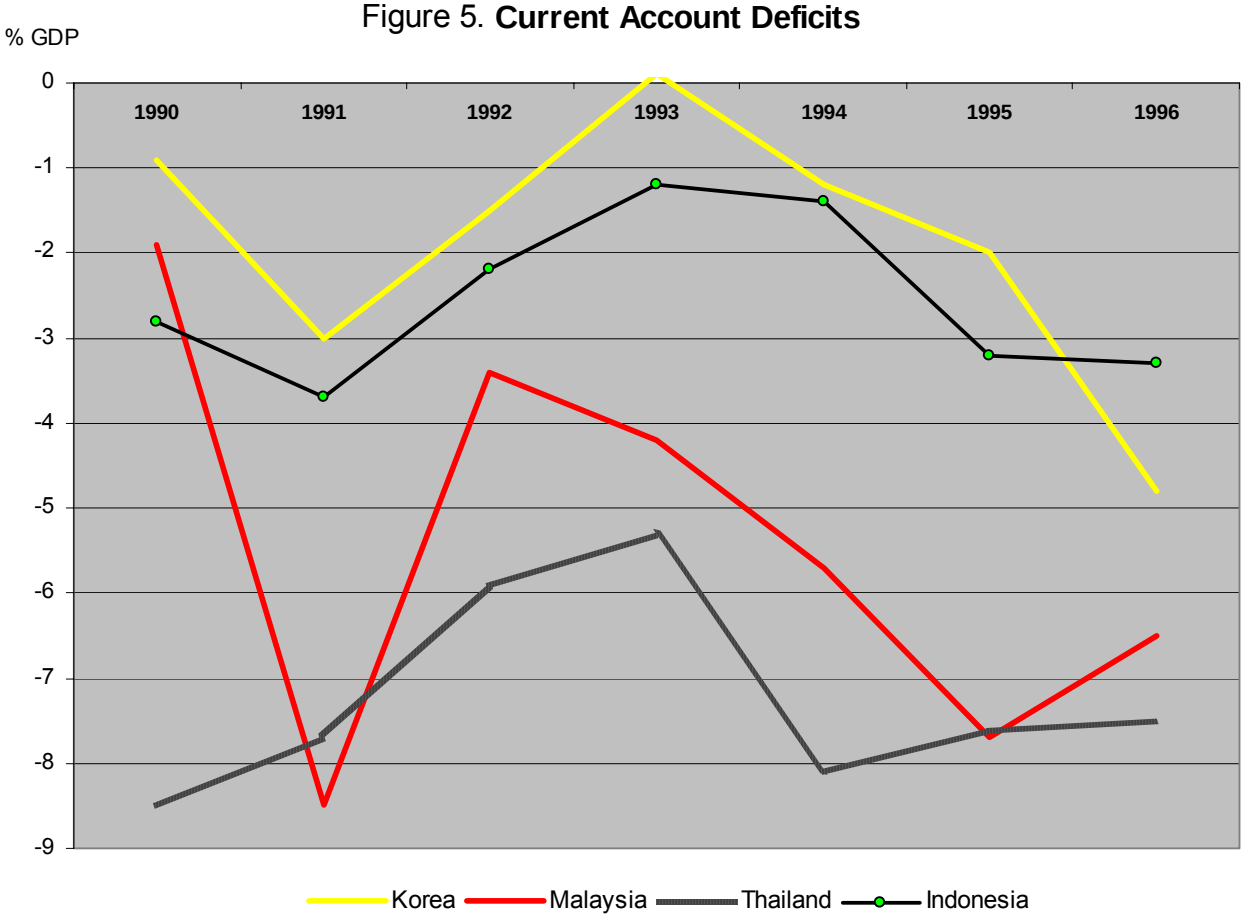
Figure 4. **Real Exchange Index (1997=100) ***




* an increase means depreciation

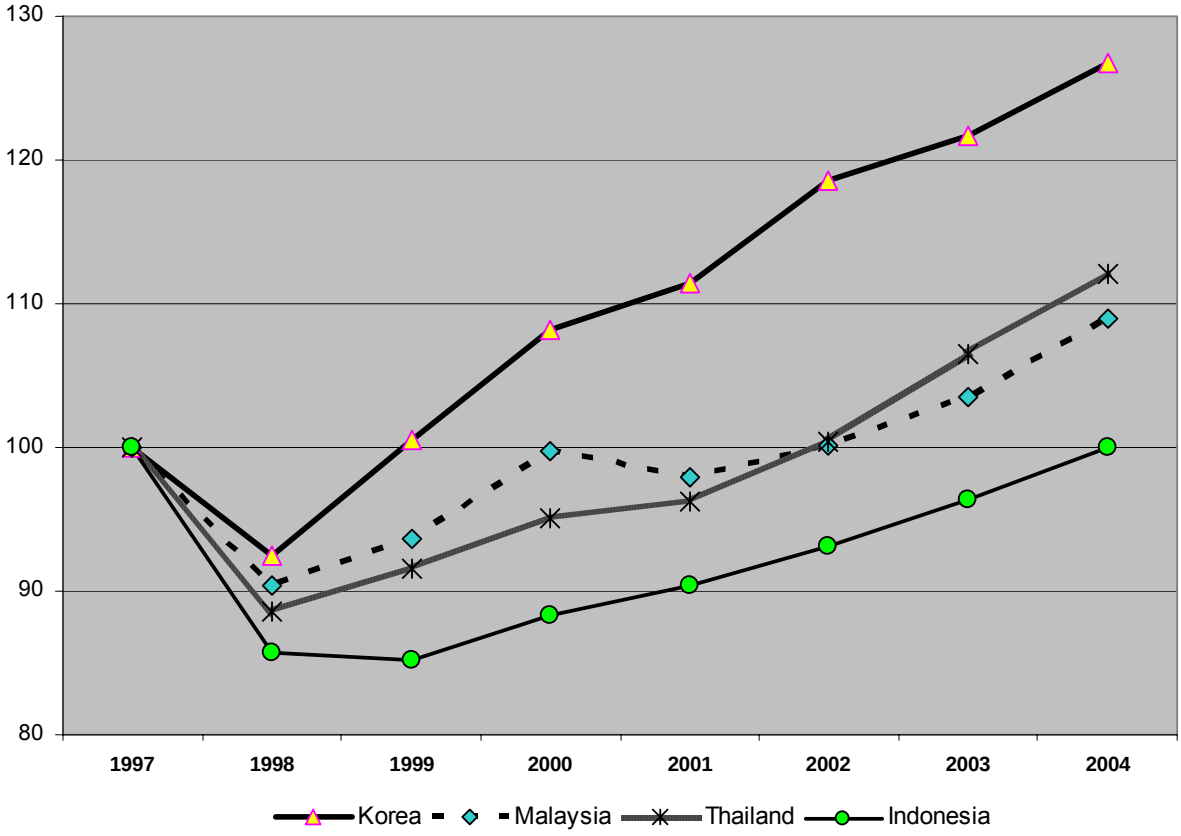
**Source:** Radelet and Sachs, 1998

Figure 5. **Current Account Deficits**




**Source:** IMF

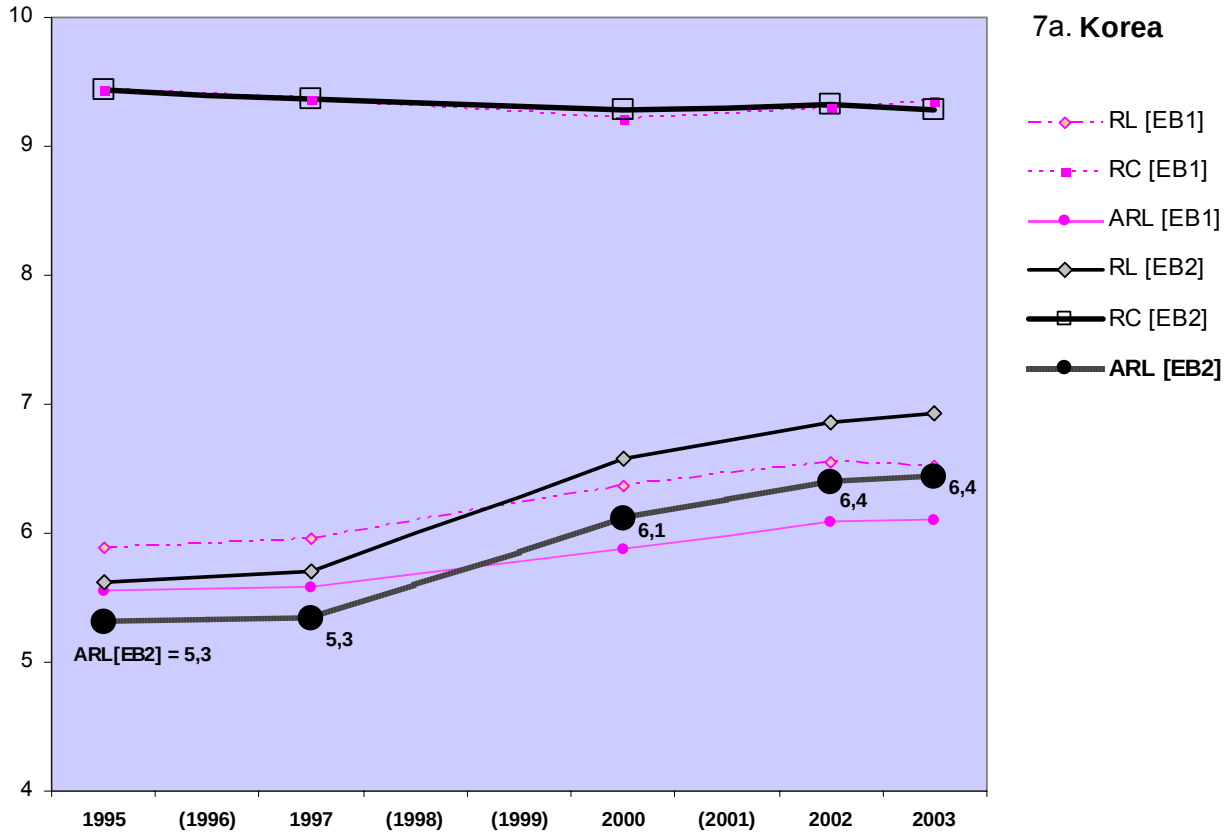
Figure 6. **GDP per capita (1997=100)**




**Note:** constant 2000 USD

**Source:** author's elaboration based on World Bank, *World Development Indicators* database

Figure 7. **Evolution of Policy Indicators**



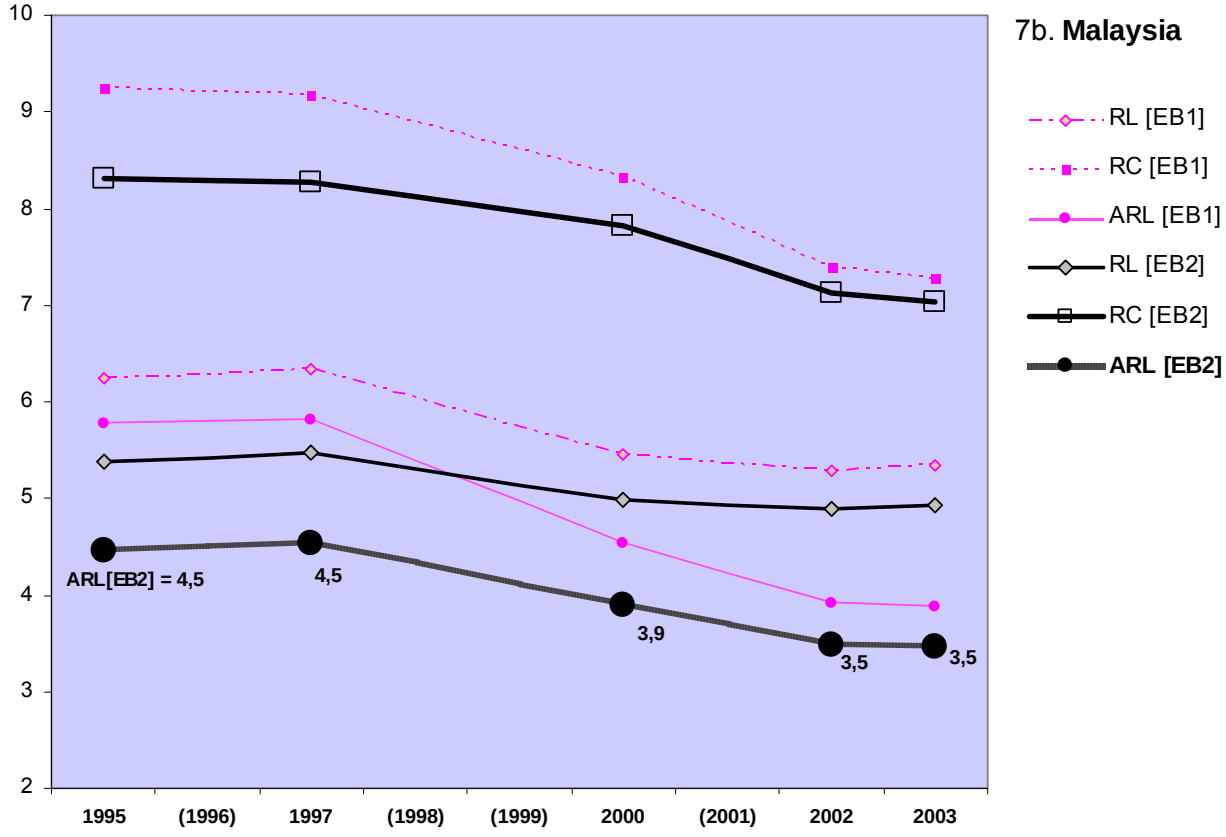
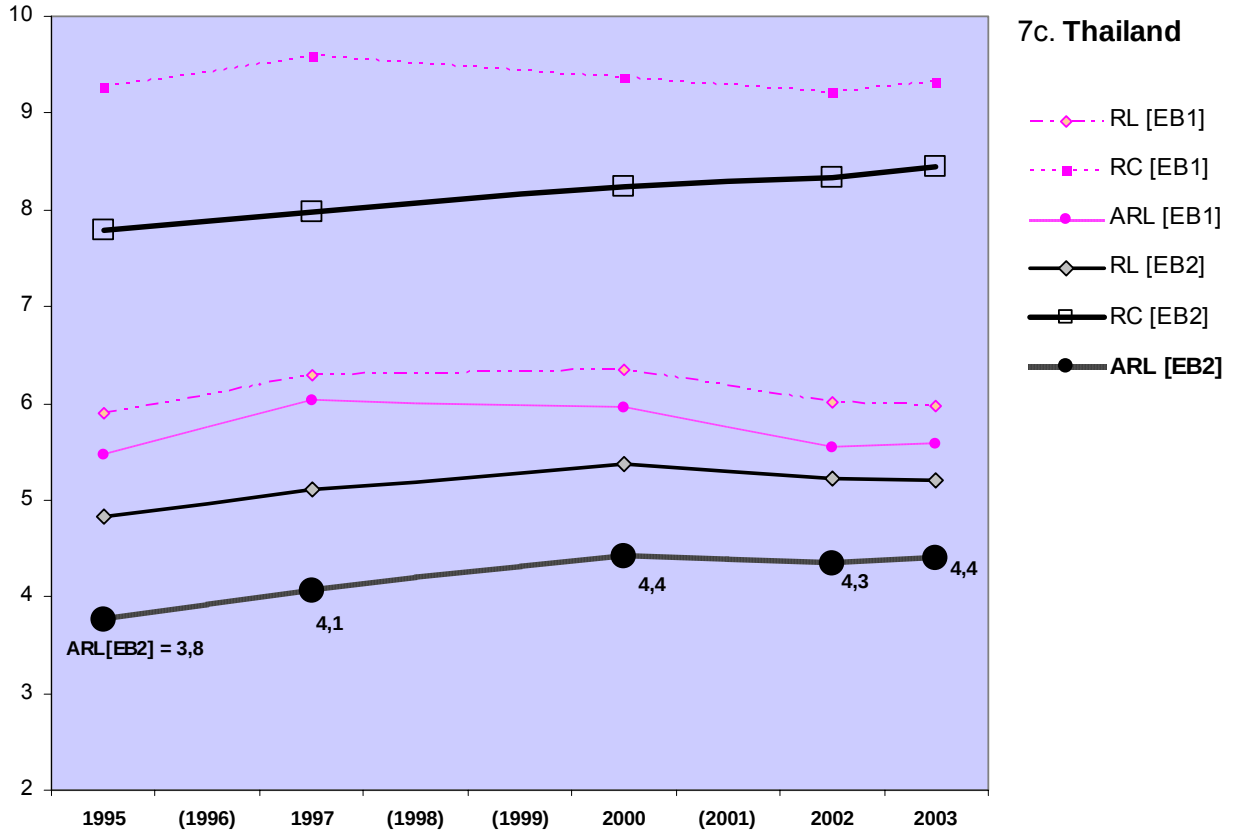



Figure 7. **Evolution of Policy Indicators** (cont'd)



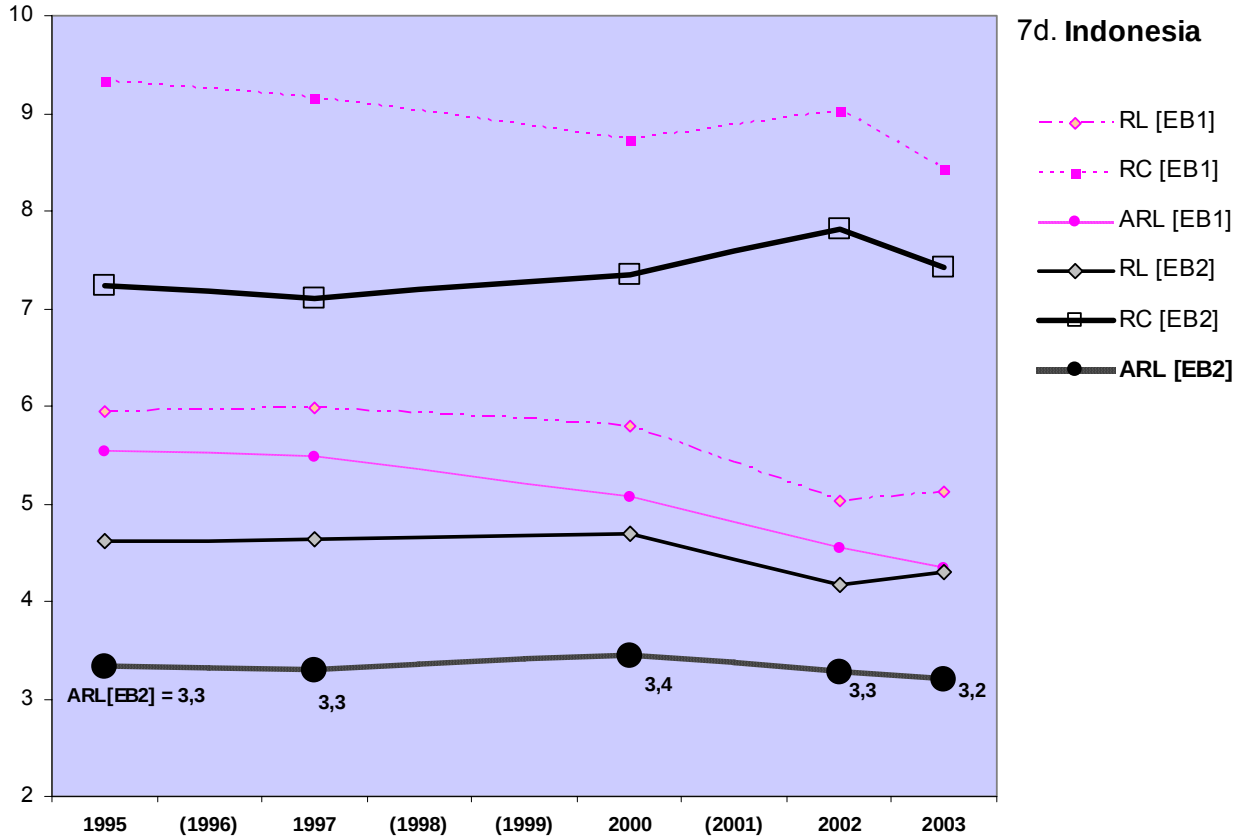
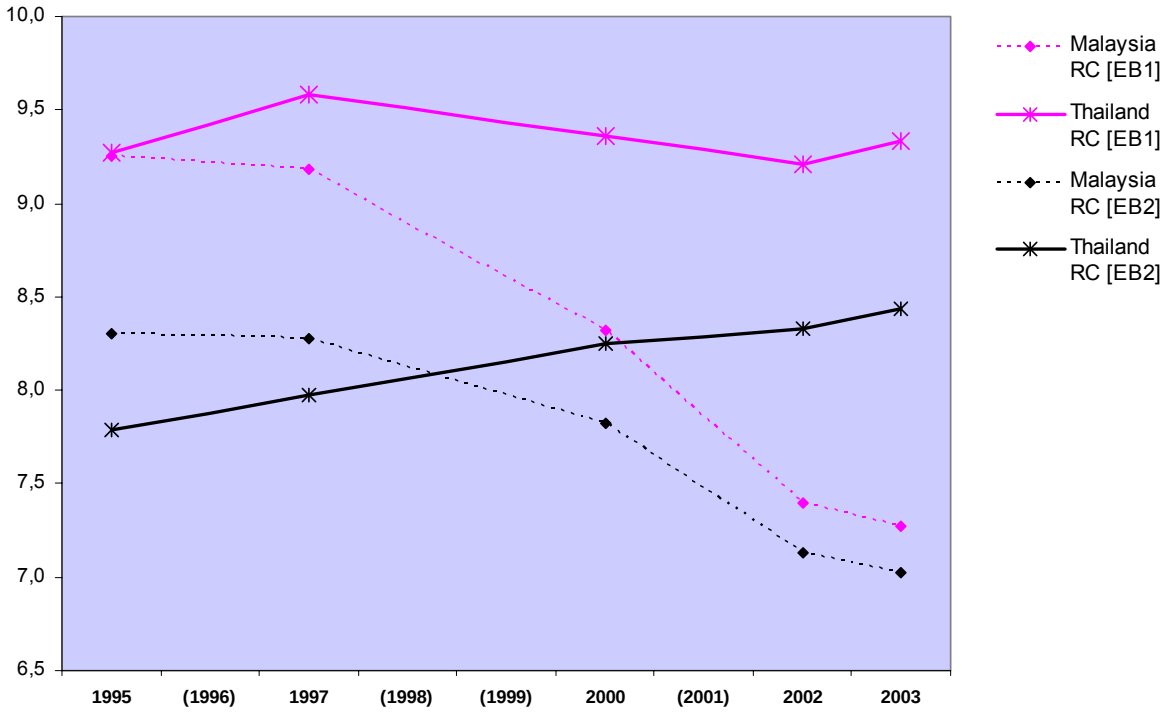
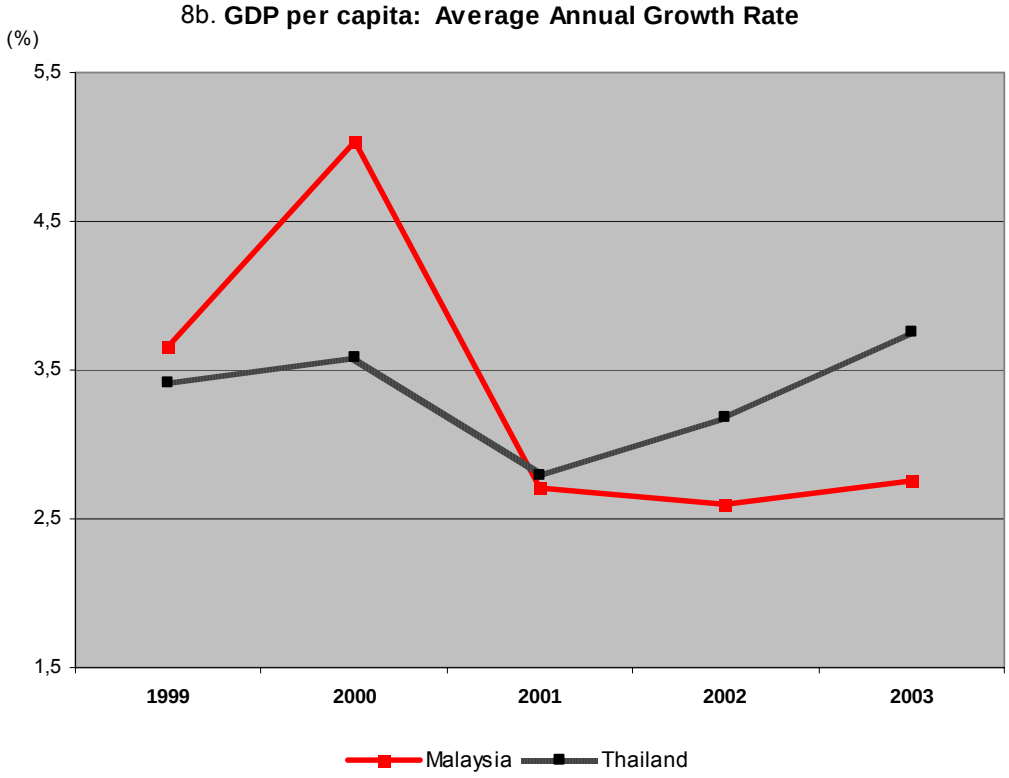



Figure 8. **Malaysia *vs.* Thailand**

8a. **Complementarity in Malaysia and Thailand**



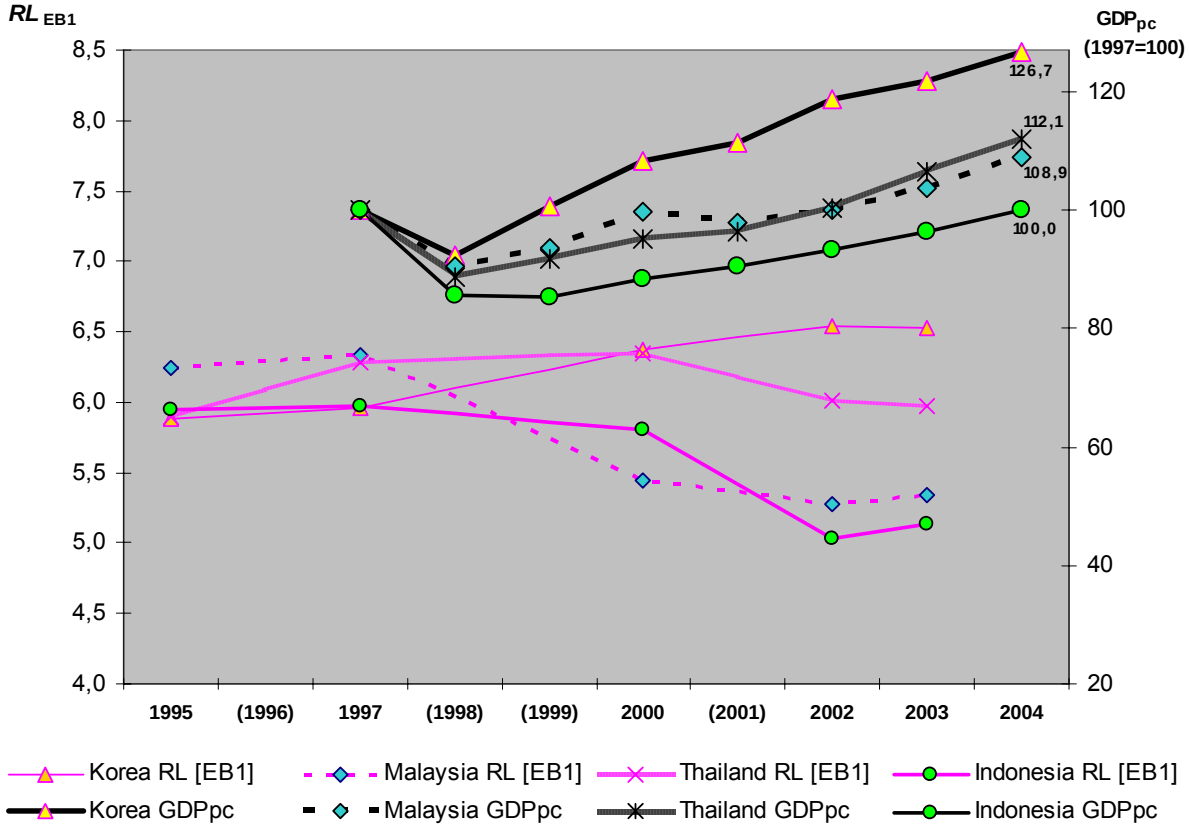

8b. **GDP per capita: Average Annual Growth Rate**



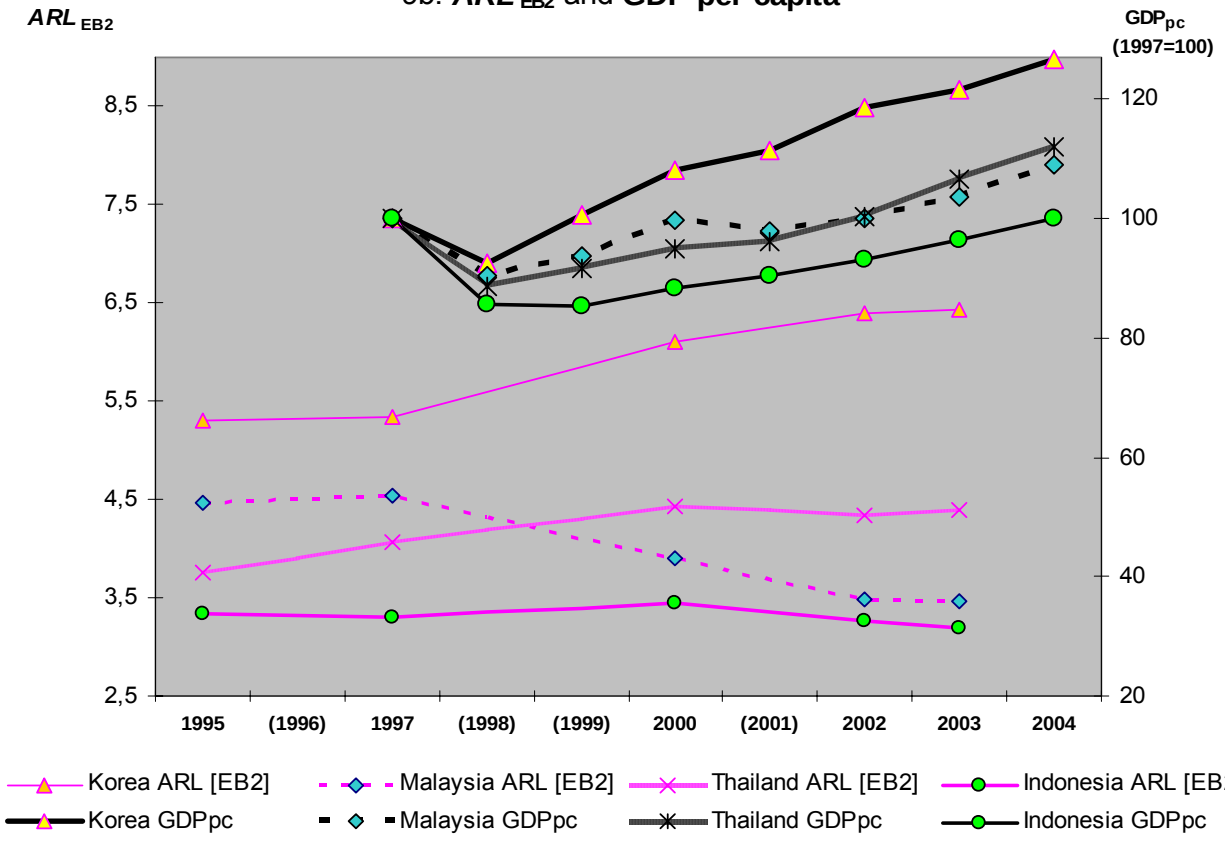

**Note:** constant 2000 USD

Figure 9. ***RL*$_{EB1}$ *vs.* *ARL*$_{EB2}$**

9a. ***RL*$_{EB1}$ and GDP per capita**




9b. ***ARL*$_{EB2}$ and GDP per capita**



Appendix. **Data used to calculate Policy Indicators (Asian-4): Sources and Definitions**

**1. Liberalisation - Prices [EB1]**

| variable name (original database) | weight | scale (orig.) | Description (original database) | Based on: |
|---|---|---|---|---|
| **Fraser 5C1i - Price controls** (extent to which businesses are free to set their own prices) | 0,5 | 0 - 10 | Countries were given a rating of 10 if no price controls or marketing boards were present. When price controls were limited to industries where economies of scale may reduce the effectiveness of competition (e.g., power generation), a country was given a rating of 8. When price controls were applied in only a few other industries, such as agriculture, a country was given a rating of 6. When price controls were levied on energy, agriculture, and many other staple products that are widely purchased by house-holds, a rating of 4 was given. When price controls applied to a significant number of products in both agriculture and manufacturing, the rating was 2. A rating of zero was given when there was widespread use of price controls throughout various sectors of the economy. | International Institute for Management Development (IMD), *World Competitiveness Yearbook*; *Price Waterhouse, Doing Business in...*; Economist Intelligence Unit, *EIU Country Reports* and *Country Commerce*; US State Department, *Country Commercial Guides* and *Country Reports on Economic Policy and Trade Practices*. |
| **Heritage 7 - Wages and prices** | 0,5 | 1 - 5 (1 = no price controls) | This factor looks at which products have prices that are set by the government and whether the government has a minimum wage policy or otherwise influences wages. The factor's scale measures the relative degree of government control over wages and prices. A "very low" score of 1 represents wages and prices that are set almost completely by the market, whereas a "very high" score of 5 means that wages and prices are set almost completely by the government. | Economist Intelligence Unit, *Country Commerce*, *Country Profile*, and *Country Report*; official government publications of each country; U.S. Department of Commerce, *Country Commercial Guide;* U.S. Department of State, *Country Reports on Human Rights Practices*. |

**2. (less) Government intervention [EB1]**

| variable name (original database) | weight | scale (orig.) | Description (original database) | Based on: |
|---|---|---|---|---|
| **Fraser 1C - Government enterprises and investment as a percentage of total investment** | 1,0 | 0 - 10 | Countries with more government enterprises and government investment received lower ratings. When there were few State Operated Enterprises (SOEs) and government investment was generally less than 15% of total investment, countries were given a rating of 10. When there were few SOEs other than those involved in industries where economies of scale reduce the effectiveness of competition (e.g., power generation) and government investment was between 15% and 20% of the total, countries received a rating of 8. When there were, again, few SOEs other than those involved in energy and other such industries and government investment was between 20% and 25% of the total, countries were rated at 7. When SOEs were present in the energy, transportation, and communication sectors of the economy and government investment was between 25% and 30% of the total, countries were assigned a rating of 6. When a substantial number of SOEs operated in many sectors, including manufacturing, and government investment was generally between 30% and 40% of the total, countries received a rating of 4. When numerous SOEs operated in many sectors, including retail sales, and government investment was between 40% and 50% of the total, countries were rated at 2. A rating of zero was assigned when the economy was dominated by SOEs and government investment exceeded 50% of total investment. | World Bank, *World Development Indicators*; World Bank Policy Research Report, *Bureaucrats in Business* (1995); OECD, *Economic Surveys*; L. Bouten and M. Sumlinski, *Trends in Private Investment in Developing Countries: Statistics for 1970–1995*. |

**3. Stabilisation [EB1]** (cont'd

| variable name (original database) | weight | scale (orig.) | Description (original database) | Based on: |
|---|---|---|---|---|
| **Fraser 3C - Recent inflation rate** | 1,0 | 0 - 10 | Generally, the CPI was used as the measure of inflation for this component. The zero-to-10 country ratings were derived by the following formula: $(V_{max} - V_i) / (V_{max} - V_{min})$ multiplied by 10. $V_i$ represents the rate of inflation during the most recent year. The values for $V_{min}$ and $V_{max}$ were set at zero and 50%, respectively—the lower the rate of inflation, the higher the rating. Countries that achieve perfect price stability earn a rating of 10. As the inflation rate moves toward a 50% annual rate, the rating for this component moves toward zero. A zero rating is assigned to all countries with an inflation rate of 50% or more. | World Bank, *World Development Indicators*; International Monetary Fund, *International Financial Statistics*. |

**4. Labour market [EB1]**

| variable name (original database) | weight | scale (orig.) | Description (original database) | Based on: |
|---|---|---|---|---|
| **Fraser 5Bi - Impact of minimum wage** (the minimum wage, set by law, has little impact on wages because it is too low or not obeyed) | 0,3 | 0 - 10 | This component is based on two survey responses obtained from the *Global Competitiveness Report 2001–2002*. The first question asked about the overall "impact of the minimum wage." The second question asked about the strength of enforcement of the minimum wage law. Countries received higher ratings if the survey respondents indicated the minimum wage had a small impact and / or was not strongly enforced. Countries received lower ratings if the impact was deemed to be great and / or if the law was strongly enforced. | World Economic Forum, *Global Competitiveness Report*. |
| **Fraser 5Bii - Hiring and firing practices** | 0,3 | 0 - 10 | Hiring and firing practices of companies are determined by private contract. | World Economic Forum, *Global Competitiveness Report*. |
| **Fraser 5Biii - Centralized collective bargaining** | 0,3 | 0 - 10 | Share of labour force whose wages are not set by centralized collective bargaining. | World Economic Forum, *Global Competitiveness Report*. |
| **Fraser 5Bv - Use of conscripts to obtain military personnel** | 0,1 | 0 - 10 | Data on the use and duration of military conscription were used to construct rating intervals. Countries with longer conscription periods received lower ratings. A rating of 10 was assigned to countries without military conscription. When length of conscription was six months or less, countries were given a rating of 5. When length of conscription was more than six months but not more than 12 months, countries were rated at 3. When length of conscription was more than 12 months but not more than 18 months, countries were assigned a rating of 1. When conscription periods exceeded 18 months, countries were rated zero. | International Institute for Strategic Studies, *The Military Balance.* |

(cont'd)

**5. Financial system [EB1]**

| variable name (original database) | weight | scale (orig.) | Description (original database) | Based on: |
|---|---|---|---|---|
| **Heritage 6 - Banking and finance** | 0,667 | 1 - 5 (1 = very low restrictions) | The banking and finance factor measures the relative openness of a country's banking and financial system. The authors score this factor by determining specifically whether foreign banks and financial services firms are able to operate freely, how difficult it is to open domestic banks and other financial services firms, how heavily regulated the financial system is, how great the presence of state-owned banks is, whether the government influences the allocation of credit, and whether banks are free to provide customers with insurance and invest in securities (and vice versa).<br><br>Score 1: Government provides financial sector with prudent regulatory supervision by an independent central bank; government may be active in some financial institutions but must comprise a very minor role in terms of total market share; credit allocated on market terms; foreign financial institutions able to operate freely and treated the same as domestic financial institutions; banks may engage in all types of financial services. Score 5: Very heavy government involvement in financial sector; nearly all financial institutions owned or controlled by government; financial institutions in crisis or collapse, or banks operate on primitive basis; nearly all credit controlled by government; most credit extended to state-owned enterprises; corruption widespread; foreign financial institutions prohibited; bank formation virtually nonexistent. | Economist Intelligence Unit, *Country Commerce*, *Country Profile*, and *Country Report*; official government publications of each country; U.S. Department of Commerce, *Country Commercial Guide*. |
| **Fraser 5Aii - Competition**<br>(domestic banks face competition from foreign banks) | 0,167 | 0 - 10 | If a country approved all or most foreign bank applications and if foreign banks had a large share of the banking sector assets, then the country received a higher rating. | World Economic Forum, *Global Competitiveness Report*; World Bank, *Survey of Bank Regulation and Supervision*. |
| **Fraser 5Av - Interest rate controls** | 0,167 | 0 - 10 | Interest rates on bank deposits and / or loans are freely determined by the market. | World Economic Forum, *Global Competitiveness Report*. |

(cont'd)

**6. Entry mechanisms [EB1]**

| variable name (original database) | weight | scale (orig.) | Description (original database) | Based on: |
|---|---|---|---|---|
| **Fraser 5Civ -Starting a new business** | 0,5 | 0 - 10 | Starting a new business is generally easy | World Economic Forum, *Global Competitiveness Report*. |
| **Heritage 9 - Regulation** | 0,5 | 1 - 5 (1 = very easy to open and operate a business) | This factor measures how easy or difficult it is to open and operate a business. The more regulations are imposed on business, the harder it is to establish one. The factor also examines the degree of corruption in government and whether regulations are applied uniformly to all businesses. Another consideration is whether the country has state planning agencies that set production limits and quotas. The scale establishes a set of conditions for each of the five possible grades. These conditions also include the extent of government corruption, how uniformly regulations are applied, and the extent to which regulations impose a burden on business. A "very low" score of 1 indicates that corruption is virtually nonexistent and regulations are minimal and applied uniformly; a "very high" score of 5 indicates that corruption is widespread, regulations are applied randomly, and the general level of regulation is very high. A country need only meet a majority of the conditions for a particular score to receive that score. | Economist Intelligence Unit, *Country Commerce* and *Country Report*; official government publications of each country; U.S. Department of Commerce, *Country Commercial Guide*; Office of the U.S. Trade Representative, *National Trade Estimate Report on Foreign Trade Barriers*. |

**7. Liberalisation - Trade [EB1]**

| variable name (original database) | weight | scale (orig.) | Description (original database) | Based on: |
|---|---|---|---|---|
| **Fraser 4Aii - Mean tariff rate** | 0,667 | 0 - 10 | The formula used to calculate the zero-to-10 rating for each country was: $(V_{max} - V_i) / (V_{max} - V_{min})$ multiplied by 10. $V_i$ represents the country's mean tariff rate. The values for $V_{min}$ and $V_{max}$ were set at 0% and 50%, respectively. This formula will allocate a rating of 10 to countries that do not impose tariffs. As the mean tariff rate increases, countries are assigned lower ratings. The rating will decline toward zero as the mean tariff rate approaches 50%. | World Bank, *World Development Indicators*; OECD, *Indicators of Tariff and Non-tariff Trade Barriers* (1996); J. Michael Finger *et al*, *Statistics on Tariff Concessions Given and Received* (1996); Judith M. Dean *et al*, T*rade Policy Reform in Developing Countries since 1985: A Review of the Evidence* (1994); others. |
| **Fraser 4Bi - Hidden import barriers** | 0,167 | 0 - 10 | No barriers other than published tariffs and quotas. | World Economic Forum, *Global Competitiveness Report*. |
| **Fraser 4Bii - Costs of importing** | 0,167 | 0 - 10 | Combined effect of import tariffs, license fees, bank fees, and the time required for administrative red-tape raises costs of importing equipment (by 10% or less = score of 10; by more than 50% = score of 0). | World Economic Forum, *Global Competitiveness Report*. |

**8. Capital flows [EB1]**

| variable name (original database) | weight | scale (orig.) | Description (original database) | Based on: |
|---|---|---|---|---|
| **Fraser 4Ei - International capital market controls** | 1,0 | 0 - 10 | Access of citizens to foreign capital markets and foreign access to domestic capital markets. | World Economic Forum, *Global Competitiveness Report*. |

**9. Foreign Direct Investment [EB1]**

| variable name (original database) | weight | scale (orig.) | Description (original database) | Based on: |
|---|---|---|---|---|
| **Heritage 5 - Foreign Investment** | 1,0 | 1 - 5 (1 = very low barriers to foreign invest.) | This factor scrutinizes each country's policies toward foreign investment in order to determine its overall investment climate. Questions examined include whether there is a foreign investment code that defines the country's investment laws and procedures; whether the government encourages foreign investment through fair and equitable treatment of investors; whether there are restrictions on access to foreign exchange; whether foreign firms are treated the same as domestic firms under the law; whether the government imposes restrictions on payments, transfers, and capital transactions; and whether specific industries are closed to foreign investment. This analysis helps to develop an overall description of the country's investment climate. The authors then grade each country based on those variables. | International Monetary Fund, *Annual Report on Exchange Arrangements and Exchange Restrictions*; official government publications of each country; Economist Intelligence Unit, *Country Commerce*, *Country Profile*, and *Country Report*; Office of the U.S. Trade Representative, *National Trade Estimate Report on Foreign Trade Barriers*; U.S. Department of Commerce, *Country Commercial Guide*. |

**10. Infrastructure [EB2]**

| variable name | weight | scale | Description | Based on: |
|---|---|---|---|---|
| **Author's calculations: Infrastructure index** | 1,0 | 0 - 10 | The variables used to compute this index were electric power consumption, percentage of paved roads, proportion of internet users, and telephone mainlines per thousand people. High-income OECD countries are the benchmark. See Table 5a. | World Bank, *World Development Indicators.* |

**11. Unemployment benefits (social safety net) [EB2]**

| variable name | weight | scale | Description | Based on: |
|---|---|---|---|---|
| **Author's rating** | 1,0 | 0 - 10 | See section III.D.2.a.ii | See section III.D.2.a.ii |

**12. Exit mechanisms (bankruptcy) [EB2]**

| variable name | weight | scale | Description | Based on: |
|---|---|---|---|---|
| **Author's rating** | 1,0 | 0 - 10 | See section III.D.2.a.ii | See section III.D.2.a.ii |

**13. Property rights [IQB]**

| variable name (original database) | weight | scale (orig.) | Description (original database) | Based on: |
|---|---|---|---|---|
| **Fraser 2ABC - Legal structure and security of property rights** | 0,333 | 0 - 10 | A - Judicial independence, the judiciary is independent and not subject to interference by the government or parties in disputes; B - Impartial courts, a trusted legal framework exists for private businesses to challenge the legality of government actions or regulations; C - Protection of intellectual property. | World Economic Forum, *Global Competitiveness Report*. |
| **Heritage 8 - Property rights** | 0,333 | 1-5 (1 = very high protection of private property) | This factor scores the degree to which a country's laws protect private property rights and the degree to which its government enforces those laws. It also assesses the likelihood that private property will be expropriated and analyzes the independence of the judiciary, the existence of corruption within the judiciary, and the ability of individuals and businesses to enforce contracts. The less certain the legal protection of property, the higher a country's score; similarly, the greater the chances of government expropriation of property, the higher a country's score. | Economist Intelligence Unit, *Country Commerce*; U.S. Department of Commerce, *Country Commercial Guide*; U.S. Department of State, *Country Reports on Human Rights Practices*. |
| **World Bank - Rule of Law** | 0,333 | -2.5 - 2.5 | Includes several indicators which measure the extent to which agents have confidence in and abide by the rules of society. These include perceptions of the incidence of crime, the effectiveness and predictability of the judiciary, and the enforceability of contracts. Together, these indicators measure the success of a society in developing an environment in which fair and predictable rules form the basis for economic and social interactions, and importantly, the extent to which property rights are protected. | World Bank, *Governance Indicators 1996-2004.* |

**14. Political stability [IQB]**

| variable name (original database) | weight | scale (orig.) | Description (original database) | Based on: |
|---|---|---|---|---|
| **World Bank - Political stability** | 1,0 | 0 - 10 | In this index the authors combine several indicators which measure perceptions of the likelihood that the government in power will be destabilized or overthrown by possibly unconstitutional and/or violent means, including domestic violence and terrorism. | World Bank, *Governance Indicators 1996-2004.* |

(cont'd)

**15. Voice and accountability [IQB]**

| variable name (original database) | weight | scale (orig.) | Description (original database) | Based on: |
|---|---|---|---|---|
| **World Bank - Voice and accountability** | 1,0 | 0 - 10 | Includes a number of indicators measuring various aspects of the political process, civil liberties and political rights. These indicators measure the extent to which citizens of a country are able to participate in the selection of governments. | World Bank, *Governance Indicators 1996-2004.* |

**16. Control of corruption [IQB]**

| variable name (original database) | weight | scale (orig.) | Description (original database) | Based on: |
|---|---|---|---|---|
| **World Bank - Control of corruption** | 1,0 | 0 - 10 | Measures the exercise of public power for private gain, including both petty and grand corruption and state capture. | World Bank, *Governance Indicators 1996-2004.* |

**17. Government effectiveness [IQB]**

| variable name (original database) | weight | scale (orig.) | Description (original database) | Based on: |
|---|---|---|---|---|
| **World Bank - Government effectiveness** | 1,0 | 0 - 10 | The authors combine responses on the quality of public service provision, the quality of the bureaucracy, the competence of civil servants, the independence of the civil service from political pressures, and the credibility of the government's commitment to policies. The main focus of this index is on "inputs" required for the government to be able to produce and implement good policies and deliver public goods. | World Bank, *Governance Indicators 1996-2004.* |