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At Different Speeds: Policy Complementarities and the Recovery from the Asian Crisis

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ABSTRACT

This paper begins with a short review and discussion of the literature on policy complementarities and their implications in terms of (sustainable) growth strategies and the possible emergence of a new policymaking paradigm. Then, it provides a descriptive analysis of the effect on economic growth of complementarities in structural policies in the specific context of the post-Asian crisis recovery. The study resulted in the computation of a reform-level indicator and of a complementarity indicator *RC* for the economies most affected by the Asian crisis—Indonesia, Republic of Korea, Malaysia, and Thailand. The comparative analysis shows that these indicators, when applied to a more comprehensive group of policy areas, are related to faster recoveries; importantly, decreasing or low *RC*s are related to slower recoveries. Furthermore, immediate resilience to the crisis seems to be stronger when a broader, more coherent set of policies is already in place. In general, the analysis suggests that while augmenting the levels of the so-called orthodox policies is necessary, it is not sufficient to generate high, sustainable post-crisis growth trajectories, as those policies must be complemented with others and evolve in a coherent, complementary way.

Keywords: complementarity, structural reforms, growth, recovery, Asian crisis.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

At Different Speeds: Recovering from the Asian Crisis

On the importance of policy complementarities for (post-crisis) growth

Bruno Rocha

1. Introduction

In the 1980s and 1990s, a set of liberal reforms was implemented in many developing countries. The effect of these policies on growth is a matter of considerable controversy. Rodrik (2004) recalled that in Latin America, for instance, fiscal discipline, privatization, and openness to trade have resulted in much poorer economic performance than that experienced under import substitution. Today, after several crises in emerging economies and somewhat disappointing growth rates, most observers agree that one-size-fits-all reform recipes—that is, to *stabilize, liberalize, and privatize*—were insufficient.

In many ways, one may regard the East Asian crisis as one more episode in the story of failure of that "orthodox" and simplistic reform agenda. The most-affected countries—Indonesia, Republic of Korea, Malaysia, and Thailand[1]—were among the most rapidly growing economies in the world. Just before the crisis, in 1996 growth rates for these economies ranged from 5.9% in Thailand to 10% in Malaysia; in 1995, the lowest rate of growth among these four economies was 8.4% in Indonesia (Table 1). Moreover, the so-called Asian tigers had remarkable economic indicators (Table 2). Inflation and fiscal deficits were low. Ambitious privatization programs were undertaken in Indonesia and Thailand. In addition, by then, the four countries had already discarded the pure import-substitution strategy of the 1960s in favor of policies promoting trade openness. And, also in accordance with the above-mentioned conventional agenda, their capital accounts were liberalized.

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

Table 1: Growth and GDP Per Capita

		1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Republic of 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**

GDP = gross domestic product

Note: * = constant 2000 US$

Source: World Bank, *World Development Indicators*

Table 2: Macroeconomic Data

	Inflation (%)		Budget Surplus (% GDP)		Savings / GDP (%)		Investment / GDP (%)	
	Avg 1990-1996	1996	Avg 1990-1996	1996	Avg 1990-1996	1996	Avg 1990-1996	1996
Republic of 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

GDP = gross domestic product

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

Many complementary reforms, however—good bankruptcy laws, social safety nets, and adequate investment in infrastructure, for instance—were not put in place. These missing links are important to explaining the impact of the crisis in the different countries and the speed of their respective recoveries. Using the East Asian crisis as a case study provides an opportunity to analyze immediate responses and growth trajectories after an event and pre-event situations that were, in general terms, similar in the countries considered here.

The remainder of this paper is divided into two sections. The first section reviews—at both the theoretical and empirical levels—some of 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 countries being considered (section 3.2), sketches a stylized picture of the recovery process (section 3.3), and presents a comparative analysis relating immediate resilience and recovery speeds to computed policy indicators (section 3.4)—focusing especially on a complementarity indicator and a reform-level indicator adjusted for complementarity. The paper ends with a brief synopsis and some final thoughts.

2. Second-Best, Policy Complementarities, and Growth

2.1 *Theoretical Background*

As Bergstrom (2002) pointed out, one of the more disconcerting results in the theory of welfare economics was articulated by Lipsey and Lancaster (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 is to eliminate all distortions at once. In 1970, Foster and Sonnenschein proved that under reasonably general circumstances, at least one kind of piecemeal reform—a radial one (i.e., made of proportional reductions in all distortions)—would improve welfare.[2]

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 creating a common definition of proportional reduction in very different policy areas would be extremely difficult.

[2] Rader (1976) generalized this result, making it less dependent on initial conditions. 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).

A less demanding framework is thus required. According to Macedo and Martins (2008), engaging several reforms in parallel reflects the idea that reforms are mutually interdependent and, therefore, complementary. This goes back to 19th century economist Francis Edgeworth, who developed the notion of complementarity: 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 generalized in such a way that it does not require any particular differentiability or convexity assumptions—the modern concept of supermodularity[3] stipulates that a change in only one coordinate of a system is less than the change associated with a parallel move across several dimensions. This is to say that raising one variable increases the return to raising another.

The basic idea is easy to formalize. 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:

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

This means that, for y, the return of moving from minimum ($\bar{x}$, $\bar{y}$) to ($\bar{x}$,y) is less than of moving from ($\bar{x}$, y) to the maximum (x, y) (and symmetrically for x). Or, in other words, 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, optimizing can be achieved by increasing all reforms in parallel (but not necessarily in the same proportion, as in radial reductions in distortions).

2.2 *Complementarities and Policymaking*

There are many practical examples that illustrate the importance of policy complementarities. In transition countries, for instance, if an economy becomes more liberalized (i.e., the proportion of prices determined by the market increases dramatically) but a policy of stabilization is not undertaken simultaneously, then inflation may accelerate. This happens because demand pressures become immediately real and measurable.

Or, if a country liberalizes 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. Appendix A is not intended to be exhaustive, but nevertheless provides several examples of policy complementarities. Virtually all possible pair combinations of policies may be understood as being complementary.

By stepping out of a more Walrasian world—that is, a world of more efficient (static) allocations of resources—it is possible to integrate technical progress in this framework. For example, a low inflation environment can permit larger investment horizons and, if the financial sector is sound and competitive, contribute to augmenting the number of financed research and development projects. In addition, 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 more developed countries, as well as to finance higher-level education and training in Europe and the United States (US). Successful technical progress strategies will help to produce the same with fewer inputs, thus putting a downward pressure on inflation.

The notion of complementarity is based on powerful economic arguments and is doubtless an intuitive idea; however, as Macedo and Martins (2008) note, in the literature relating the design and scope of reforms to economic performance, little attention has been paid to this concept. Nevertheless, it is also true that the subject is attracting the attention of an increasing number of economists.

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

Azis and Wescott (1997), for instance, found that Washington Consensus-type, individual policies are of little help in promoting fast growth.[4] Using both an outcomes-based probability analysis approach and a standard regression approach, the authors demonstrated that favorable combinations of policies can significantly increase a developing country's economic growth performance. They found that the probability that a developing country experienced fast per capita income growth if the country had only a single high-quality policy over the period 1985–1995 was in the range of 0.20 to 0.35. 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 a relatively low degree of government involvement in economic activity. The authors also demonstrated econometrically that, although none of these three policies individually is significant in explaining the pace of economic growth, collectively they are significant in explaining growth when they are summarized in a policy complementarity variable.

The authors concluded that while Washington Consensus-type policies are generally the right ones 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 Azis and Wescott point out, 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 a case of making fewer reforms.

Importantly, the authors note that, whereas they suggested a set of three core policies that appear to greatly improve a country's chances of exhibiting rapid economic growth, and that their findings supported 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 (2008) carried out econometric tests focused on transition economies in Eastern Europe (European Union [EU] and non-EU members) and in the former Soviet Union. 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 gross domestic product (GDP) per capita before the transition in 1989, *RL* (reform level) stands for the simple average of nine sectoral indicators taken from the European Bank for Reconstruction and Development's *Transition Report*,[5] and *RC* constitutes an index of reform complementarity (captured through the inverse of a Hirschmann-Herfindahl indicator; the same index was utilized later in this paper). The results confirmed that countries with 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 reforms become 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 complementarity by itself does not necessarily lead to higher output growth, because, in the authors' sample, unreformed countries may have had, for some period of time, higher complementarity than did reforming ones.[6] 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 characterized by a significant decrease of complementarity or coherence at the beginning of the transition. According to Macedo and Martins, not all reform areas could be changed at the same time, so complementarity decreased. Once again, this is typically a

[4] Hausmann, Pritchett, and Rodrik (2005) provided a rather simple but very eloquent finding. Analyzing data from 1950 on, the authors identified 83 episodes of growth acceleration. They found that: *(i)* 85.5% of growth take-offs are not preceded or accompanied by economic liberalization reforms; and *(ii)* only 18.8% of episodes of economic liberalization are followed by growth take-offs.

[5] The indicators are: large-scale privatization, small-scale privatization, governance and enterprise restructuring, price liberalization, trade and foreign exchange system, competition policy, banking reform and interest rate liberalization, securities markets and non-bank financial institutions, and infrastructure. The European Bank for Reconstruction and Development indicators are ranked from 1 (no reform) to 4+ (full reform).

[6] 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 3.4.1.

second-best situation, which can entail 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,[7] 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.

Chang, Kaltani, and Loayza (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 presented 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 stabilization, public infrastructure, governance, labor-market flexibility, ease of firm entry, and ease of firm exit. An interesting pattern of reform complementarity emerged: the coefficients on the interaction between the trade volume ratio and, in turn, the secondary enrollment rate, the private domestic credit ratio, and the number of phone lines per capita are 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 labor 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, labor-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 labor markets make it easier for domestic firms to transform and adjust to changing environments, particularly 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.[8]

2.3 *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) recalled that such a strategy requires not only having complete knowledge of all prevailing distortions, but that it also demands having the capacity to remove all the distortions 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, according to Hausmann, Rodrik, and Velasco, 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: 6), 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." He also said that this strategy has been commonly accepted at international financial organizations, namely the World Bank.

[7] The sample of new EU member countries included: Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovak Republic, and Slovenia.

[8] In this context, it is worthwhile to mention the World Bank's Independent Evaluation Group's report, which stated that, "it is crucial that complementary measures such as removing marketing and price distortions as well as competition policy, reducing labor market rigidities, and improving the regulatory environment (currently more commonly thought of as "investment climate" issues) accompany trade reforms" (World Bank Independent Evaluation Group 2006: XV).

If one wants to take into account economic theory and thus guarantee that partial reform will have good results, it is necessary to select those areas for which the second-best interactions across markets magnify the direct positive effects rather than weaken or reverse them. But, as Rodrik also points out, in any real economy, figuring out these interactions (and quantifying them) *ex ante* is extremely complicated.

Hausmann, Rodrik, and Velasco proposed an alternative and practical "diagnostic" approach—that is, a focus on the most-binding constraints. The best option would then be to focus on the reforms for which the direct effects can be expected to be large. This way, there will be less 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 utilize 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 practice, 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 (e.g., saving, investment, education, productivity, infrastructure, etc.). Once it is clear where to focus, then it is possible to look for associated economic distortions whose removal would make the largest contribution to alleviating the constraints on growth.

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—toward a much more open and realistic policymaking paradigm, which is to be based on country-specific solutions. Nevertheless, this is not to say 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 suggested for Brazil, or a combination of orthodox and unorthodox elements (India, Republic of Korea [hereafter Korea], and Viet Nam seem to be good examples of this).

While the authors' focus is on starting a growth process, sustaining it is another matter entirely. On recalling the "growth and crash" experience of the Dominican Republic, Rodrik (2004: 12) 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"; therefore sustaining growth is more difficult than getting it started (Rodrik 2003).

Even if the targeting of the binding constraints is well done, some, or many, distortions will remain. The distortions could be regarded as not being very important at first, simply because they are not visible. However, the evaluation of estimated welfare losses arising from the remaining distortions should be made with a medium- or long-term horizon, taking particular note of the risks that those distortions imply. A high growth can be ignited, but one should ask how sustainable that growth process is. For instance, when an economy is growing, not much attention is typically paid to the necessity of putting in place good bankruptcy laws and well-staffed bankruptcy courts, because neither is 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 would amplify and deepen the recession. Capital flights would be larger and more abrupt because creditors would know that they would not be able to recover their loans; on the other hand, the reallocation of resources from closed firms to new or more efficient companies would be prevented. In the crisis, the previously invisible distortion would reveal itself.

In addition, the conjugation or interaction of high growth with a set of remaining distortions can create new distortions. Imagine that a poor country managed to dramatically increase its growth rate in a short span of time. Imagine that its government's strategy was to augment its trade openness to take advantage of strong comparative advantages and growth in its richer neighboring countries. In such a case, the country would specialize in a labor-intensive, low-tech, fragmented, and light industry sector (thus limiting, in a decisive manner, its long-run growth prospects). As the working-age population got more jobs and higher wages, these people (and their families) would start to consume more (i.e., buying better houses and hi-tech products, traveling, etc.). However, as the financial system does not function well because it is laxly regulated, protected from external competition, and closely connected to the government, domestic banks have neither the capacity nor the incentive to respond correctly to the new demand for credit. Loans to consumers (as well as loans to firms) would grow—also for political convenience—without the banks taking into account that debtors rely on

a salary which, in turn, depends essentially on the evolution of international prices of export goods with low added value. 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 that demand for credit was virtually inexistent—when stimulated by rapid growth and bad institutions or incentives, could emerge and expand to worrying proportions.

In short, at first, it is acceptable to put aside the "spray-gun approach" and focus on a given bottleneck in order to trigger growth. Thereafter, policymakers should think about making complementary reforms. The underlying idea is that there is a link between high coherence (or high complementarity) and sustainable growth.

3. Policy Complementarities and the East Asian Recovery

3.1 *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 paper, and before delving again into its core issue, to recall and highlight some key aspects of that devastating episode in Asia's recent economic past.[9]

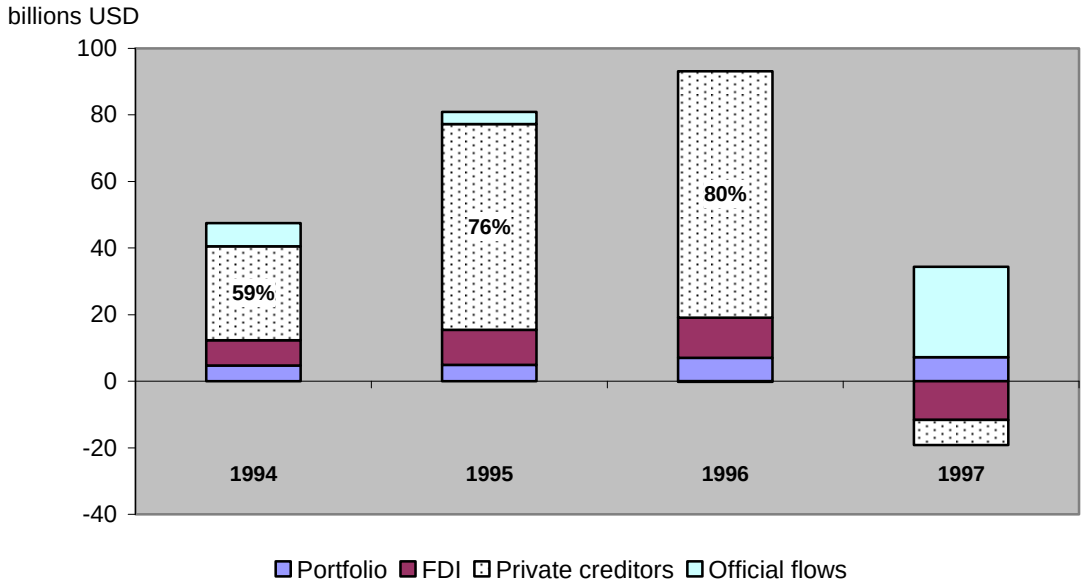
As noted above, the economy in these countries seemed to work well. Growth was high and macroeconomic indicators were sound. The Asian economies had neither high budget deficits nor were pursuing expansionary monetary policies. Also, public debt was very low (even compared with many Organisation for Economic Co-operation and Development [OECD] countries)—for instance, public debt in Indonesia was 24% of GDP and it was 4% of GDP in Thailand.[10] However, a more careful look at the balance sheets of banks and companies would have revealed a different situation, as the crisis was caused by an excessively large short-term external borrowing of the private sector.

Thus, in the years preceding the crisis, private capital was flowing into these economies at a high rate, while the relative importance of bank loans was very large and growing (Figure 1). 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 referred to as the Asia-4)—was almost three times larger in 1996 than it had been in 1990.

[9] The works of Chang and Velasco (1998), Radelet and Sachs (1998), and Furman and Stiglitz (1998) provide extensive analyses of the Asian crisis and were the main references used in writing this section. A chronology of devaluations can be found in Box 1.

[10] In France and the United States, public debt in 2005 was 66% and 65% of GDP, respectively.

Figure 1: Net Capital Flows in the Asia-4 and the Philippines



Asia-4 = Indonesia, Republic of Korea, Malaysia, Thailand; FDI = foreign direct investment; USD = United States dollar

Source: IIF (Table 2 in Radelet and Sachs 1998).

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

The "moral hazard" effect is another factor that should be considered in order to understand the more important aspects of the Asian crisis. That is, investors felt protected by either explicit or implicit guarantees. However, there is no consensus on the importance of moral hazard in the crisis. While some have held that the Mexican bailout in 1995—a US$50 billion rescue operation prepared by the International Monetary Fund (IMF) and the Clinton administration—created moral hazard on a global scale,[11] others have claimed that much of the lending was directed to non-bank enterprises and was not protected by any kind of guarantee. Nevertheless, it is indeed 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 that a bail-out does not have to rely necessarily on an explicit promise or policy by the government is not an unrealistic one. If formal rules were broken before, why could they not be broken again?[12] 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 Asia-4's private debt was increasingly short-term. In seven years, the proportion of short-term debt, which was already very high, rose by almost eleven percentage points. The last two columns of Table 3 show 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 (particularly

[11] With regard to the moral hazard created by the International Monetary Fund (IMF)-Clinton administration plan, Milton Friedman (1999) 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."

[12] 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.

if creditors decide not to roll over the debt). In sum, there were two sources of vulnerability: (i) domestic banks borrowed in foreign exchange and lent in local currencies, implying a greater exposure to losses in the event of depreciation; and (ii) these banks borrowed in short-term maturities and lent with longer payback periods, which implies a greater exposure to the risk of a run. The rest of the story is known—a quick listing of the facts of the events is found in Box 1 and Box 2.

Table 3: 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
Republic of 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).

Box 1: Chronology of Devaluations

30June 1997

Thailand's Prime Minister says that there will not be a devaluation of the baht

2 July

floating baht (immediate depreciation of 20%)

14 July

floating ringgit

14 August

floating rupiah

20 November

Korea increases the limit for daily depreciation from 2.5% to 10%

16 December

floating won

Source: Various newspaper reports.

Box 2: Trigger Events, Contagion, and Added Panic

Failures

- Korea: failure of business conglomerates or *chaebols* (Hanbo Steel in January 1997 was the first)
- Thailand: failure of finance companies (quasi-banks)

Contagion effects

- Hit Indonesia, Malaysia, and Philippines (many creditors treated the region as a single unit)

Political instability (excluding Malaysia)

- Changes of government
- Non-credible statements and decisions

IMF tutelage (excluding Malaysia)

- Immediate suspension or closure of financial institutions (created more panic)
- Higher interest rates to defend currencies (forced additional contraction)
- Budget surpluses (again forced additional contraction)

Source: Chang and Velasco (1998), Radelet and Sachs (1998), and Furman and Stiglitz (1998).

According to Radelet and Sachs (1998), the existing macro and microeconomic imbalances were not strong enough to warrant a crisis of the magnitude seen in East Asia. They blamed a mixture of panic on the part of the international lenders, policy mistakes by local governments at the very beginning of the crisis, and poorly designed international rescue programs, for triggering a full-fledged financial panic and massive withdrawal of foreign capital,[13] which deepened the crisis more than was either necessary or inevitable.

3.2 *A Complementarities-Based Approach to some Aspects of the Asian Crisis*

Not long before the crisis struck, Azis and Wescott (1997: 16) wrote prophetically, "We suspect that it is better to make policy progress on some fronts rather than do nothing, but national authorities must recognize 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 liberalized 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."

The Asian crisis can thus be regarded as a case of an abrupt end to 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 Asia-4 countries was apparent in the decision to liberalize their capital accounts—Williamson, Griffith-Jones, and Gottschalk (2003) classified the capital accounts in these four countries, as of the first half of 1997, as being "largely liberalized"—and to allow for strong credit creation without having put in place good supervision mechanisms. Banks operated in a weak institutional environment and, as a result, were under-supervised. What is more, many banks maintained very close 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, one should expect the amount of expected over-

[13] In the Asia-4 and the Philippines, total net private flows amounted to US$93 billion in 1996 and US$-12 billion in 1997.

investment to be even larger.[14] Put 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 realized that institutions *do matter*. Institutions establish a stable structure for human interactions or incentives. But, in many cases, stability does not coincide with efficiency—i.e., bad institutions fail to align private incentives with social welfare; thus, poor institutions can generate incoherent policies that only serve to benefit networks of private interests, which will not coincide with (long-term) social interests. Importantly, these incoherent policies will possibly materialize either into low long-run growth rates (as may be the case in Brazil or the Philippines), or into high but unsustainable growth rates (as happened in the Asia-4 countries).

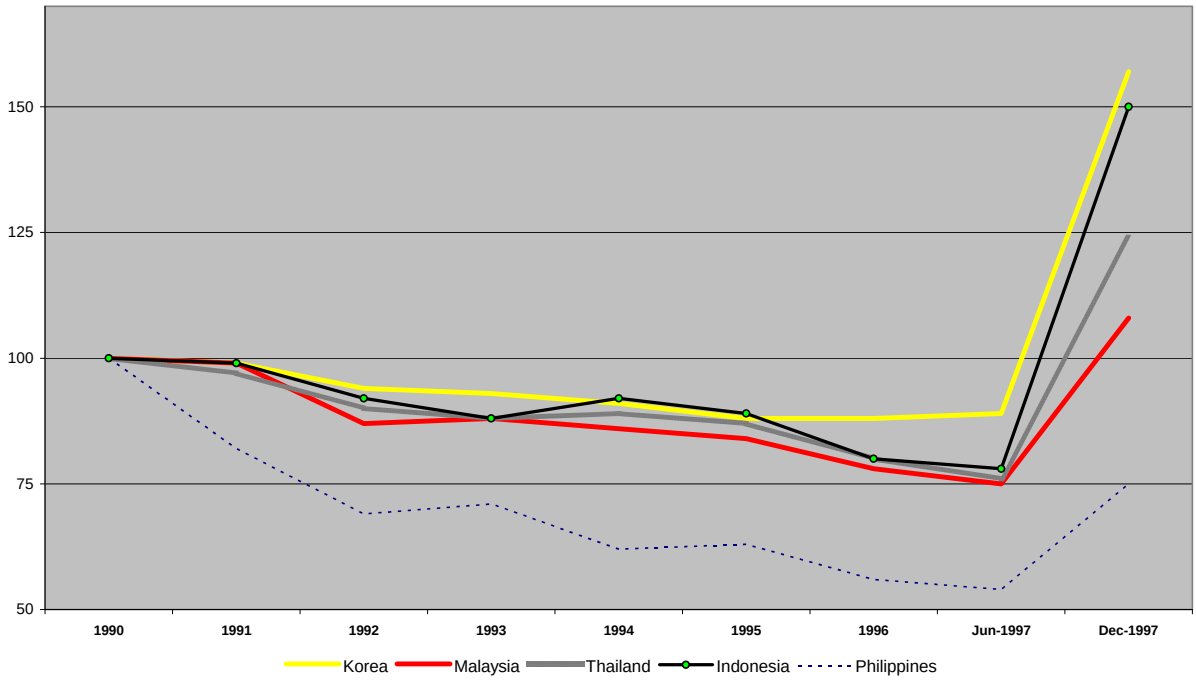
This sort of higher-level or primary incoherence—the lack of a good institutional environment, in broad terms—may then generate an endless number of policy inconsistencies. The Asian crisis is fertile in providing examples. For instance, the monetary response to the capital inflows between 1994 and 1996 was given mainly through sterilization (i.e., 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 (in order to reduce the money multiplier). Also, higher reserve requirements ensure that a bank will have enough money to cover bad loans, thus reducing its vulnerability. But, when the president's family owns banks—as was the case in Indonesia—and, moreover, there is the feeling that the economy is growing and that 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 to the growing specialization in non-tradable sectors. Figure 2 shows an important appreciation of the real exchange rate in the Asia-4 economies until the very beginning of the crisis (June 1997). This appreciation was caused by the appreciation of the US dollar—particularly since 1994—to which these countries' currencies were effectively pegged.[15] Such bad specialization resulted in a loss of competitiveness, as well as a smaller capacity for those economies to attract reserves. The financial sector amplified this specialization as much of the credit was being directed to speculative investments in real markets (e.g., shopping centers and luxury office buildings), rather than to the exports sector.

[14] 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. In the Asian crisis countries, 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).

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

Figure 2: Real Exchange Index (1997=100)*



Korea = Republic of Korea

Note: * an increase means depreciation

Source: Table 10 in Radelet and Sachs, 1998.

As Radelet and Sachs clearly pointed out, the utilization of short-term foreign currency borrowing to finance domestic investments in real estate and other non-tradable sectors was 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 detrimental specialization. If a country decides that, in a given moment, it needs a strong currency—in order to, say, attract foreign capital, fight inflation, and even to be able to buy capital goods and top-level education abroad—then it must put in place complementary policies that stimulate the investment and competitiveness of the export sectors and reduce the (short-term) attractiveness of non-tradable sectors.

A key feature in more coherent economic systems[16] is the existence of good exit mechanisms. Good bankruptcy laws make crises less likely, or even prevent them from happening, and surely contribute to faster recoveries and sound growth.

According to the analysis of Radelet and Sachs, 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. In general, if creditors believe that they will not be able to recover what they have loaned to a bankrupt (or even only temporarily illiquid) borrower in a reasonable amount of time (e.g., because the bankruptcy laws are bad, de jure or de facto), then a creditors' run will probably occur, as each creditor will rush to be the first to demand full

[16] For the purposes of this paper I define "economic system" as a group of interrelated policies. The use of the term "system" in this context intends to reflect the idea that policies are interdependent.

repayment.[17] Furthermore, the absence of appropriate debt workout mechanisms that allow for the coordination of creditors will help to create a situation of panic.

Good bankruptcy laws are important in an (at least) equally important way: they do not impede plant dynamics and, therefore, lead to a faster and more efficient reallocation of resources, which is of particular significance in the context of a post-crisis recovery process.[18]

In recent years, various studies have shown that the resource re-allocation process from exiting producers to entering producers explains a substantial portion of total factor productivity changes at the aggregate level. Exiting producers exhibit persistently declining productivity, while entering producers that survive the market selection process exhibit rapidly increasing productivity. Thus, policies that prevent the reallocation of resources via entry and exit could be potentially very costly for the economy (see Lim and Hahn 2003).

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 recovery, have, respectively, the worst and best bankruptcy systems among the Asia-4.

Indonesia's bankruptcy law, drafted by the Dutch in 1905, remained unchanged when the crisis struck in 1997. Remarkably, in the nearly 50 years since the Dutch left 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 people who lose their jobs and their families during a crisis is larger and, as a result, aggregate consumption and, consequently, aggregate output will decrease to a greater extent. Therefore, unemployment benefits act as an automatic stabilizer. In poorer countries, where households spend a very large proportion of their budget on food, the adjustment to a job loss situation is likely to be made through the reduction or elimination of education expenses, which is bad for human capital accumulation, and, thus, bad for growth; this is the scenario described by Chetty and Looney (2005). These authors compared large panel datasets on the US and Indonesia and came to find that the mean and median consumption drop associated with unemployment in both economies is roughly 10%. Such a similarity is remarkable, given that Indonesia has no formal unemployment insurance system, whereas the US insures 50% of the pre-unemployment wage for most individuals. However, in the Indonesian sample, the average household devotes nearly 70% of its budget to food, compared with 20% in the US. The authors examined the methods households used 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 labor allocation, in the sense that it enables workers to find better jobs. In the specific circumstances of a crisis episode that suddenly signals the need to rapidly abandon a given specialization pattern—say, in non-tradable sectors like real estate—the existence of

[17] Lack of transparency also plays a role here. If depositors have difficulty distinguishing sound from unsound institutions, then 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 with the biggest immediate impact from the crisis (its GDP per capita decreased 14.3% in 1998). This large impact was certainly related to the fact that Indonesia had the worst bankruptcy law as well as the worst and least transparent institutional environment among the Asia-4.

[18] Bergoeing, Loayza, and Repetto (2004) considered 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 labor 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 presented convincing cross-country evidence. Bergoeing, Kehoe, Kehoe, and Soto (2002) compared the experiences of Mexico and Chile in the 1980s and noted that, while both were affected by similar shocks—the 1980s debt crises—Chile was able to recover and "find" a decade that turned out to be lost for Mexico. They argued 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.

unemployment benefits can facilitate a worker's 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 Asia-4 and other Asian "tigers," unemployment insurance was probably dismissed as superfluous because growth was high and unemployment rates were low (Lee 1998). It has been argued that the fiscal costs of implementing unemployment benefits systems in developing economies are prohibitive for those countries. But, as Lee pointed out, unemployment insurance is self-financing, with schemes based on contributions from workers, employers, or a combination of both—fiscal costs to the government need not rise unless the government chooses to subsidize the program. Lee made the point that at very modest levels of required contributions, the effects of unemployment insurance on labor costs and, hence, on demand for labor would be negligible. He added that International Labour Organization assessments show that if Indonesia, Korea, and Thailand had introduced unemployment insurance in 1991 (i.e., six years before the crisis' onset), an average required contribution rate of between 0.3 and 0.4% of payroll from 1991 to 2000 would have sufficed to provide 12 months of benefits for all insured job losers over this period, including during the crisis.

Once more, comparisons within the Asia-4 seem to be revealing: 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 modest 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 (3.4.2.1) of this paper.

3.3 *Deep Impact, Different Recoveries*

This section gives a brief description of the different impacts of the crisis in the Asia-4 and their respective recovery speeds. While some other variables are mentioned in order to make the picture more complete, the main focus hereafter is on real GDP per capita (GDP per capita at constant year 2000 US dollars).

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

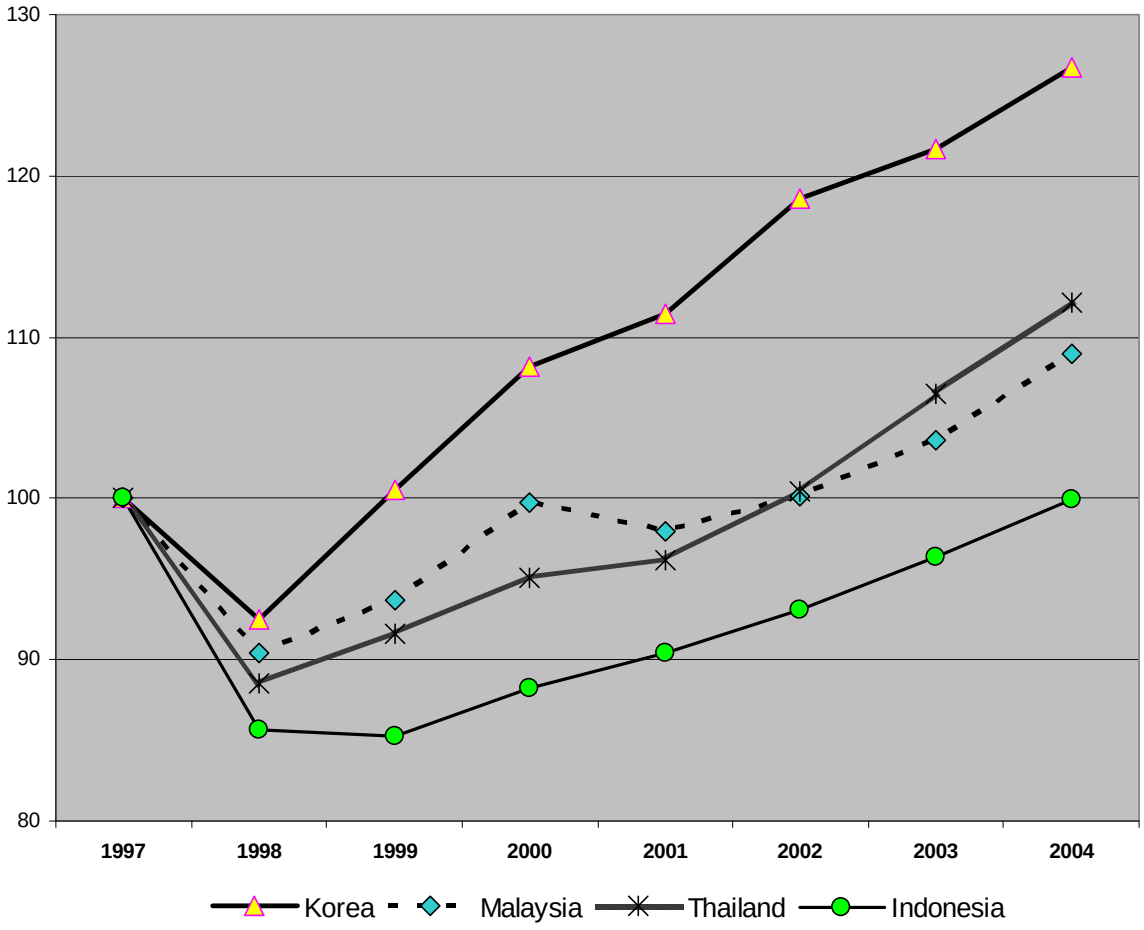
In Indonesia, one in every five formal-sector jobs was terminated in 1998, which left five million workers with bleak future prospects (Lee 1998). Poverty rates also grew across the region.

Griffith-Jones and Gottschalk (2006) justly stated that a key cost is forgone output. They have estimated the output loss for the Asia-4 at US$917 billion for 1997–2002. The largest losses in relative terms—that is, adjusted for the GDP sizes of their economies—were incurred by Thailand and Indonesia: 157% and 133% of their 2002 GDP, respectively. Malaysia incurred a loss of 69%. The loss in Korea was no larger than 26%. 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 3 shows that it was only in 2004 that Indonesia finally recovered its pre-crisis level of output per capita. By then, GDP per capita in Korea was already 27% higher than in 1997; in Thailand and Malaysia, the GDP per capita was 12% and 9%, respectively. Interestingly, Malaysia experienced a faster recovery than did Thailand until 2001, but then Thailand overtook Malaysia and, by accelerating its growth in the sub-period 2002–2004, 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 (International Labour Office 2000).

Figure 3: GDP Per Capita (1997=100)



GDP = gross domestic product, Korea = Republic of Korea

Source: Author's computation based on World Bank, *World Development Indicators*.

The average growth rate of GDP per capita between 1998 and 2004 in Korea was 5.1%. In Thailand, it was 3.8%. Malaysia and Indonesia both had the smallest average growth rates: 2.7%.

From these elements, a quite stylized picture can be sketched: Korea started and finished in first place; Malaysia started second but finished third, changing positions in 2002 with Thailand; Indonesia started last and reached 2004 in the same position. The main argument of this paper 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.

3.4 *Coherence and Recovery in the Asia-4*

3.4.1 Measuring Coherence

Trying to make a comprehensive portrait of a given economy and its evolution across a number of dimensions and years is not an easy task. There are data limitations: sometimes data do fit exactly in the concept that we want to see described; other times, there is simply not any data.[20]

To create 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).[21]

There are 17 dimensions considered here; these can be further divided into three blocks:

(i) a basic economic block (EB1), which represents roughly the somewhat typical receipt inspired by the Washington Consensus and has nine policy areas: liberalization of prices, less government intervention, stabilization, financial markets' openness and deregulation, ease of entry mechanisms, labor market deregulation, trade liberalization, access of nationals to foreign capital markets, and foreign access to domestic capital markets (i.e., 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) with 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 Asia-4 countries for all EB1 and IQB policy areas, and also for infrastructure availability in EB2.[22] Given the absence of readily usable data for unemployment benefits schemes and bankruptcy laws for the totality of the time period considered in this paper, these two areas were rated by me, using available data as well as information contained in several reports and papers. All elements were converted to a 0–10 scale.

As in Macedo and Martins (2008), I calculated, for each block, the respective *RL* (reform level—the simple average of the respective sectoral indicators R_i) and an index *RC* of reform complementarity (captured through the inverse of a Hirschmann-Herfindahl indicator). 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 example, $N = 12$). As before 2000, the Fraser Institute data, in its more detailed form, are available on a five-year basis, and so 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 of the policy areas in EB1 (fully, in two cases, and partially, in the other three[23]). However, 1995 can also be regarded as a good snapshot of the pre-crisis situation, as policies 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.

A country could have $RC_{\text{EB1}} = 10$ and $RL_{\text{EB1}} = 1$ (if $RL_i = 1, \ \forall i \in [1,9]$), i.e., an economic system can be highly coherent, but have extremely market-unfriendly policies; one can think of autarchic, state-planned

[20] This, together with the aim of maintaining a clear focus on the Asia-4 countries, prevents the use of econometric techniques in this paper.

[21] See Appendix B for a detailed explanation on the way the ratings in each area were built.

[22] A simple infrastructure index was built for the purposes of this paper, based on World Bank data. 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 Organisation for Economic Co-operation and Development (OECD) countries were the benchmark (that is, R = 10).

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

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 policy environment:

$$GQ = \frac{ARL_{EB2} + ARL_{IQB}}{2}, \quad GQ \in [0,10].$$[24]

3.4.2 Looking at Data

3.4.2.1 Individual Policies

With a quick glance at the data (Table 4), 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 liberalization 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 (out 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 was that indicator not high, reaching no more than 4.7.

[24] Using ARL_{IQB} to calculate *GQ* corresponds to assuming that RC_{IQB} is relevant. At first glance, expanding this methodology to explore the idea of coherence of politico-institutional systems seems appealing and can possibly constitute a promising line of theoretical and empirical work. However, such work is out of the scope 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.

Table 4: 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	Liberalization (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. intervention	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
		Stabilization	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
		Labor 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
		Liberalization (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

ARL = Adjusted Reform Level, EB1 = basic economic block, EB2 = extended economic block, FDI = foreign direct investment, Ind = Indonesia, IQB = institutional quality block, Kor = Republic of Korea, Malay = Malaysia, RC = Reform Complementarity, RL = Reform Level, Thai = Thailand

Source: Author's computation.

In 1997, 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 the Asia-4 (6.5 and 5.2). Once more, Indonesia was in the worst situation: poor protection of property rights (3.9), poor control of corruption (3.1), and a lack of political stability (2.1).

It is interesting to notice that Malaysia—the only country that did not follow the IMF's prescription for crisis recovery—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 in Malaysia increased, the labor 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 quite sharply augmented 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, property rights protection grew from 5.9 to 6.1).

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

Exit Mechanisms

After having seen in section 3.2 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 areas in the Asia-4 countries. The fact that the respective ratings had to be calculated by the author of this paper only reinforces the need to proceed—although very briefly—to such a description, for the sake of transparency.

As of 1997, Indonesia did not have even a minimally effective bankruptcy law (see section 3.2). In response to the crisis, the Indonesian Bankruptcy Regulation was amended in 1998 (this time in Bahasa Indonesia, the Indonesian language) and a special commercial court to handle bankruptcies was established. However, the revised Indonesian bankruptcy law was never implemented in a way that creditors viewed as transparent. People tended to avoid using the court system because it was considered expensive, unpredictable, and unreliable. There was a pervasive culture of corruption at all levels (Gamble 1998; Walker 2000; Ruru 2001).

By comparing the ease of closing a business[25] in 2005 in the United Kingdom (UK) (our benchmark in this domain) with the ease of closing a business in Indonesia in the same year, one has a basis for attributing a "grade" to the Indonesian bankruptcy system (see Table 5). 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 4% in the UK and 18% in Indonesia; and, finally, the recovery rate (how many cents on the US dollar claimants—creditors, tax authorities, and employees—are able to recover from an insolvent firm) was 85.3 in the UK and 13.1 in Indonesia. Therefore, it is reasonable to attribute a grade 3 (out of 10) to Indonesia's system in 2003. The ratings from 1995 to 2002 reflect a supposed linear tendency of improvement (see Table 4).

[25] In the World Bank's *Doing Business* project, the topic closing a business "identifies weaknesses in existing bankruptcy law and the main procedural and administrative bottlenecks in the bankruptcy process."

Table 5: Closing a Business in January 2005

	Time		Cost		Recovery Rate		Bankruptcy Process
	years	rating 0-10 (a)	% of real 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**
Republic of 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**

dollar = United States dollar, UK = United Kingdom, USA = United States

Note: * simple average of (a) (b) (c)

Source: Author's computation based on World Bank, *Doing Business*.

The Thai law, enacted in 1940, was also obsolete. Before the 1997 crisis, 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 specialized bankruptcy court. By the time judgment was secured, few, if any, assets of the debtor remained to be recovered. Not surprisingly, creditors rarely utilized the Thai bankruptcy regime (Walker 2000).

Legislation that put in place a new bankruptcy court and reformed bankruptcy procedures was enacted in 1998 and in 1999. These laws have given debtors and creditors the alternative of negotiating reorganization 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 reorganization, 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 for Thailand, an evaluation which suggests that even though some important reforms were successfully undertaken, other measures still needed 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 out of 10.

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 by its grade of 9). Lim and Hahn (2003: 11) pointed out 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 showed 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" (Lim and Hahn 2003: 12).

Unemployment Protection

As of 2003 (the last year of our time sample), neither Malaysia nor Indonesia nor Thailand had unemployment benefits systems.[26] Korea established an unemployment benefits scheme in 1995 and improved it not only as an

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

immediate response to the crisis (International Labour Office 2000),[27] but also in the following years.[28] It expanded the system to all firms, included temporary workers, shortened the compulsory contribution for eligibility, and extended the duration of unemployment benefits.

Korea has developed a medium-level unemployment insurance system much better than those of the other Asia-4 countries, but not as generous or wide-covering as in many EU countries, for instance. A very rapid, but still elucidative comparison helps 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 three to eight months (only for those with more than 10 years of enrollment in the system or aged 50 and over). In Portugal, for example, the unemployment benefit corresponds to 65% of wage earnings and its duration varies between one year and 30 months (for those aged 50 or more).[29] 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 Asia-4 countries were rated zero.[30]

3.4.2.2 Indicators

By analyzing the computed indicators *RC*, *RL*, and *ARL* (see section 3.4.1) 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 GDP per capita in some countries than it was in others.

The "do as much as you can" approach applied to EB1 is not very discriminating, but nevertheless would signal Korea and Indonesia as the "worst students," because their RL_{EB1} were the smallest among the Asia-4. However, the alignment between RL_{EB1} in 1997 and GDP per capita growth in 1998 was very low (Table 6).

[27] 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" (International Labour Office 2000: 162).

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

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

[30] 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 (nine months salary for an employee who had worked for four years at a firm) and Thailand (6 months) than in Malaysia (2 months), but the share of informal workers (60–70% in Indonesia, 50% in Thailand) was much larger in the two countries than in Malaysia (30%), so it is reasonable to consider 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 Raju (2002) and Addison and Teixeira (2001), the literature is not conclusive in showing that severance benefits regulations have a positive effect on employment and overall productivity. Yet, this alternative scenario does not influence the results.

Table 6: Deep Impact and Policy Indicators

		EB1 in 1997			EB2 in 1997			IQB in 1997		
	GDPpc growth in 1998	*RL*	*RC*	*ARL*	*RL*	*RC*	*ARL*	*RL*	*RC*	*ARL*
Republic of Korea	-7.5	5.96	9.37	5.58	5.70	9.36	5.33	6.17	9.73	6.01
Malaysia	-9.6	6.34	9.18	5.82	5.48	8.28	4.53	6.04	9.78	5.91
Thailand	-11.4	6.28	9.58	6.02	5.10	7.97	4.07	5.28	9.90	5.22
Indonesia	-14.3	5.98	9.17	5.48	4.64	7.11	3.30	3.06	9.24	2.83
	Correlation	**0.06**	**0.22**	**0.15**	**0.99**	**0.98**	**1.00**	**0.94**	**0.68**	**0.93**

ARL = Adjusted Reform Level, EB1 = basic economic block, EB2 = extended economic block, GDPpc = gross domestic product per capita, IQB = institutional quality block, RC = Reform Complementarity, RL = Reform Level

Source: Author's computation.

Conversely, ranking these four countries by their RL_{EB2}, RC_{EB2}, or ARL_{EB2} and the smallness of their GDP per capita losses in 1998 results in exactly 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 better complemented with good infrastructure, and also with a modest—but nevertheless existing—unemployment safety net and exit mechanisms.

Things become even more interesting when looking at the entire 1997–2003 period. In every single year between 1998 and 2002, Korea had the highest GDP per capita growth rate among the Asia-4. In the post-crisis years Korea was able to maintain very high levels of complementarity: its RC_{EB2} was 9.4 in 1997 and 9.3 in 2003, while its ARL_{EB2},(that is, its reform level adjusted for complementarity) increased from 5.3 in 1997 to 6.4 in 2003 (Figure 4a). Also, Korea was the only country that augmented its RL_{EB1} during the 1997–2003 period, which, in 1997, was the lowest among the Asia-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 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.

Figure 4: Evolution of Policy Indicators

Figure 4a: Korea

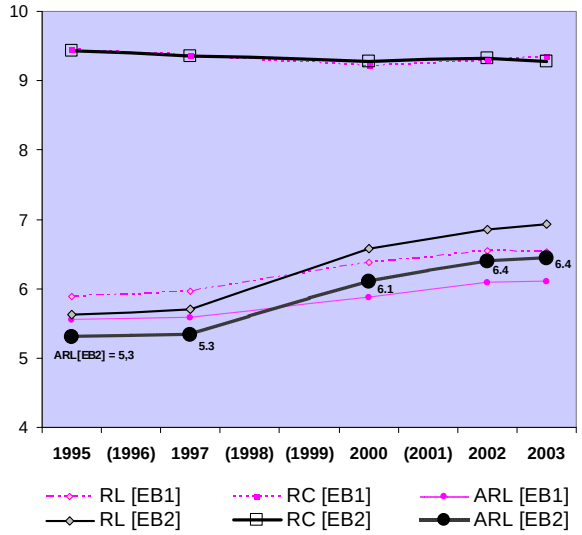


Figure 4b: Malaysia

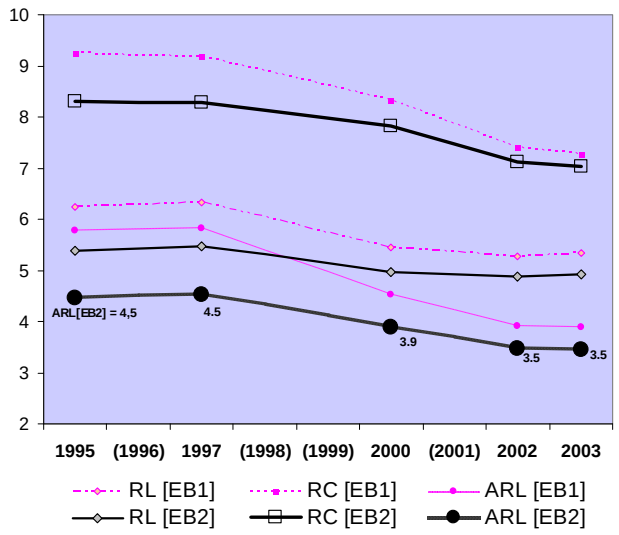


Figure 4c: Thailand

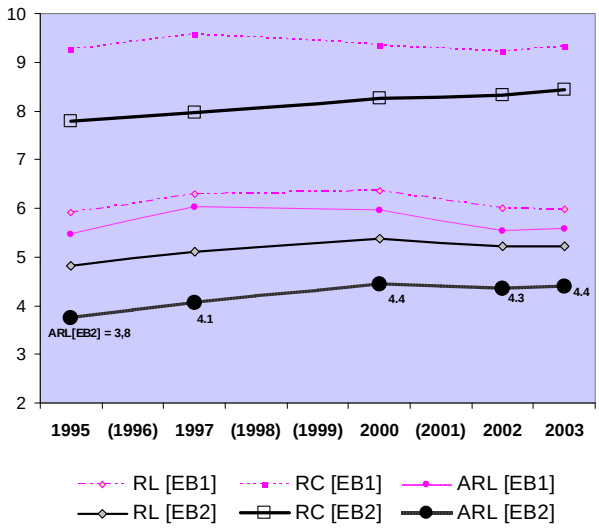
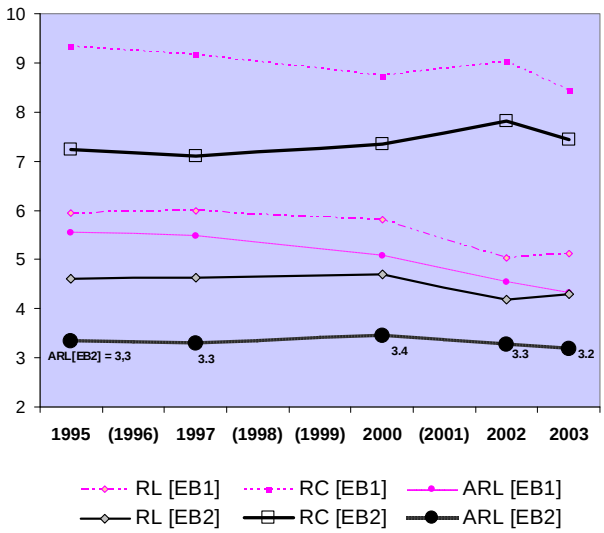


Figure 4d: Indonesia



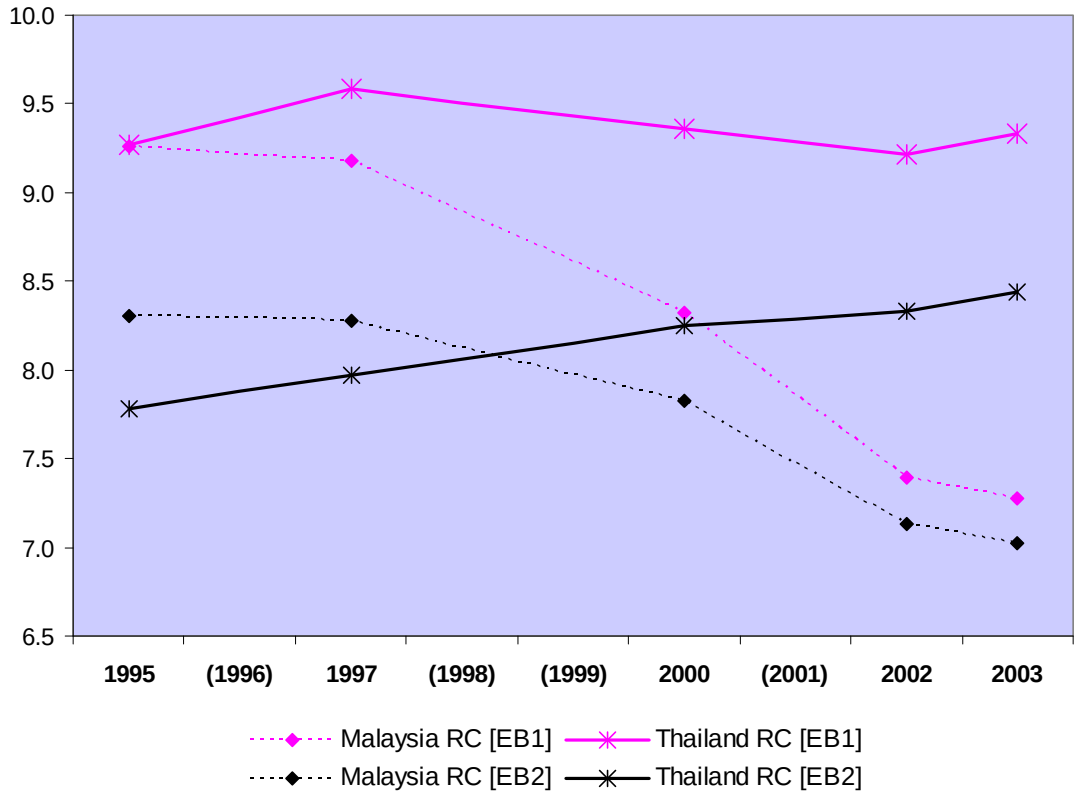
ARL = Adjusted Reform Level, EB1 = basic economic block, EB2 = extended economic block, Korea = Republic of Korea, RC = Reform Complementarity, RL = Reform Level

Source: Author's computation.

On the other hand, Malaysia, as seen in section 3.4.2.1 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 an 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. It is widely believed that 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 interventions of the IMF were indeed inappropriate, I believe that such a vision misses a key point. The Malaysian economy reacted well to the crisis (when compared to Thailand and Indonesia) because it had a relatively more market-friendly environment and a more coherent economic system. However, in the subsequent years, Malaysia sharply reduced its ARL_{EB1} and ARL_{EB2} (and 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 5 compares the trajectories of the two countries). Before the crisis, ARL_{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, the country then experienced no more than a slowdown in its GDP per capita growth, which continued to be positive (from 3.8 to 1.2%), while Malaysia experienced negative growth (-1.8%).

Figure 5: Complementarity in Malaysia and Thailand



EB1 = basic economic block, EB2 = extended economic block, RC = Reform Complementarity

Source: Author's computation.

In fact, adding coherence to its economy seemed to have resulted in good dividends for Thailand; the Thai economy accelerated its growth and reached GDP per capita growth rates in 2002 and 2003 of 4.4% and 6.1%, respectively. In 2002 and 2003, growth in Malaysia was only 2.3% and 3.4%, respectively.

Indonesia was the country with the lowest real GDP per capita in 1997 (US$906, less than one-tenth of real GDP per capita in Korea), but it was also the country with the slowest recovery (it was only in 2004 that it recovered its pre-crisis GDP per capita level). Therefore, the Indonesian economy seemed not to have benefited from any kind of catching-up effect. The analysis also appears to shed some light on this. In Indonesia, ARL_{EB2} was always the lowest among the Asia-4 countries, and it did not grow from 1997 to 2003—in 2003, it was 3.2 (while in Korea, it was 6.4); furthermore, ARL_{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 intrinsically low coherence of its economy.

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

Remarkably, Figure 6a shows that ARL_{EB2} and GDP per capita experienced twin evolutions. Figure 6b is much less convincing in suggesting that RL_{EB1} can help to explain, to a similar extent, the different post-crisis growth trajectories within the Asia-4.

Figure 6a: ARL_{EB2} and GDP Per Capita

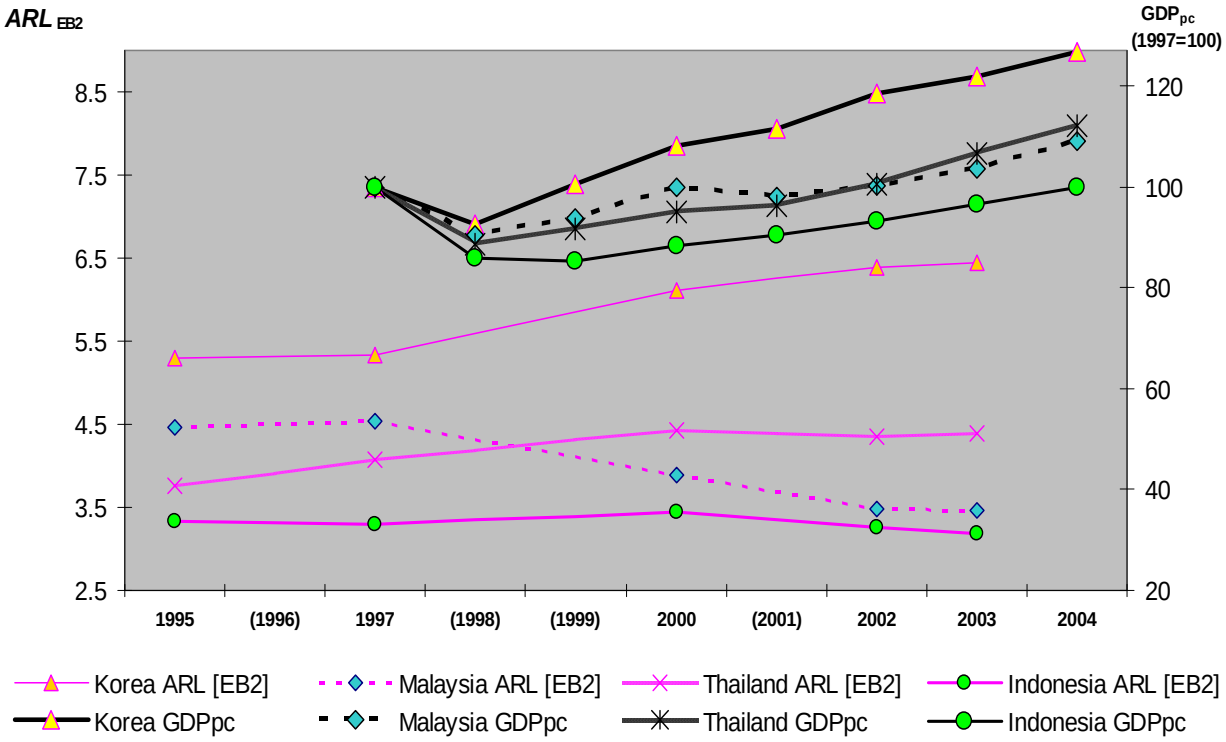
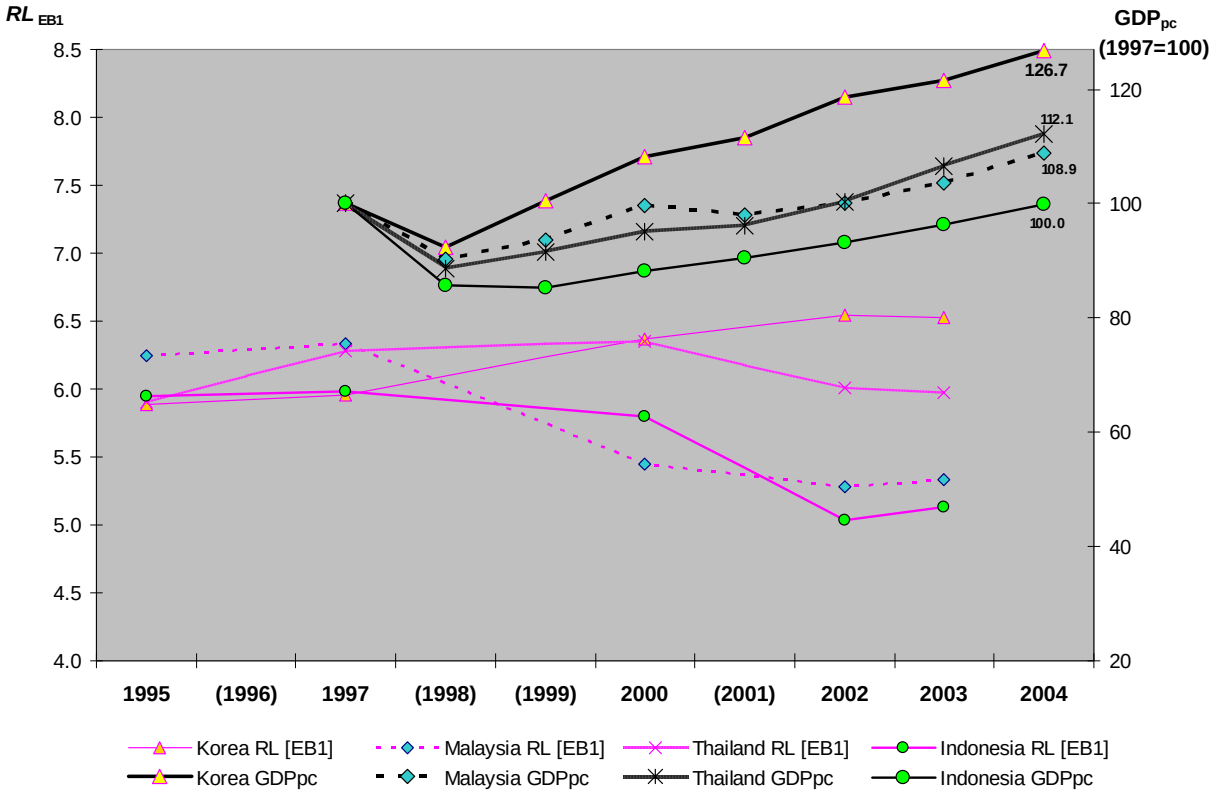


Figure 6b: RL_{EB1} and GDP Per Capita



EB1 = basic economic block, EB2 = extended economic block, GDP = gross domestic product, GDPpc =gross domestic product per capita, Korea = Republic of Korea, RC = Reform Complementarity, RL = Reform Level

Source: Author's computation.

To sum up, this short comparative analysis provides suggestive evidence not only for the importance of preserving or achieving high levels of economic complementarity during a post-crisis recovery process (Korea and, to a smaller extent, Thailand are good examples), but also for 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). There is no need to opt between a "do as much as you can" approach focused on an orthodox agenda and, on the other hand, a reflexive anti-market policy package (eventually, an "undo as much as you can" approach), which will be equally incomplete and myopic.

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, such as free prices or free financial markets, will play a key role. 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.

4. Conclusion

After having made a short literature review at both the theoretical and empirical levels on the importance of policy complementarities for growth, which provided strong arguments and substantial evidence in favor of that hypothesis, I discussed in section 2.3 the implications of policy complementarities in terms of growth strategies, in tandem with the emergence of a new, more open, and more realistic policymaking paradigm.

I applied this framework to a case study—the East Asian crisis and recovery—in an analytical exercise that may be regarded as a sort of "natural experiment." Section 3.2 provided an introductory approach to the

issue of (missing) policy complementarities in the most affected countries—Indonesia, 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 for different "policy sets;" also, a reform level indicator adjusted for complementarity (*ARL*) was developed. The study found that in those four countries, stricter policy packages (especially if implemented under a "do as much as you can" approach) are related to slower recoveries (and less immediate resilience). On the other hand, countries that have broader, more coherent policy sets in place have faster post-crisis growth (and more immediate resilience). Decreasing or low *RC*s seem to be related to slower recoveries, especially if one considers the broader group of policies. My analysis suggests that while improving the typical or so-called orthodox market-friendly policies is necessary, it is not sufficient to generate high sustainable growth, as these policies must be complemented with others and evolve as a whole in a coherent way.

5. Some Final Notes

The global economy has witnessed the failure of simplistic liberal policy packages. Now, a new paradigm seems to have emerged and will be developed in the coming years. While it is true that it is not yet known what the standard policymaking approach of the coming decades will look like, it will almost surely be more knowledge demanding, value country specificities much more, and 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 advice.

When starting a reform strategy that, in its initial stages, deliberately results in a reduction of economic coherence, countries incur a risk. As such, this could be measured 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 (including those associated with the production of economic expertise, which the international community should contribute to alleviating). To systematically ignore that risk, however, could result in deep and long-lasting fragilities.

Appendix A: Matrix of Positive Linkages

	Liberalization	**Stabilization**	**Financial Reform**	**Mechanisms of Exit**	**Mechanisms of Entry**
Liberalization (prices and tariffs)	-	Demand pressure becomes measurable	Better assessment of credit worthiness	Competitive pressures (e.g., import discipline)	Lower entry barriers
Stabilization	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 liberalization	Prevents pressure for liquidity injection for troubled banks	-	Support of hard budget constraints	Improved credit conditions and other financing sources
Mechanisms of Exit (enterprise privatization, liquidation, and restructuring)	Support of liberalization 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	-

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

Source: Macedo and Martins (2008).

Appendix B: Data Used to Calculate Policy Indicators (Asia-4): Sources and Definitions

1. Liberalization—Prices (EB1)

Variable Name (original database)	Weight	Scale (original)	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 households, 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), *EIU Country Reports* and *Country Commerce*; United States (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.	EIU, *Country Commerce*, *Country Profile*, and *Country Report*; official government publications of each country; US Department of Commerce, *Country Commercial Guide;* US Department of State, *Country Reports on Human Rights Practices*.

2. (Less) Government Intervention (EB1)

Variable Name (original database)	Weight	Scale (original)	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 Entreprises (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 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 were operating 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 were operating 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); Organisation for Economic Co-operation and Development (OECD), *Economic Surveys*; L. Bouten and M. Sumlinski, *Trends in Private Investment in Developing Countries: Statistics for 1970–1995*.

3. Stabilization (EB1)

Variable Name (original database)	Weight	Scale (original)	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. Labor Market (Deregulation, Flexibility) (EB1)

Variable Name (original database)	Weight	Scale (original)	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 labor 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.*

5. Financial System (EB1)

Variable Name (original database)	Weight	Scale (original)	Description (original database)	Based on:
Heritage 6—Banking and finance	0.66(6)	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). 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.	EIU, *Country Commerce*, *Country Profile*, and *Country Report*; official government publications of each country; US Department of Commerce, *Country Commercial Guide*.
Fraser 5Aii—Competition (domestic banks face competition from foreign banks)	0.16(6)	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	0.16(6)	0–10	Interest rates on bank deposits and/or loans are freely determined by the market.	World Economic Forum, *Global Competitiveness Report*.

6. Entry Mechanisms (EB1)

Variable Name (original database)	Weight	Scale (original)	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.	EIU, *Country Commerce* and *Country Report*; official government publications of each country; US Department of Commerce, *Country Commercial Guide*; Office of the US Trade Representative, *National Trade Estimate Report on Foreign Trade Barriers*.

7. Liberalization—Trade (EB1)

Variable Name (original database)	Weight	Scale (original)	Description (original database)	Based on:
Fraser 4Aii—Mean tariff rate	0.66(6)	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., *Trade Policy Reform in Developing Countries since 1985: A Review of the Evidence* (1994); others.
Fraser 4Bi—Hidden import barriers	0.16(6)	0–10	No barriers other than published tariffs and quotas.	World Economic Forum, *Global Competitiveness Report*.
Fraser 4Bii—Costs of importing	0.16(6)	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 (original)	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 (original)	Description (original database)	Based on:
Heritage 5—Foreign Investment	1.0	1–5 (1 = very low barriers to foreign investment)	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; EIU, *Country Commerce*, *Country Profile*, and *Country Report*; Office of the US Trade Representative, *National Trade Estimate Report on Foreign Trade Barriers*; US 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.	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 3.4.2.1	See section 3.4.2.1

12. Exit mechanisms (bankruptcy) (EB2)

Variable Name	Weight	Scale	Description	Based on:
Author's rating	1.0	0–10	See section 3.4.2.1	See section 3.4.2.1

13. Property Rights (IQB)

Variable Name (original database)	Weight	Scale (original)	Description (original database)	Based on:
Fraser 2ABC—Legal structure and security of property rights	0.33(3)	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	0.33(3)	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.	EIU, *Country Commerce*; US Department of Commerce, *Country Commercial Guide*; US Department of State, *Country Reports on Human Rights Practices*.
World Bank—Rule of Law	0.33(3)	-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 (original)	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.*

15. Voice and Accountability (IQB)

Variable Name (original database)	Weight	Scale (original)	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 (original)	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 (original)	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.*

Source: see "Datasets" (accessed June–July 2006) in the References below.

References

Addison, J. T., and P. Teixeira. 2001. The Economics of Employment Protection. Institute for the Study of Labor (IZA) Discussion Paper 381. Bonn: IZA.

Amir, R. 2003. Supermodularity and Complementarity in Economics: an Elementary Survey. Center for Operations Research and Econometrics - Université Catholique de Louvain (CORE-UCL) Discussion Paper 104. Louvain-la-Neuve: CORE-UCL.

Azis, J. and R. Wescott. 1997. Policy Complementarities and the Washington Consensus. International Monetary Fund (IMF) Working Paper 118. Washington, DC: IMF.

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. National Bureau of Economic Research (NBER) Working Paper 10584. Cambridge, MA: NBER.

Bergstrom, T. 2002. Comment on Trout Rader's paper, "The Welfare Loss from Price Distortions." Unpublished paper. Ann Arbor, MI: University of Michigan.

Chang, R., and A. Velasco. 1998. The Asian Liquidity Crisis. NBER Working Paper 6796. Cambridge, MA: NBER.

Chang R., L. Kaltani, and N. Loayza. 2005. Openness Can be Good for Growth: the Role of Policy Complementarities. Word Bank Policy Research Paper 3763. Washington, DC: World Bank.

Chetty, R., and A. Looney. 2005. Income Risk and the Benefits of Social Insurance: Evidence from Indonesia and the United States. NBER Working Paper 11708. Cambridge, MA: NBER.

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).
Available: http://www.hoover.org/publications/digest/3512571.html (accessed May 2006).

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.
Available: http://www.emergingmarketstrategies.com/articles/24-restructuring-in-asia.html
(accessed May 2006).

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. 2005. Growth Accelerations. *Journal of Economic Growth* (10): 303–329.

Hausmann, R., D. Rodrik, and A. Velasco. 2005. Growth Diagnosis. Prepared for the Latin American and Caribbean Economic Association 10th Annual Meeting, Paris, October.

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

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

Lim, Y., and C. H. Hahn. 2003. Bankruptcy Policy Reform and Total Factor Productivity Dynamics in Korea: Evidence from Macro Data. NBER Working Paper 9810. Cambridge, MA: NBER.

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. 2008. Growth, Reform Indicators and Policy Complementarities. *Economics of Transition* (16)2: 141–164.

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.

Radelet, S., and J. Sachs. 1998. The Onset of the East Asian Financial Crisis. NBER Working Paper 6680. Cambridge, MA: NBER.

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 317. Linz: Johannes Kepler University of Linz.

———. 2004. Rethinking Growth Policies in the Developing World. Unpublished paper. Cambridge, MA: Harvard University.

Ruru, B. 2001. Role of Indonesian Insolvency System: Case for Optimism and Case for Caution. Prepared for the First Forum for Asian Insolvency Reform (FAIR), OECD, Bali, Indonesia, February.

Vodopivec, M., and D. Raju. 2002. Income Support Systems for the Unemployed: Issues and Options. World Bank Social Protection Discussion Paper Series 214. Washington, DC: World Bank.

Vongvipanond, P. 2004. Thailand's Post Crisis's Institutional Change: Corporate Restructuring and Financial Institution Risk Management. Prepared for the Fourth Forum for Asian Insolvency Reform (FAIR), OECD, New Delhi, India, November.

Walker, J. 2000. Building the Legal and Regulatory Framework. Conference Series (Proceedings) 44. Boston, MA: Federal Reserve Bank of Boston.

Williamson, J., S. Griffith-Jones, and R. Gottschalk. 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.

World Bank Independent Evaluation Group. 2006. Assessing *World Bank Support for Trade 1987-2004: An IEG Evaluation.* Washington, DC: Independent Evaluation Group, World Bank.

Datasets (accessed June–July 2006)

Fraser Institute, *Economic Freedom of the World*: http://www.freetheworld.com/datasets_efw.html.

Heritage Foundation, *Index of Economic Freedom*: http://www.heritage.org/Index/Download.aspx.

World Bank, *Doing Business*: http://www.doingbusiness.org/CustomQuery/.

World Bank, *Governance Indicators*: www.worldbank.org/wbi/governance/govdata.

World Bank, *World Development Indicators*: http://go.worldbank.org/B53SONGPA0.