Revisiting East (and South East) Asia's Development Model*

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1. Introduction

The most successful developing countries over the last half century have come from East Asia. In the early nineties the World Bank published a very influential book attempting to explain this" East Asian Miracle" (World Bank, 1993). As the Asian Financial Crisis spread to this region in 1997 some structural and institutional weaknesses became apparent. Yet the resiliency which East Asia revealed in fighting off and ultimately overcoming most of the negative consequences of the crisis did not make the miracle vanish.

The major objective of this paper is to attempt to understand why East Asia's development performance was so much more successful than that of other developing countries. The East Asian experience is well known but not as well understood as it should. In this paper we shall follow Kuznets (1982) in attempting to offer a more integrated explanation for the past successes of, and future challenges faced by East Asia than in previous approaches to this question based on three critical factors and corresponding phases of development: 1. In a world of interdependent evolution, openness is a necessary but not a sufficient condition for successful development. In order to benefit from openness, countries need to reach, first, the take-off point which, in turn, requires the generation of an intersectoral transfer from agriculture (i.e. an agricultural surplus) to finance the physical infrastructure and a pragmatically educated labor force; 2. In the next phase, successful development calls for industrialization that brings along continuous structural and technological upgrading. During this potentially high growth phase, the role of the government is to maintain macroeconomic stability, overcome possible coordination failure and act as an umpire in promoting growth pioneers; 3.In the mature phase, there exists a risk that those countries that have achieved to reduce their technological gap with the leader (the U.S.) might attempt to extend arbitrarily the high growth phase resulting in "asset bubbles" and debt crises. The stagnation of Myanmar that still lingers in the pre-take-off phase, the de-industrialization of Hong Kong, and the recession of Japan in the last decade testify to the consequences of ignoring these three critical factors in their respective development phases.

We argue that East Asia (Japan, South Korea, Taiwan, Singapore, Hong Kong and China) and to a lesser degree Southeast Asia (Indonesia, Malaysia and Thailand) adopted an essentially common core of policies and institutions, including at an early stage emphasizing agricultural development and education until the take-off point was reached and then gradually opening up their economies by encouraging trade and capital inflows to acquire state of the art technology while maintaining macroeconomic stability.

Distinct alternative development models and strategies were followed by different countries around this common core, particularly regarding the form and degree of government intervention, yet these countries remained generally faithful to the common core.

Comparing the rate of growth of real per capita income of an economy with the level of real per capita income of the same economy and taking a cross-section of such paired data, Lucas (1988) concluded that "the mid-income countries grow the fastest, next the high-income countries, with the low-income countries growing the slowest." While this finding is, of course, correct on average it begs the question of why certain very poor countries were able to escape the poverty trap. All the East and Southeast Asian countries listed above with the exception of Japan displayed a real per capita income in 1950 around or less than one-tenth that of the U.S. (the corresponding ratio for Japan was approximately two tenths). By the end of the 20th century Japan, Hong Kong, and Singapore had reached per capita real income levels between 70 and 80 per cent of that of the U.S., while Taiwan and South Korea enjoyed levels of incomes around 50 per cent of that of the U.S. Although the growth performances of Thailand and Malaysia were somewhat less spectacular they reached a relative income level between a fourth and a third of that of the U.S.

In contrast, practically every Sub-Saharan nation - starting from a very low initial level - saw its relative income gap with the U.S. augment *not* fall. Likewise most Latin American and South Asian economies had fallen behind relative to the American standard of living over the second half of the 20th century (for details see Table 2). The question we attempt to answer is why Taiwan, South Korea and the rest of East Asia performed so much better than countries such as Egypt and Brazil that started with approximately the same income level in the 1950's? Likewise why did Malaysia, Indonesia and Thailand develop so much faster

than the Philippines? Is there a common core of policies, strategies and institutions that can help explain this differential performance? We claim and argue in this paper that a certain number of specific factors can be identified as prime movers of the development process of East Asia. What is idiosyncratic to East Asian countries is not so much the individual elements of their development strategies as the sequence in which those elements were used, the way they were combined and the way governments adapted to changing conditions.

Since the success elements of the East Asian miracle are well known (see World Bank, 1993), there is no need to repeat them here. Rather, we concentrate on identifying some key features that are peculiar of that region and are likely to distinguish it from strategies followed in other parts of the world. As will be seen these features are not unique to East Asia's and South East Asia's development paths but are much less typical of the development paths of other regions in the last fifty years.

In identifying these distinctive features we distinguish between two development phases : first, the initial early phase where the center of gravity of the socio-economic system consisted of agriculture before the take-off point had been reached ; and, secondly, the growth phase following the take-off.

Since the birth of development economics, as a discipline in its own right, analysts have been concerned with the conditions required for an economy at an early stage of development to reach the take-off stage into sustained growth. Concepts such as the "Big Push" (Rosenstein-Rodan,1943), "Take-off " (Rostow,1956) and the "Critical Minimum Effort Thesis" (Leibenstein,1957) have in common that they view growth as an essentially discontinuous process requiring a large and discrete injection of investment.[1]

At the outset of the development process a country is predominantly agrarian and the economy is relatively closed. The great bulk of the output originates in agriculture where the great majority of the labor force is employed. The key issue in starting the cumulative growth process is how to generate the resources

[1] The wave of more recent avatars of these early concepts was inspired by Murphy, Shleifer and Vishny (1989) formalization of the " Big Push". In the case of East Asia, the epochal events that triggered the take-off and the successive steps toward industry-upgrading took alternative forms, some occurred as a spontaneous response to an external shock –as for Hong Kong; others as the result of institutional reforms, combined with specific measures as was the case in Japan, South Korea, Taiwan, Singapore and lately PRC (for detail see footnote 6 on p.12).

required to reach the take-off point. East Asian governments understood long before most other developing countries that the major mechanism for obtaining the resources needed to escape the poverty trap and for industrialization was through an inter-sectoral transfer out of agriculture. The role of the agricultural sector was to generate an agricultural surplus that could finance the industrialization process. In section 2, we argue that East Asia performed extremely well in setting up policies and institutions to capture and channel the agricultural surplus to start the growth process.

In this early phase the government also emphasized primary education. The spread of education throughout the rural areas provided the children of farmers with the human capital and skills they would need to operate successfully in non-farming activities after the take-off. These skills benefited particularly young women who started working in a variety of factories while still living at home and commuting. The emphasis on primary and vocational education prepared the labor force to move out of agriculture and migrate later on to semi-rural and urban regions. Traditionally most women quit their jobs after marriage or childbirth, so that knowledge accumulation covers a shorter period than for male workers. Between the mature industrialized economies and the industrializing economies, the comparative advantage of the latter lies in products using relatively intensively workers with less experience: i.e. industries relying on female labor such as footwear, garments, plastic products, and electric/electronic assembly. Japan early on specialized in those industries and was followed by the NIEs and presently China.

In the second phase, East Asia recognized that the world economy evolves mainly through an interdependent development process rather than through independent growth. The economic history after World War II reflects the insight of Allyn Young (1928) that, while interaction among agents and firms can lead to external economies, interaction among countries – through trade, investment and technology transfer - can create strong positive spillover effects[2]. In this vein, Kuznets (1989) summarized succinctly *how* technology spreads from the more developed economies to the less developed, facilitated by trade and

[2] This "externality" insight was incorporated into growth theory by Shell (1967) and subsequently by Roemer (1986) within the context of a single country or world-wide. Lucas (1988) extended this insight to development studies, with different economies growing at different rates. In the development context, the cross-countries externalities of technology spillover were shown to be important by Coe, Helpman, and Hoffmaister 1997), but somehow left out by Lucas.

foreign investment and under appropriate policies and institutional environments that overcome the resistance of vested interest (for detailed interpretation, one might consult Wan ,2004).

A fundamental corollary of such a proposition is that although openness alone does not guarantee successful economic development, no development can be successful without openness. In section 3, we claim that the hallmarks of East Asia's development from the 1960's on were an outward orientation to benefit from the fruits of state of the art technology. Trade and foreign investment became the "conveyor belt" in the transfer of technology. Another hallmark, not always successful, was the experimentation with a variety of government interventions (particularly in the area of industrial policies). The name of the game was to maximize the benefits that could be derived from being an integral part of an interdependent global trade, investment and technological system. As will be argued in Section 4 dealing with the various strategies followed by the East Asian countries relating to the promotion of exports and the attraction of foreign investment and advanced technology, these strategies often relied on a set of interventionist measures that , at times, clashed with laissez faire. This was a price many governments were willing to pay to become integrated in the global economy.

2. Main Growth Features in the Take-off Phase: the Role of Agriculture

Most East Asian and South East Asian countries underwent some form of land reform redistribution early on in their history so that they started with a relatively even land distribution that greatly facilitated the subsequent growth of agricultural output and the transfer of the agricultural surplus to non-agricultural sectors.[3]

The major mechanism to obtain the resources needed for industrialization at an early stage of development is through an inter-sectoral transfer out of agriculture.[4] It is important to identify the major components of this transfer. A first component consists of the resources that tend to flow out of agriculture, automatically,

[3] It is relevant to note that the path breaking work on inter-sectoral capital flows in the process of development was by T.H.Lee (1971) .In that volume Lee analyzes and measures the contribution of the agricultural surplus to the economic development of Taiwan before 1960. For a more recent discussion of the role of agriculture in the development of Taiwan, see Thorbecke (1979, 1992)

[4] This subsection is based on Thorbecke (2000)

through the market mechanism wherever the rate of return on resources is higher in agriculture than in non-agriculture (typically in the incipient industrial sector). Teranishi (1997) has called this flow a "market-based resource shift". In addition there are resource flows that are policy-induced through the direct intervention of the government. Therefore, it is useful to make a distinction, as Teranishi (1997) does, between 1) market based resource flow; and 2) policy based resource flow further broken down into a) net direct taxation; b) net indirect taxation; and c) infrastructure investment in agriculture.

Typically, developing countries tax their agricultural sector heavily through direct taxation (usually by turning the internal terms of trade against agriculture through such interventions as artificially low consumer prices for food and high input prices, e.g. the hidden rice tax through high fertilizer prices in Taiwan); and indirect taxation (mainly through the impact of an overvalued exchange rate on agricultural tradables).

In a careful empirical study of inter-sectoral resource flows, Teranishi (1997) showed that there was no significant difference in the (high) degree of direct and indirect taxation on agriculture among the four regions, East Asia, South Asia, Latin America, and Sub-Saharan Africa (SSA), but that the regional differences in infrastructure investment in agriculture were enormous. Teranishi (1997, p. 289) concluded that

> "In East Asia, the adverse effects of indirect taxation (real exchange rate over-valuation and industrial protection) and direct taxation of agriculture were counterbalanced by government efforts in agricultural development, particularly in the area of infrastructure investment, resulting in the relatively low level of total policy-based resource shift from agriculture."

The explanation that is given for the radically different treatments of agriculture in Asia and other developing regions and the consequent very disparate performances is that the latter governments tended to use "divisible benefits" in a very selective way to keep or win over agricultural actors who supported the incumbent political regimes regardless of their contribution to production. Furthermore, Teranishi (1997) provides an interesting political economy explanation of why small farmers in Africa do not react collectively against the effects of policies detrimental to agriculture, in contrast with farmers in East Asia. The answer lies in the shifting mode of cultivation of small African farmers that does not provide incentives to invest in land improvement, a situation made worse by the fact that most small farmers do not

own their land in contrast with Asia. Given the very different production and tenure conditions in East Asia, incentives for small farmers to resist policies detrimental to agriculture are much larger in that region than in Africa and much of the developing world.

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The main lesson to be drawn from the experience of a large set of developing countries was summarized by Thorbecke and Morrisson (1989, p. 1490)

> "The process of capturing the surplus is quite delicate. The goal should be to generate a reliable and continuous flow of *net* resources from agriculture into the rest of the economy throughout much of the structural transformation. A lesson learned from those countries which were most successful in achieving both growth and equity throughout their development history (e.g. Taiwan and South Korea) is that a continuing *gross* flow of resources should be provided to agriculture in the form of such elements as irrigation, inputs, research and credit, combined with appropriate institutions and price policies to increase this sector's productivity and potential capacity of contributing an even larger flow to the rest of the economy. It is much easier to extract a *net* surplus from increasing production than from stagnant or falling output."

In summary the treatment of agriculture and the delicate way in which resources were transferred out of agriculture –combined with the emphasis on primary education – in East and South East Asia was instrumental in generating the take-off and establishing favorable conditions for the next development phase. In contrast, the more typical pattern in the rest of the Third World was to exploit agriculture unmercifully and squeeze a large surplus out of it thereby "killing the goose before it had the chance to lay a golden egg".

3. Characteristic Features in the Modern Development Stage

Development does not consist of producing more of the same, but requires a structural transformation. Economies can export mineral resources or agricultural products without structural transformation. Trade does not lead to development in such situations. On the other hand, structural change for the less developed economies usually calls for the acquisition of technology. The adoption of required technology through trade and foreign investment is certainly more economical than reinventing the wheel. Thus, *openness does not guarantee catching up, but catching up is impossible without openness.*

There are different ways through which the transfer of technology can proceed. Technology transfer may be (a) the sole purpose of a transaction, like consulting agreements and the licensing of patented discovery, or, less noticed but conceivably more important, (b) the by- product of trade, labor movement and direct foreign investment. Experience in East/Southeast Asia testifies that in the latter context, subcontractors may get advice along with foreign orders; product designers become stimulated to innovate to meet foreign requirements, foreign staff disseminates novel practices, former employees from firms abroad return with experience and information unavailable at home. Also the presence of foreign establishments imparts in domestic partners and suppliers, indigenous employees as well as local rivals such information, practice and standards that can invigorate the host economy.

In the history of technology, this is known as “dialogue in technology” (Pacey, 1990), which is two-way in nature, with mutual emulation, though in our context, the developing South benefits more from the developed North, in the first approximation. The conceivably superior capacity to continue to innovate by the leader in over-all technology, if not blind sighted by hubris, may explain why the change of leadership is so rare in history and often coincides with major external shocks, such as the exodus of talents from the Third Reich before, during and after World War II that confirmed the passing of technology leadership from the UK to the US.

Learning is easier for the learned. The *capacity* to absorb technology usually increases with the level of income. At higher average income levels individuals tend to be better educated and with more education people are able and willing to accept new ideas and absorb new technologies more readily. But as the catching up process evolves, the *opportunity* or scope for borrowing technology declines as the technical gap or distance between the frontier technological shelf and the technology in use in a given country falls. As a country grows and continues to adopt improved technologies, the gap between own practice and the best practice the world can offer becomes smaller. The adoption of foreign technology is not free. For the very poor, even to keep the technical gap constant may be a constant struggle.

On the basis of international cross-sectional evidence based on the growth paths of over one-hundred countries between 1961 and 1997 Wan (2004) derives a number of theoretical inferences leading to a sequence of testable hypotheses :

(a) In terms of observed relative frequency, the reduction of the technology (or income) gap is the highest among the mid income group.

(b) Among the poorest countries, gap reduction is relatively infrequent, though not impossible (as the East Asian experience demonstrates).

(c) A full catching up with the technological leader is not to be expected.

(d) The long (and finite) period of self-sustained gap-reduction is often initiated in economies by an internal policy reform, or occasionally through some external shocks.

Table 1 provides the distribution of countries by level of development ('poor', 'middle income', and 'rich') decade by decade. It also shows the frequency of countries whose relative per capita real income vis-à -vis the U.S. increased (i.e. whose relative gaps shrunk). Some interesting observations emanate from Table 1. First, the relative proportion of "poor countries" (with per capita real incomes below 30% of that of the U.S.) remains high throughout the whole period. Secondly, it is only among the group of "middle income countries" (with per capita real incomes between 30% and 70% of that of the U.S.) that one finds a majority of countries with shrinking gaps-at least in the first four decades (from the 1950's to the 1980's). Figure 1, which is derived from Table 1, indicates the proportion of countries in each group and in each decade that were able to reduce their gaps relative to the U.S. It testifies to the difficulty of catching up among both the group of poor countries and that of the rich countries. The former face enormous difficulties in taking off and the latter tend to undergo a deceleration in their growth paths- as would be predicted by a logistic growth pattern.[5]

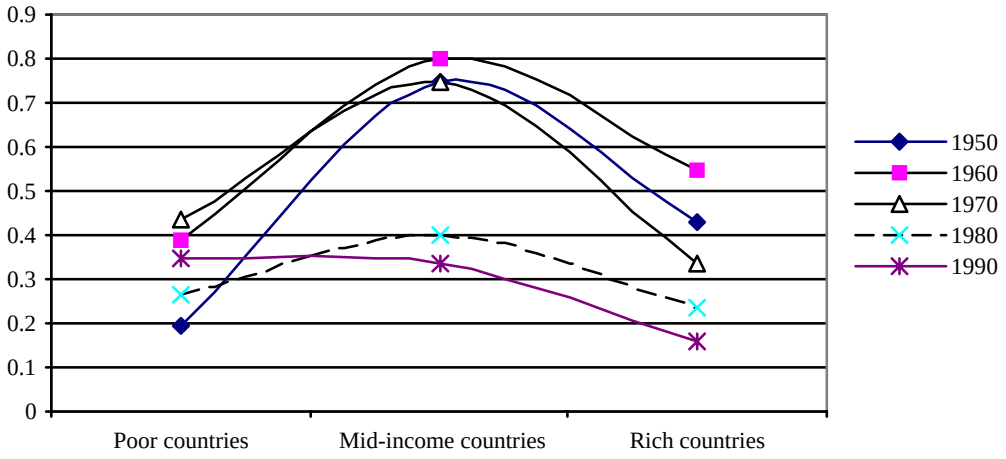
[5] In short, the parabolic shape of the phase diagram shown subsequently in Figures 1 and 2 seems to hold up well in each of the five decades appearing in Table1.

Table 1: Distribution of Countries According to Relative Per Capita Incomes (y) and Shrinking Gaps by Decades*

	'poor countries' y < 30%		'mid-income countries' 30% < y < 70%		'rich countries' 70% < y		Total number of countries
	Share in total	countries with shrinking gaps	Share in total	countries with shrinking gaps	Share in total	countries with shrinking gaps	
1950	31 in 54	6 in 31	16 in 54	12 in 16	7 in 54	3 in 7	21 in 54
1960	82 in 113	32 in 82	20 in 113	16 in 20	11 in 113	6 in 11	54 in 113
1970	78 in 117	34 in 78	24 in 117	18 in 24	15 in 117	5 in 15	57 in 117
1980	83 in 127	22 in 83	25 in 127	10 in 25	17 in 127	4 in 17	36 in 125
1990	80 in 121	28 in 80	22 in 121	7 in 22	19 in 121	3 in 19	38 in 121
2000	82 in 121		25 in 121		14 in 121		

*The sample of countries spanning the fifty year period amounted to 121. Note that Table 2 includes a somewhat smaller sample of 106 countries for which continuous annual data were available for the period 1960-1998.

Figure1: Proportion of Countries with Shrinking Gaps in Each Group (based on Table 1)



A far-reaching corollary of this 'Kuznetsian' view of development is that a successful development episode engenders a growth profile which is a tilted logistic curve. Thus, the artificial, and perhaps politically motivated, prolongation of the 'high growth period' can cause asset bubbles and debt crisis as the cases of Japan and South Korea demonstrated.

The present era is one in which America has inherited the mantel of technological leadership from Britain. Thus a convenient data source for empirical work is the *relative per capita real income* series of the Penn World Table, version 6.1, in which the per capita real income (expressed in constant purchasing power parity) of all economies is given as a percentage of the concurrent American figure, on the Summers-Heston basis (see Table2). The level of relative per capita real income at which the sustained gap-reduction process can start is specific to each economy, influenced by external shocks, and above all conditioned on policies and institutions.

The East/Southeast Asian economies which have been the most successful over the past half a century in 'gap-reduction' provide us a window to unravel what type of policy packages are conducive to successful growth. As we have seen, for most economies with a hinterland (which rules out Hong Kong and Singapore)[6] agricultural reform is crucial. This is not to presage a growth powered with high value-added agriculture, but to generate the agricultural surplus for infra-structural investment that is the indispensable preparation for globalized development.

Using such empirical information, we have found that implications (a), (b) and (c) hold as expected, and by case studies, implication (d) apparently is also satisfied for the East Asian economies. [7]

[6] The agricultural surplus is often used for the infrastructure investment needed in the phase of exporting industrial goods. The fact that in their earlier existence as entrepôts, both Hong Kong and Singapore had such infrastructure meant that they could get by without having to extract an agricultural surplus. Interestingly , their development accelerated after they lost their entrepôt role.

[7] Thus, we can list below the events heralding sustained growth for the six East Asian economies:

Japan ----------The Dodge line Policy, 1949
Hong Kong---------- The Korean War and its induced embargo against PRC, 1951
Taiwan----------The economic reform of 1958
Korea---------- The economic reform following the coup under Park, 1961
Singapore---------- The separation from Malaysia, 1965
PRC----------The outward oriented reform, 1978-9.

Before turning to the empirical evidence a few concepts need to be defined based on Wan (2004). Let x be the per capita real income of an economy with y = (dx/dt)/x as the growth rate of x. In turn let z stand for the per capita real income of the U.S. (assumed to be the leading economy and technological leader over the period with which we are concerned). A useful concept, v , is that of the ratio of a given country's per capita real income to that of the U.S., i. e. v =x/z. For example, in 1961 (three-year average) both South Korea and Taiwan had similar v's , the ratio of their per capita real incomes to that of the U.S. was between .11 and .12 . By 1997 (three-year average), the corresponding ratios were .54 and .46, respectively.

Next, a key concept that follows directly from the above discussion is that of the technological gap, i. e. g = (1– v). Returning to the previous example, Taiwan's and South Korea's technological gap (with respect to the U.S.) in 1961 fell between .88 and .89 and had been reduced to .46 and .54, respectively, by 1997. In other words it is assumed that the technological gap depends on the relative per capita real income ratio.

Wan (2004) makes two simplifying assumptions, namely that : 1. the growth rate of per capita real income of any given economy (y) depends only on the relative per capita real income ratio, v (this assumption is subsequently relaxed to allow for the impact of policies and institutions on growth) ; and, 2. the growth rate of the leader (the U.S.), z , can be taken as approximately constant (equal to c) over the period under consideration. The implication of the second assumption is that countries with per capita real incomes lower than that of the U.S. can grow faster than the latter. Following from the above and a few additional assumptions (see Wan, 2004 for details) , a phase (growth) diagram can be derived (see Figure 2).

The rate of growth of per capita real income, y , is plotted on the vertical axis and the relative ratio of a given country's per capita real income to that of the economic and technological leader (the U.S), v , is shown on the horizontal axis. Note that, c , represents the assumed constant growth rate of the leader. There is a stable equilibrium at v* and an unstable equilibrium at $\underline{v}$ (both equilibria can be thought of as steady

states). The direction of the arrows indicates that any v near v* must gravitate toward v* and any v near $\underline{v}$ must move away and down from $\underline{v}$.

The intuition behind this diagram is that every country has the *potential* to grow in a quasi-logistical fashion.[8]A very poor economy may typically grow at a very low rate and essentially stagnate. The few economies that achieve to take off will see their growth rates accelerate up to a maximum (the peak of the parabola in Figure 2) before decelerating. The diagram in Figure 2 reflects the hypotheses stated earlier. For those economies with a relative per capita real income lower than, $\underline{v}$, they will tend to lag increasingly behind the leading economies. East Asia and some South Eastern Asian were among the few cases that managed to escape the poverty trap. One can conceive of, $\underline{v}$, as the take off point, i.e. the threshold relative income ratio required to start the a process of self-sustained growth .Depending on the specific initial conditions of a country, $\underline{v}$, might range between 5 and 10 per cent. For those economies with a relative per capita real income ratio between, $\underline{v}$, and , v*, their growth rates will tend to exceed that of the leader, i.e., c and the catching up process is underway. As the diagram indicates, a phase of growth acceleration is followed by one of deceleration. Finally, it is postulated that , v, may approach some steady state value less than 1 (v = 1, represents the per capita real income of the U.S.) so that the catching up process will never be fully completed. Since the initial conditions differ, as do the policies and institutions adopted by a given country over time, so does the shape of the parabola in Figure 2, as will be discussed shortly.

[8] The typical logistic growth curve traces the growth of output over time. Wan (2004, Appendix 1.2) argues that countries such as Japan and the NIEs went through a trend acceleration phase at already high levels of relative per capita incomes, rather than continue to grow at a decreasing rate as the conventional logistic curve would have called for. To reflect this acceleration Wan proposes a formulation where the growth rate of the relative per capita real income has the expression d logv/dt and not the simple time derivative dv/dt.

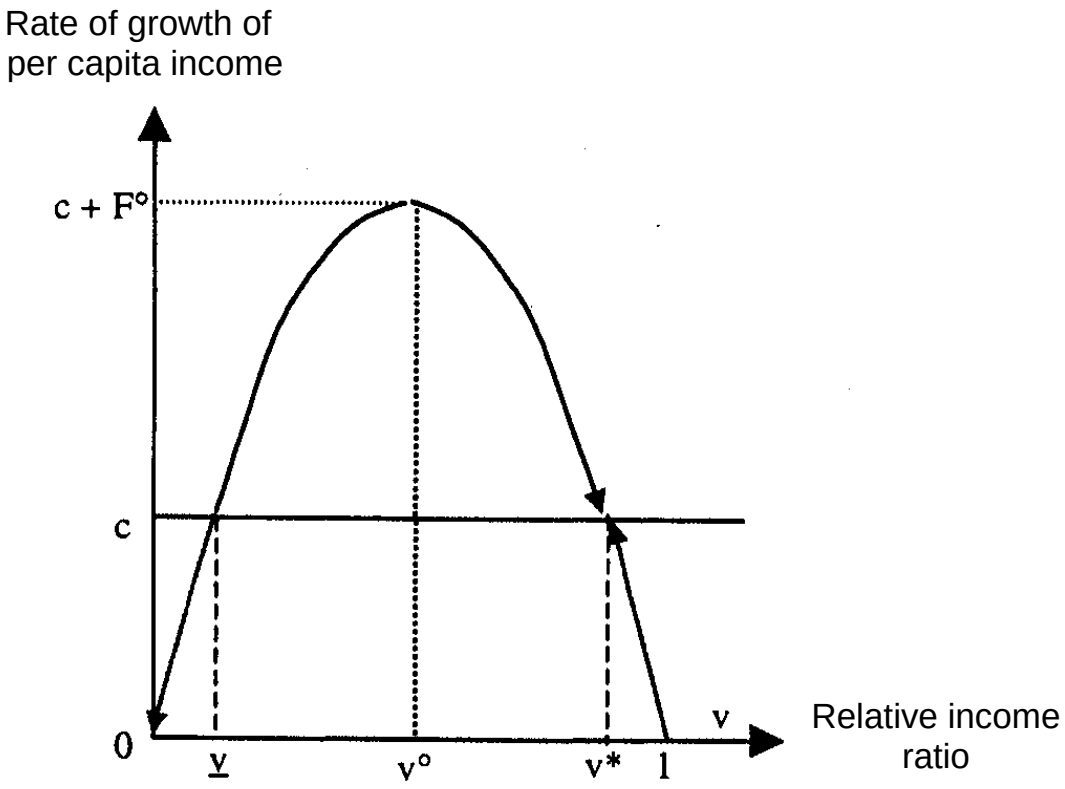


Figure 2. A Phase Diagram

Source: Wan (2004, p. 11)

The question that needs to be answered at this stage is "what are the mechanisms through which the transfer of technology occurs?" First, it is logical to assume that the per capita real income of the leading economy in a given period reflects the "best practice" and the technological frontier which progresses at its own pace. This is consistent with Kuznets' (1989) view that "at any given time, the worldwide, trans-national stock of technology sets a potential of full economic development". For a long period of time the United Kingdom was the leading economy before being replaced by the U.S. around the 1930's. Secondly, the growth rate of , v , reflecting the speed at which a given country catches up, can be approximated as the product of two terms, where the first term represents the " ability to learn" which can be taken as depending on , v ,, and the second term stands for " the opportunity to learn", which increases with the gap, (1 – v).

The "ability to learn" grows with the level of education and the prevailing stock of technology – both of which are highly correlated with relative income. In turn, the "opportunity to learn", or the potential scope for learning depends on the stock of available knowledge over and above that prevailing in a given country at a given time period. The distance between the state of the art technology and that prevailing in a poor country is large and likely to be approximated by the income-cum-technological gap, g = (1 –v). Note that an implication that follows from the above analysis is that a poor country has a low knowledge base and technological stock and therefore a limited capacity to learn, while simultaneously enjoying a large scope for learning - the latter is the flip side of the former.

Policies and institutions play a key role in affecting, v , (the ability to learn) as well as in taking advantage of the benefits that can be potentially derived from the technological gap. At an early stage of development the role of agriculture and primary education is crucial, while later on an outward orientation focused on maximizing interaction and contact with the developed world to benefit from the favorable spillover effects of technology becomes the hallmark of the successful developers. In the next section the alternative strategies (around a common core) followed by different East Asian countries are examined.

Next, we explore the empirical evidence. We computed the relative per capita real income ratio, v , and the gap = (1 – v) for 106 countries . This was the sample of countries for which continuous time series were available over the period 1960 to 1998. To reduce the possible impact of one specific year, we took as our initial period the three- year average around 1961 and as our terminal period the three year average around 1997. Table 2 gives the gaps for the 106 countries in both the beginning year and final year (in columns 1 and 2, respectively). It also shows the absolute value of the gap reduction or increase between 1961 and 1997 (in column 3), and the ratio of the gap reduction (or increase) to the initial gap (in column 4). The countries are listed according to this last ratio that can be taken as an indicator of relative success in reducing the gap with the U.S. It can be seen that 36 countries managed during this period to reduce their income gap with the U.S., while the other 70 fell behind, relatively speaking – their gaps increasing over this period. Figure 3 which is derived from Table 2 (column 4) presents graphically the change in the relative gap during the period under consideration.

The relative gap reduction ranges from a high of .81 for from Hong Kong to a low -6.65 in New Zealand. The first observation that jumps out is how successfully East Asia and, to a lesser extent South East Asia, have performed in terms of relative gap reduction. Five of the first six countries in column 4 of Table 2 are from East Asia (the first four positions are occupied by , respectively, Hong Kong, Singapore, Japan and Taiwan; South Korea is in sixth place ; while Malaysia is 16th, Thailand 17th and Indonesia 21st). Figure 3 which lists countries from worst to best performers in terms of relative change in gap makes clear the dominant position of these countries. Of the 36 countries revealing a reduction in their relative gaps with the U.S between 1961 and 1997, 9 were from East and South East Asia and 13 were from Europe.

It is noteworthy how few countries from the other developing regions -outside East and South East Asia- achieved to improve their relative income position vis-à-vis the U.S. during this period. As can be seen from Table 2 there were only 3 countries from Latin America, 2 from Africa, 3 from the Middle East, 1 from South Asia and 5 from other regions (mainly islands economies). The retrogression of countries such as Argentina, New Zealand and Australia that started in 1961 with initial income levels only slightly below that of the U.S. is remarkable.

Table 2 Income Gap ($g_{97} - g_{61}$) and Relative Income Gap ($(g_{97} - g_{61})/ g_{61}$ for 106 countries*

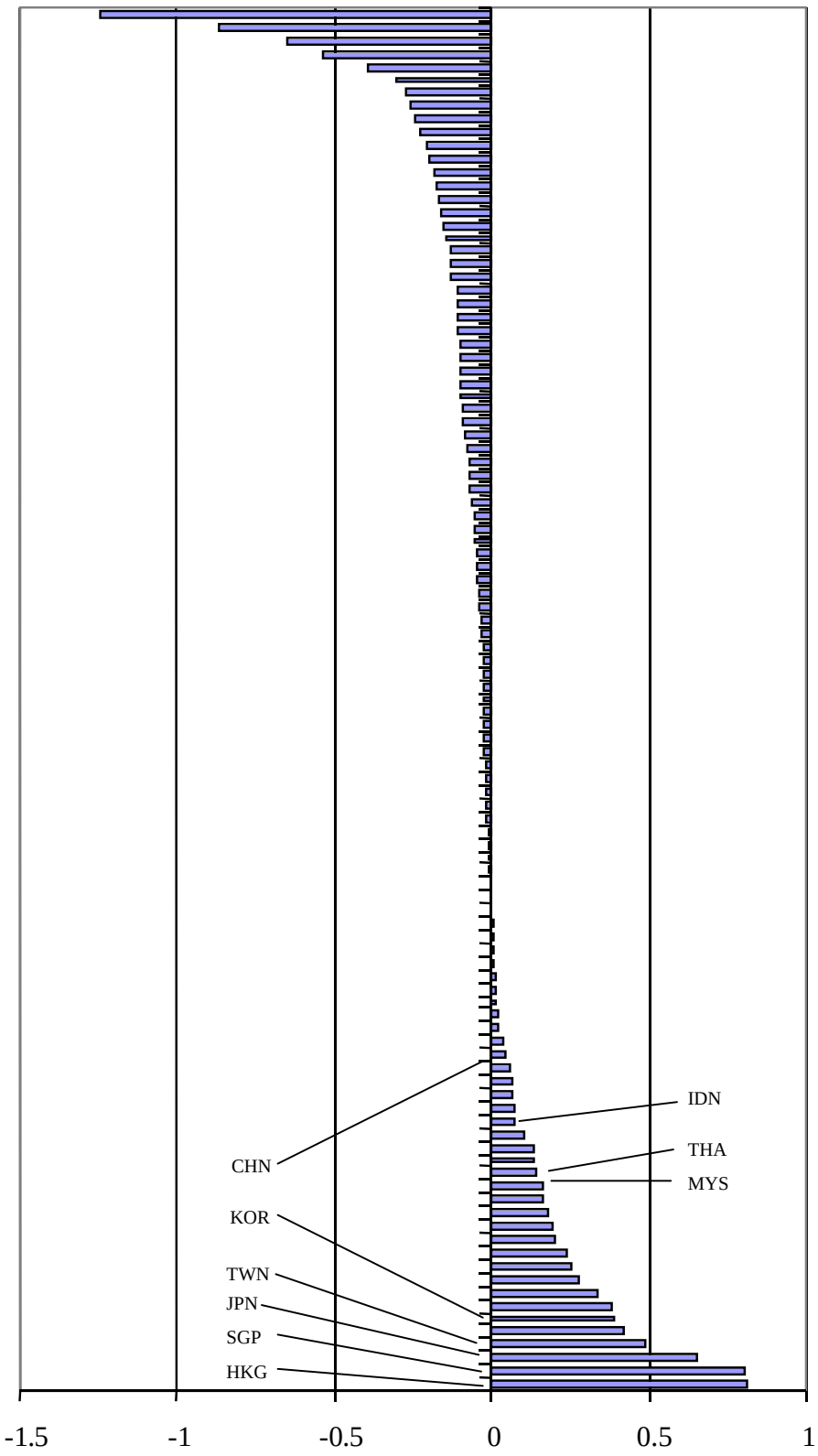
	g_{97}	g_{61}	g_{61}-g_{97}	g_{61}-g_{97}/ g_{61}
Economy	ave.gap96-98	ave.gap60-62	Gap reduction	Gap reduction rate
HKG	14.5478106	76.10361672	61.55580611	0.80884206
SGP	15.3430034	78.9688076	63.6258042	0.805708053
JPN	20.2644069	58.69350722	38.42910027	0.654741931
TWN	45.6373575	88.71242863	43.0750711	0.48555847
IRL	33.3221014	57.77727451	24.45517312	0.423266299
KOR	53.6468542	88.41164888	34.76479471	0.393215093
NOR	15.5028405	25.05572044	9.552879912	0.381265425
ISL	25.1353973	37.73258978	12.59719243	0.333854435
AUT	27.9634392	38.61727071	10.65383146	0.275882559
PRT	53.4319808	71.92445196	18.49247113	0.257109656
ITA	31.0457055	40.920956	9.875250538	0.24132502
ESP	46.5763539	58.26464735	11.68829342	0.200606954
BEL	28.2342818	35.06378477	6.829502991	0.194773697
SYC	65.3024737	79.76796296	14.4654893	0.1813446
MUS	59.383012	71.12611546	11.74310342	0.165102555
MYS	68.5075286	81.7763871	13.26885847	0.162257822
THA	77.6391275	90.34006129	12.70093379	0.140590272
BWA	79.7224452	92.23126318	12.50881802	0.13562449
GRC	56.2820037	65.0174505	8.735446798	0.134355419
FIN	32.2052505	36.08344991	3.878199418	0.10747862
IDN	87.0360884	94.15228052	7.116192074	0.075581728
FRA	31.6569206	34.17590215	2.51898158	0.073706367
ROM	84.1132223	90.09508866	5.981866388	0.066395033
ISR	44.4202881	47.48277051	3.06248243	0.064496709
CHN	89.774899	95.01553357	5.240634547	0.055155556
GAB	72.113641	75.43660458	3.32296362	0.044049751
BRA	77.1262551	79.85242052	2.726165389	0.034140047
SYR	86.6492475	88.74859031	2.099342784	0.023654942
CPV	89.1592334	91.02240755	1.863174127	0.020469401
IRN	82.3530349	83.7313701	1.378335228	0.016461396
MAR	86.9704021	88.16511452	1.194712433	0.013550852
BRB	49.8605242	50.39587758	0.535353366	0.010622959
DOM	85.6661382	86.47453929	0.808401057	0.009348429
PRY	83.6563788	84.3395024	0.683123564	0.008099687
IND	92.7494766	93.11133721	0.361860595	0.003886322
TUR	77.619931	77.91898195	0.299050918	0.003837973
PAK	93.529317	93.35314421	-0.176172826	-0.001887165
CHL	68.9699408	68.70689019	-0.263050656	-0.003828592
EGY	87.4135212	87.03943418	-0.374087067	-0.004297903
PAN	80.5982568	80.07435627	-0.523900491	-0.006542675
LKA	89.3929998	88.75853321	-0.634466603	-0.007148232
LSO	95.4444918	94.55898663	-0.885505151	-0.00936458

HTI	93.2949982	92.25755435	-1.037443884	-0.011245083
PRI	67.0216123	66.14672505	-0.874887283	-0.013226464
UGA	97.0822896	95.72058131	-1.361708254	-0.014225867
MWI	97.4659108	95.97281025	-1.493100525	-0.015557537
NPL	95.5889776	94.03764829	-1.551329343	-0.016496896
COL	81.6624044	80.16641609	-1.495988352	-0.018661036
DZA	84.681288	82.98694767	-1.694340352	-0.02041695
BDI	97.9230599	95.93595491	-1.987104994	-0.020712829
TZA	98.5279836	96.26687165	-2.261111947	-0.023487955
COG	94.4690543	92.23867563	-2.230378631	-0.024180514
BFA	97.0078162	94.66264451	-2.345171682	-0.024773993
ETH	98.084846	95.71064406	-2.374201901	-0.024806038
MRT	95.7135989	93.27896531	-2.434633627	-0.026100564
FJI	82.8408091	80.6423049	-2.198504217	-0.027262418
NLD	26.6306406	25.91211548	-0.71852516	-0.027729313
GNB	97.4498477	94.77854647	-2.671301253	-0.028184662
KEN	95.7253303	93.0236415	-2.701688834	-0.029043035
BGD	94.903967	91.59520777	-3.308759245	-0.036123716
JOR	87.2168268	83.95856864	-3.258258198	-0.038807929
MLI	97.1703846	93.07669136	-4.093693208	-0.043981937
RWA	97.1969307	93.10014311	-4.096787575	-0.044004095
NGA	97.0541922	92.88626304	-4.167929164	-0.044871319
BEN	96.3257356	91.61830973	-4.707425878	-0.051380842
ECU	87.8465952	83.18202305	-4.664572198	-0.056076686
TTO	71.5715133	67.7231186	-3.848394682	-0.05682542
TGO	96.9159852	91.55762473	-5.35836044	-0.058524459
GMB	96.418767	90.37908878	-6.039678225	-0.066826058
HND	92.9131028	87.0925141	-5.820588661	-0.06683225
PHL	89.2831995	83.68177106	-5.601428438	-0.06693726
TCD	97.0040977	89.79874698	-7.205350677	-0.080238878
CMR	93.5791094	86.04595793	-7.533151462	-0.087547999
PNG	88.8400583	81.43428384	-7.405774474	-0.090941728
GTM	87.0454623	79.47556479	-7.569897519	-0.095248112
JAM	88.4956638	80.66048213	-7.835181704	-0.097137799
ZWE	90.8869613	82.56299622	-8.323965057	-0.100819561
MDG	97.3363507	88.36119738	-8.975153273	-0.101573468
BOL	91.1772959	82.74358823	-8.433707713	-0.101925816
MEX	74.6852027	67.76872701	-6.916475662	-0.102059991
CIV	93.5056925	84.60061559	-8.905076908	-0.10526019
GHA	95.7473894	86.55806663	-9.18932278	-0.106163679
GUY	89.2021952	80.63366529	-8.568529943	-0.106264919
NER	97.3526622	87.86238422	-9.490278005	-0.108012981
COM	94.5518067	83.83185451	-10.71995224	-0.127874449
SEN	94.9769148	84.05737908	-10.91953574	-0.129905737
CRI	82.6068852	73.04039663	-9.566488525	-0.130975309
CAF	96.9884164	84.85757214	-12.1308443	-0.142955354
MOZ	96.9440351	84.41032877	-12.53370631	-0.148485458

SLV	85.7548011	73.96137331	-11.7934278	-0.159453878
PER	85.0254917	73.06293396	-11.96255777	-0.163729502
ZMB	97.2934588	82.66978232	-14.62367653	-0.176892646
CAN	21.4150082	18.14744388	-3.267564348	-0.180056451
VEN	78.3163842	65.44665887	-12.86972536	-0.196644498
ZAF	75.4110366	62.48449568	-12.92654094	-0.206875975
GNQ	92.4966821	75.16737453	-17.32930758	-0.230542941
GIN	90.8284248	73.00916379	-17.819261	-0.244068828
URY	67.736107	54.01769935	-13.71840763	-0.253961346
NIC	94.5717901	74.4866721	-20.08511799	-0.269647139
NAM	85.5182958	65.69563029	-19.82266546	-0.301734916
GBR	30.9636466	22.19726946	-8.766377096	-0.394930427
ARG	62.9917464	40.95742531	-22.03432114	-0.53798111
AUS	22.0820448	13.37831491	-8.703729902	-0.650584917
DNK	18.0538983	9.66554232	-8.388355991	-0.867861907
SWE	29.6395747	13.21798347	-16.42159126	-1.242367363
NZL	41.6548916	5.443025012	-36.2118666	-6.652893662

*Luxembourg, Switzerland, & USA are excluded

Figure 3. The Change in the Relative Gap for 106 Countries between 1961 and 1997 (based on Table 2, column 4)



For clarity, the outliner, NZL, at -6.653 is excluded.

The breakdown above confirms hypotheses a) and b) mentioned earlier, namely that in terms of frequency the reduction in the technology (income gap) is highest among the mid-income countries and that gap reduction is relatively infrequent among developing countries.

What were the key elements of the core development strategy adopted by East Asia and some South East Asian countries that allowed them to reduce their income and technological gaps relative to the leading economy so significantly. Six such key elements deserve to be highlighted. First, the emphasis during the early phase on promoting: a) *agricultural development* to generate the transfer of an agricultural surplus; and b*) primary education* to generate the human capital resources required by the incipient industrial sector. This allowed this region to reach the take off point v. The next five elements were needed to insure that the growth process would be sustainable.

The second element was the emphasis on maintaining *macroeconomic stability* that was required to insure a sustainable and equitable long term development path that in so doing would contribute to the survival of regimes that were vulnerable to political and even military attacks from within as well as from outside.

The third element consisted of an *opening up process*. A transition from an essentially inward-looking and closed economy to an outward-oriented, open economy was considered necessary to acquire more advanced knowledge and technology. The *opening up process* allowed East Asian actors to become actors in the interdependent global economy and learn from interacting with it. The argument here is not that the growth of East Asia was necessarily export-led, but rather that the interdependence between trade and output growth engendered a cumulative virtuous circle. Ranis (1999) remarked that the two-way linkage between growth and trade invalidates the concept of trade as a "leading sector" or the concept of "trade-led growth" –even in the case of a relatively small country like Taiwan.[9]

[9] There is another approach based on Lucas(1976) that emphasizes the fact that economic transactions reflect decisions by forward–looking agents, taken under specific policy regimes such as import-substituting, outward-free-market-oriented and outward-oriented-export-promoting. A given policy regime is represented by, and consists of, a set of laws and regulations, the statements of officials, discretionary rulings, all of which provide the setting under which agents make decisions. The *trade volume* can be taken as the proxy for such diffuse and incipient signals characterizing a given policy regime.

The fourth element was based on the belief that *emulation of the technological leader* would provide the greatest scope for the transfer of knowledge. This meant establishing close trade and investment connections with the U.S. and learning as much as possible from the highly competitive American market. Emulation and the copying of technologies (reverse engineering) in the 1970's paid off handsomely and, probably, benefited East Asia more than if it had invested relatively more in R&D or relied on alternative markets. The relatively high proportion of East Asian exports to, and imports from the U.S., compared to most other economies at the same stage of development, provides support for this strategic element. The frequent changes in fashion, style and technology in manufacturing production make it important to interact closely with the leader to keep up.

The next two elements are related to the initial conditions prevailing in East Asia at the beginning of the growth process, after the end of the Second World War. The fifth element consisted of taking advantage of *intra- East Asian connections*. The historical links between Japan and both Taiwan and South Korea going back to the occupation period as well as the close cultural affinities shared by the ethnic Chinese minorities throughout the region provided a catalyst that reduced greatly transaction costs. A conscious effort was made by governments and business people to strengthen those connections. Business relations and contacts within the region were facilitated by the ease of communication (e.g. many Taiwanese and Koreans still spoke Japanese in the 1970's) and greater mutual trust than would have been the case with outsiders. The lower transaction costs between Japan and other East Asian economies is partly due to the common Confucian heritage, and also to the emulation of Japan by other economies after the Meiji period.

The historical fact that Japan, Taiwan ,and South Korea once belonged to the same political unit produces a degree of "common knowledge", but is sometimes also accompanied by lingering political complications.

The sixth element that helps explain the relatively high growth performance around the take off period is clearly inherent to the peculiar initial conditions prevailing in part of East Asia at the time it started its growth spurt. For lack of a better term it could be called *unused growth potential*. For example, Japan both before and during the Second World War made major technological breakthroughs, such as building the

largest battleship of that period (the “Yamato”). But due to massive destruction of its infrastructure and post-war dislocations, the actual real per capita income of Japan fell to about two-thirds of that of Spain around 1950. This clearly understated the technological capacity of Japan’s economy. Taiwan offers another example. The massive migration from the Mainland in the late 1940’s provided a sudden discrete increase in the stock of human capital and know-how. It took sometime before these resources were integrated into the socio-economic system. During the transition Taiwan was blessed with an unused growth potential.

Figure 4 attempts to represent graphically these last four elements with the help of a phase diagram. In Panel A the opening up effect is shown. East Asian countries started as essentially closed economies which in the absence of a big push in the form of an agrarian reform followed by an opening up phase would have resulted in stagnation (denoted by the left side arrow of the lower , closed economy, parabola).

The adoption of an outward orientation allowed these countries to jump in a discrete fashion to a higher growth regime represented by the top parabola and reduced greatly the cost of technology acquisition. Once their growth rates surpassed that of the U. S. leader, the catching up process was underway. By now there is overwhelming evidence that countries which persisted with an import-substitution trade regime fared poorly and tended to retrogress in terms of relative income vis-à-vis the U.S.

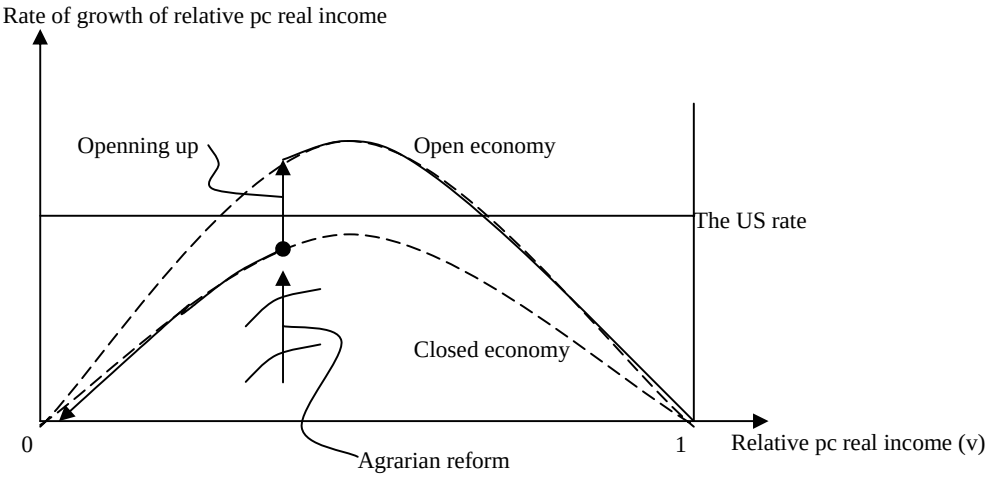
Panel B of Figure 4 illustrates the implications of establishing and maintaining closer relations with the technological leader. For example, it is likely that the greater emulation of American technologies by Japan placed it on a higher parabola and corresponding growth path than France over the last half century. As Table 2 shows Japan’s relative gap shrunk from 58.7 per cent to 20.3 per cent between 1961 and 1997, while that of France declined only marginally from 34.2 to 31.7 per cent. A higher present relative income does not, of course, insure that the next generation of innovations will necessarily originate in the richest countries. In fact, there exists a risk that a culture based on copying and emulation could thwart creativity

and innovation.[10] In this context two apparent handicaps faced by East Asia, in comparison with the U.S., are that it had very limited opportunity of attracting scientific and technical personnel from Europe, and secondly, that it was not endowed with a tradition of scientific inquiry (Uchida, 1991). In the same vein, Hayami(1998) states that "In order to sustain growth, it is vital for Japan to shift from being a borrower to an originator of innovative ideas and concepts, so that its growth pattern will be transformed to the Kuznet's pattern". The same applies equally well to Taiwan and South Korea.

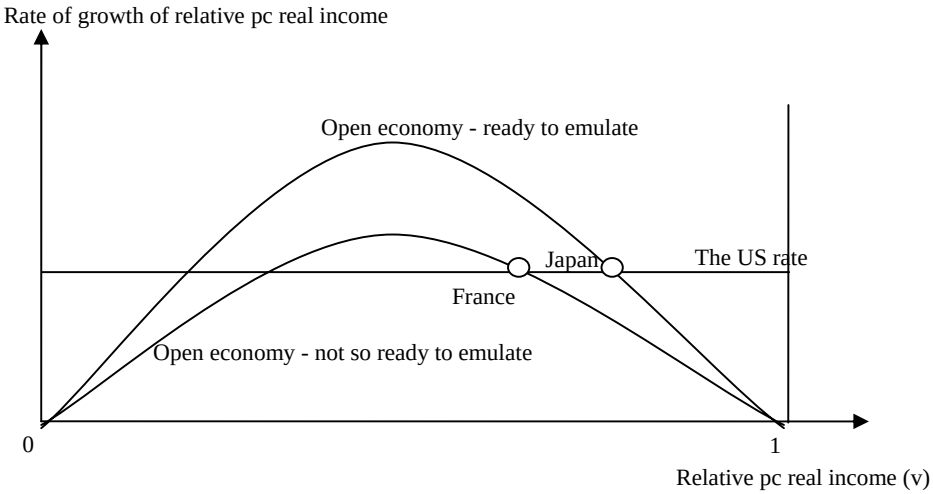
[10] The present state of the field of information technology is quite suggestive. For now, the largest exporter of memory chips is Korea. The four main economies producing computers are the US, Japan, the PRC and Taiwan, with brandnames from the US, Japan and Taiwan (for the latter, desktops are from Tatung, laptops from Acer and notebooks from Asustek). There are two operating systems, Windows and Linux, the first is American and the latter is Finnish, hence European. If hardware fabrication requires discipline and attentiveness, software development calls for creativeness and independence, and the necessary condition to be a technological leader certainly include creativeness and inderpendence. Thus, for any balanced comparison between the current West European and East Asian economies, these aspects must be taken into consideration.

Figure 4. Phase Diagrams to Illustrate Four Characteristic Elements of East Asia's Development Strategy

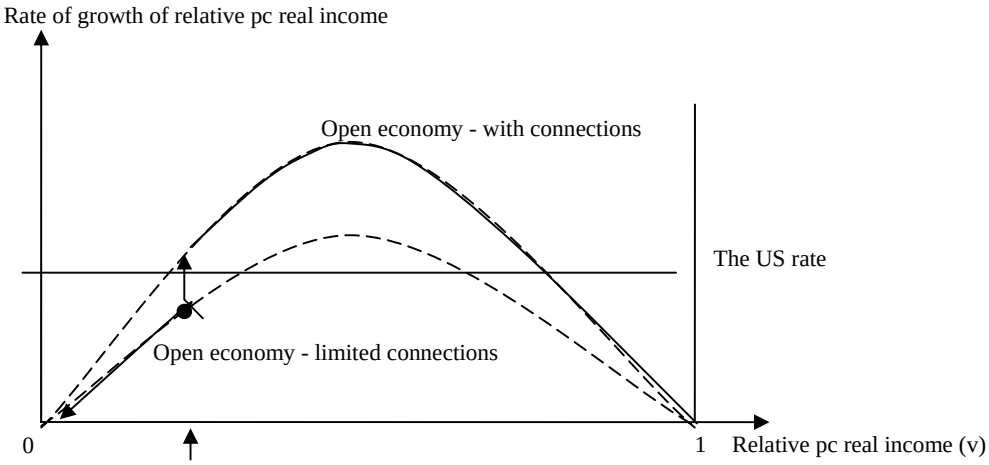
A. The openning up effect



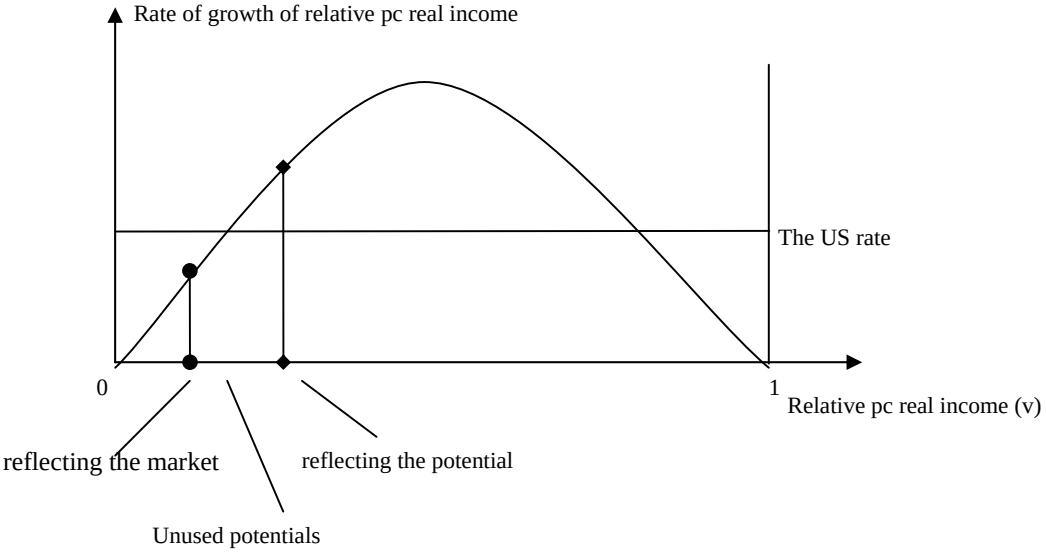
B. 'Closer relation' with the technology leader



C. Intra-East Asia connections



D. Unused potentials - Japan and Taiwan, after World War II



Panel C of Figure 4 demonstrates the impact of the greater inter-connectedness within the East Asian economies. Here, again, the building of closer ties is likely to have created a business environment with much lower transaction costs than would have prevailed with more limited connections. One example suffices to illustrate the importance of this effect. In recent years, Hong Kong supplied 60 per cent of the massive flow of "foreign investment" into China, and 11 million workers in the Pearl River Delta of PRC work under Hong Kong management.

The final panel illustrates the consequences of what we termed the "unused growth potential" element. Japan, right after the end of the Second World War and Taiwan right after the migration of the Nationalists from the Mainland were operating below their potential (within their production frontier). Once the untapped resources had been put to productive use, the economy could jump from an initial low growth regime reflecting the market to a higher growth regime.

In an attempt to test how significant and how strong some of the above effects were in explaining the global growth in the last fifty years, we used the per capita real income data from the Penn World Table for 106 countries over the period 1961 to 1997. We took as our dependent variable the relative change in the gap during that period (the initial gap in 1961 minus the terminal gap in 1997 divided by the initial gap). As independent (explanatory) variables we used the initial relative gap; the initial relative gap squared; the relative change in openness (the ratio of the sum of exports plus imports to GNP in the final period minus this same ratio in the beginning period this whole term divided by this ratio in the final period); and an East South East Asia dummy. The results are shown in Table 3.

It is clear that the initial conditions as reflected by the initial gap and gap squared are important and statistically significant at the 1% level. The openness variable is significant at the 10% level and the East/South East dummy at the 5% level. These results suggest that openness and close intra-East and South East Asian connections were strongly correlated with the catching up process as measured by the relative gap reduction. Another independent variable that could be used to check the strength and significance of

the "emulation of the leader" effect is the proportion of each country's trade with the U.S out of each country's total trade-something we might try subsequently.

Table 3.Multiple Regression Equation: Dependent Variable: Change in the Relative Gap between 1997 and 1961

	Coefficients	t Statistics
Intercept	-2.52	-7.74
Initial Gap	0.081	6.70
$(\text{Initial Gap})^2$	-0.006	-6.00
Openness	0.11	1.79
East and SE Asia Dummy	0.45	2.32

Regression Statistics: Multiple R 0.62; R Square 0.39; Adjusted R Square 0.37; Standard Error 0.55; Observations 106

4. Alternative Country Experiences and the Role of the Government in Meeting the Common Core of Elements

The fundamental role of the government in East Asia and to a somewhat lesser extent in South East Asia after the Second World War can be distinguished into two phases. In the first phase the government set up the institutional and policy foundations required for the growth of agriculture and the spread of primary education to allow a take–off from a poor agrarian economy and traditional society into a path of sustainable development and modernization. The transfer of the agricultural surplus and the building up of a pool of educated workers provided the resources needed outside of agriculture to enter the second phase, characterized by a continuous and careful shepherding of the economy to acquire technology, upgrade and modernize the economy and ultimately catch up with the Western World. As Hayami (1998) clearly stated "I would like to single out as the key to the high performance of East Asian economies the successful preparation of institutional conditions for effective technology borrowing."

The specific role of the government varied from country to country. Yet it can be claimed that the State acted neither as a central planner (excluding China during the Cultural Revolution), nor as a backseat

driver, but as an astute umpire[11], or conductor of an orchestra for two tasks: to set the stage for taking off into the trading world, and to continue the structural upgrading. The first task coincided largely and overlapped with the first phase above and required prudent macroeconomic management, pragmatic education for the labor force, and financing the infrastructure investment out of the agricultural surplus. The second task, in the post–take-off phase, consisted of overcoming the coordination failure that can stop a market economy from flourishing.

In terms of the degree of government intervention, the spectrum ranged from Hong Kong (during the British reign) that relied on laissez faire to South Korea, which under Park, saw its industrialization process being micro-managed by the manipulation of the business groups through the directed credit policy. The other East and South East Asian countries fall somewhere within this continuum.

Next, we attempt to provide selective examples of alternative policies and institutions adopted by the various governments of the region and how they affected the core characteristic elements of the East Asian development model we identified earlier: 1. the treatment of agriculture and education in the pre-take-off phase; 2. macroeconomic management and stability; 3. openness and outward-orientation; 4. emulation of the technological leader; and 5. intra-East and South East Asian connections.[12]

Since some policies and institutions affected more than one element, the category under which they are discussed is somewhat arbitrary. The hope is that these few examples will illustrate both the commonality of the development regimes followed by the countries under consideration and some of the diversity in the means that were used in pursuing these regimes.

4.1 Treatment of Agriculture and Education in the Pre-Take-off Phase

[11] One illustrative example of the umpire role of the State is when the Taiwanese shoemaking association requested the government to enforce decisions among the private firms on quality and pricing, through its power of granting export permits (Cheng, 2001).
[12] The sixth element, the "unused growth potential", was truly exogenous. However there is little doubt that both Japan and Taiwan intervened in a way to take advantage of this potential.

Three examples should suffice to illustrate the way the region nurtured its agricultural sector before delicately capturing the agricultural surplus. The critical lesson learned from the Taiwanese experience, and that of other countries in the region, is that a continuing *gross* flow of resources should be provided to agriculture in the form of such means as investment in physical infrastructure (irrigation, and road network), inputs, research, credit, combined with appropriate institutions(such as the Joint Commission for Rural Reconstruction and Farmers' Associations) and price policies to increase this sector's productivity and potential capacity of contributing an even larger return flow to the rest of the economy. This allowed the government, in turn, to siphon off a larger gross flow of taxes and revenues (mainly through the hidden rice tax[13]) from increasing agricultural production so as to generate a *net* transfer to the rest of the economy.

During the 1970's, Indonesia earned large windfall profits from oil. A part of these windfall profits were wisely recycled and spent in the agricultural sector on rural infrastructure, irrigation schemes, agricultural credit and fertilizer subsidies. The rice intensification program that originated during this period was so successful that it converted Indonesia from the largest rice-importing country in the world to virtual self-sufficiency by the mid-1980's. The increase in supply resulted in lower prices than would have prevailed otherwise, and led to an indirect transfer of the surplus through a market-based resource shift.

The spread of education was essential for the catching –up process. For example in South Korea elementary school enrollment rose from about 60 per cent in the mid-fifties to 85 per cent in1960 and 100% by 1970; middle school enrollment, in the corresponding periods, rose from 20% to about 53% and over 95% by 1980; and high school enrollment went from about 15% at the start to almost 70% by 1980. Finally, tertiary enrollment rose from an insignificant proportion to about one-fifth in 1980 and to about half by the mid-nineties. Although the pace at which human capital was created in South Korea was faster than in most other countries in the region, the trend is typical. The strong emphasis on spreading education to cover rural areas and women in an early phase of development was instrumental in setting the stage for the phase of sustained growth.

[13] In the early phase of development, the State had a monopoly on fertilizer and for a period sold the fertilizer to farmers at a price significantly higher than the world price.

4.2 Macroeconomic Management and Stability

Macroeconomic stability has been a major policy objective throughout the development of East and South East Asia. Except for a few episodes, the management of public finance was relatively well disciplined. The two key pillars of macroeconomic stability were the maintenance of relatively balanced budgets and equilibrium (or near equilibrium) exchange rates. Why was this region so much more successful than the rest of the developing world in achieving macroeconomic stability? A number of reasons come to mind. First the memory of the painful consequences of the episodes of hyperinflation most of these economies suffered from in their early phase must have been a strong incentive to keep inflation under close control. Secondly, most of the regimes in power faced external and internal military and political threats. Consequently, it was essential to strive for an equitable development process that would benefit all segments of the population. The survival of many of these autocratic regimes hinged on being able to raise the standard of living of all groups in an equitable way. Inflation would have skewed the income distribution and aggravated dissensions among different socio-economic groups which could have become politically de-stabilizing. Another reason for the success in the fight against inflation is the relative independence of career bureaucrats from the government in power and the reliance, in many of these countries, on rules rather than discrete policies.

Here again two examples are given. Taiwan throughout its growth adhered faithfully in the design of its economic policy to the guiding principle of "progress with stability", or "growth with stability" in Kuo's (1999) more idiomatic translation. The idea was to seek growth within a stable environment (Thorbecke and Wan, 2002).[14]The emphasis on stability- one of the two pillars of Taiwan's development strategy-can be interpreted as a combination of sub-objectives including price stability, a balanced budget, a strong balance of payments, steady and continuous growth avoiding fluctuations, and risk aversion. At least until the late eighties, Taiwan was one of few countries that enjoyed an almost continuous balanced –if not surplus fiscal budget. Over a period, Taiwan let its currency depreciate in line with the popular ideology of "export first", or "all out for exports" in the society (Shea,1999). This brought about a massive increase in

[14] K.T. Lee, a chief architect of Taiwan's economic policy, remarked that the Taiwanese government would always opt for more stability even if it meant foregoing, or sacrificing, an additional two percent in annual growth.

foreign reserves that provided a welcome insurance against possible external shocks for an economy that could not rely on the IMF or World Bank financial lifelines and helped Taiwan overcome the Asian Financial Crisis better than its neighbors.

The economic and political crisis of 1966 in Indonesia that brought in the "New Order" government led by Suharto induced major institutional changes in the objectives of, and principles underlying economic (and particularly macroeconomic) policy. At the limit one can even suggest that an implicit "Economic Constitution" evolved as a reaction to the crisis. The two fundamental pillars of the "Economic Constitution" were a balanced budget and currency convertibility (i.e., the maintenance of an equilibrium exchange rate). The "balanced budget" Presidential Decree passed in 1967, prohibited domestic financing of the budget either in the form of debt or money creation. The successful performance of the Indonesian economy until 1997 in terms of growth and poverty alleviation owed much to the macroeconomic policy that was followed throughout. Ironically, it is when the "Economic Constitution" was relaxed in the late eighties- largely through the excessive deregulation of the banking and financial sector that the seeds of the lingering malaise that has affected the country following the Asian Financial Crisis were sown.

4.2 Openness and Outward-Orientation

In section 3 we discussed in some detail how openness acts as a catalyst in the acquisition of technology. In this sub-section we illustrate by way of a comparison between Taiwan and South Korea the very different instruments in terms of trade and industrial policies that were used in these countries to achieve the same ultimate goal of obtaining state of the art technology. In both cases, there was a realization that exports were the route (the conveyor belt) to the transfer of technology. At least until the eighties export – promotion policies were superimposed on import-substitution policies rather than replacing them and have been strong enough to have effectively more than compensated for the negative incentives faced by exporters arising from import-substitution policies (Hayami,1998).

The first and foremost instrument that was used to encourage exports consisted of the strategic way these two governments intervened with the provision of credit. Under the Park regime, short term "policy loans" were extended to business groups (chaebols) at negative real interest rates – largely financed by the "inflation tax". In the form of a contest, exporters who met the targets set by the government continued to receive subsidized credit and those who failed were cut off. Thus favored the conglomerates grew fast and reached such top-heavy debt-to-equity ratios that placed them under the thumb of the state-controlled banks.[15] Eventually, as these business groups became "too big to fail", Alladin's genie was metamorphosed into Frankenstein's creature and many of them crashed after being hit by the financial crisis of 1997. The emphasis on heavy industries starting in the seventies under government targeting further reinforced the "chaebol" structure.

In contrast, the KMT that presided over Taiwan's industrialization had been traumatized by the hyperinflation episode earlier on the Mainland and it avoided inflation and foreign borrowing like the plague. Their policy loans never carried negative real interest rates and the favored businessmen could not count on a bail-out in case of distress. Another major difference with South Korea is the dominance of Small and Medium Enterprises (SMEs) throughout Taiwan's development experience. The government-controlled banks operated somewhat like pawnshops and never supported the heavy industrial sectors, such as shipbuilding and automobiles for export.

As a consequence of these different policy regimes, most Taiwanese firms cater to "niche markets" and tend to serve their foreign clients as sub-contractors, unlike Korean firms which compete in world markets with brand name products. The Koreans excel in the production of commodities requiring scale economies and vertically integrated operations while the Taiwanese on design skills and flexible operations.[16]In the latter context Taiwan drew much benefit from its investment in industrial parks that attracted many foreign firms and set the stage for joint ventures and a very direct transfer of technology. For example Taiwan

[15] This is how Park could preside over his monthly business lunches with a dozen business tycoons and browbeat them to take risky investments (like the shipyard at Hyundai) by implicit threat.
[16] The opportunity to export transformed many Taiwan's villages, first into producers of straw hats into plastic footwear suppliers of Japanese trading companies catering to the American market, before shifting quickly to produce leather shoes sold directly to American purchasing agents(Levy,1990,Cheng,2001).

launched the semi-conductor industry by establishing government laboratories to develop the basic know-how, then formed spin-off firms from such laboratories and allowed them to become privatized through stock market offerings. An interesting method of a policy to provide indirect incentives to exporters in Taiwan was the public policy to improve the efficiency of domestic firms producing inputs (upstream) used by domestic exporters (downstream). Taiwan has developed very efficient upstream industries in both the synthetic fibre and the semi-conductor industries by using this novel type of industrial policy (Thorbecke,Tung and Wan, 2002).

4.3 Emulation of the United States as the Technological Leader

Clearly if technology acquisition is a major mean of catching up and developing then it is logical to learn as much as possible from the American market. The penetration of the U.S. market is not only a sign of success but is also an invaluable source of technological information. A few examples are given to illustrate this point briefly. Morawetz (1980?) stressed the very different markets (environments) faced by garment exporters in the seventies. East Asian exporters to the U.S. market had to meet strict quality specifications and punctual delivery in order to compete in the American market. In contrast their Colombian counterparts who dealt with neighboring countries faced much less demanding customers and consequently did not acquire the technological skills and marketing standards to compete in the world market. In the same vein, the President of Giant, a Taiwanese bicycle firm, stated that in working as a sub-contractor for Schwinn, the American firm, one learns the crucial importance of quality and service. By becoming sub-contractors, Taiwanese firms were forced to adapt to the strict requirements of the American firms they supplied and create “niche markets” that were tailor-made to meet the specifications of the American buyers.

4.4 Intra-East and South East Asia Connections

A common advantage enjoyed by the economies of this region has been the relative ease in establishing strategic complementarities with Japanese firms by virtue of geographical and cultural closeness which could be called a “neighborhood effect”(Hayami,1998). As Hayami remarked “the development of

Japan's capacity in manufacturing production, exports and imports has been transmitted initially to NIEs and later to ASEAN, and more recently to the coastal areas of China". This transmission occurred in a "wild-geese–flying-pattern".

In addition to geographical proximity what is the cement that bounds the countries of this region together? It is useful to distinguish between two different types of cement yielding two different nexus of connections. First, historical ties linking Taiwan to South Korea to Japan remained long after the occupation period had ended. Secondly, most countries of the region include among their population either ethnic Chinese majorities or minorities. The close cultural heritage shared by the ethnic Chinese people facilitated greatly economic interaction by reducing transaction costs. In this context, Kojima (1978) reported that for Japanese merchants, trading in Taiwan was as easy as trading in the Southern Japanese islands of Shikoku and Kyushu. There is also much evidence of the strong influence of Taiwanese engineers in Indonesia and of Chinese professionals and workers in Malaysia. Finally, it is interesting to note that cultural affinity often overlaps the two nexus mentioned above. In this context, Smith (1983) indicated that Japanese investors in Malaysia found it easier to work with Chinese Malaysians than Ethnic Malay Malaysians

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