PASCN Philippine APEC Study Center Network

PASCN Discussion Paper No. 99-22

The Great Dragon Effect: Mainland China and the ASEAN Slowdown

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September 1999

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THE GREAT DRAGON EFFECT: MAINLAND CHINA and the ASIAN SLOWDOWN

Raul V. Fabella

Abstract

We study the impacts of the emergence of a Great Dragon on other countries. We first focus on the labor-abundant Great Dragon (Mainland China) and then on the capital-abundant Great Dragon (Japan). We do this in both the static Hechscher-Ohlin-Samuelson framework and the dynamic East Asian model framework.

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Executive Summary

This paper details the many possible economic imports that M. China will exert on the other Asian countries, especially the Asean. The prognosis from the static analysis is negative overall, especially for countries with factor endowments similar but smaller than M. China's, namely, the Philippines. Malaysia and Indonesia can depend on abundant primary resources (e.g., oil, lumber) to complement M. China's growth. Vietnam and Thailand can depend on their prowess at food (rice) production to get by. The dynamic analysis shows the crucial importance of the relative real wage, real exchange rate and DFI's (and capital mobility) in the role M. China played in the Asian crisis. It also highlights how important proactive and aggressive exchange rate policy is in prolonging the adjustment period of the region to the challenge from M. China.

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THE GREAT DRAGON EFFECT: MAINLAND CHINA and the ASIAN SLOWDOWN [*]

Raul V. Fabella [**]

I. INTRODUCTION

East Asia has experienced the emergence in its midst of two economic Great Dragons in the last thirty years. The first one was Japan, which attained gigantic proportions in the 1970s and 1980s, and exerted a tremendous positive pull on the rest of East Asia. South Korea and Taiwan became export powerhouses, churning out goods with heavy Japanese import content. It was not an exaggeration that the S. Koreans downplayed their trade surplus with the U.S. as "disguised Japanese trade surplus". In the second half of the 1980s, Japanese DFIs transformed Malaysia, Thailand and Indonesia into export machines and, eventually, DFI miracles.

The second Great Dragon experience came with the entry of M. China into the world export market in the late 1980s and early 1990s. The impression was unmistakable and scary. The other East Asia promptly lost its thriving sports shoe industry, its textile and garments, its toys and its knick-knacks. Christmas tree manufacturers in Thailand were uprooted with dispatch. The C and D markets of the world became flooded with cheap "Made in China" products. The fledgling tradeable sector in the Asean, used to sending shivers down the spines of others, now itself faced raw end of comparative advantage. The contrast with Japan's positive pull cannot be more pronounced.

In this paper, we will first explore the theory behind the Great Dragon effect. A three-country model will first generate comparative static explanations for the phenomenon we now observe. Then, a dynamic model of East Asia will convey the story in terms of growth.

II. EMERGENCE OF A DRAGON: A STATIC THREE-COUNTRY MODEL

A. The Labor-Abundant Dragon

A.1. Initial Conditions

Consider a three-country, two-good, two-factor trading universe. Factors are immobile. The first country, A (for East Asia), is labor-abundant and the second, W, is capital-abundant. X is the labor-intensive and homogeneous, and Y is the capital-

[*] This study is part of the research project “China and Its Implication to the Asia-Pacific”, funded in whole by the Philippine APEC Study Center Network.
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intensive, homogeneous commodity. By the Heckscher-Ohler-Samuelson proposition, if only A and W trade, A exports X to and imports Y from W.

A.2. Dragon in Hibernation: Country D initially operates in autarky. Let D be initially identical to the pre-trade A so that its initial autarkic price ratio $p^D = (P_X/P_Y)^D = p^A = (P_X/P_Y)^A$, the autarkic price ratio of A. Both are less than the autarkic price ratio of W p^W: $p^A = p^D < P^W$. Now let the labor endowment L_D of D expand rapidly *ceteris paribus*. We know that (see, e.g., Woodland, 1982):

$$p^{D*} = P_X^{D*} - P_Y^{D*} = [-L_D/(\delta_D + \delta_S)] \; |\lambda| \qquad \text{(i)}$$

where (*) indicates rate of growth, δ_D is the elasticity of substitution around the isoquant, δ_S the elasticity of transformation around the production frontier, $(\delta_D + \delta_S) > 0$ and $|\lambda| > 0$ if X is more labor-intensive than Y (λ being the matrix of industry shares). Thus, the autarkic p^D falls and the fall is larger, the larger the growth in labor L_D. Thus, the before-trade post-L growth price ratios are $p^D < p^A < p^W$. But as long as D is autarkic, exports of X to W will all come from A. However, the citizens (labor)of D are now poorer than A's, because each works with less capital and, thus, lower marginal productivity, i.e., $(w/r)^D < (w/r)^A$.

A.3. Export Shares

Let s be A's share of X export market (W's imports of X). We assume s to be a function of p^A and p^D if D opens its door, i.e.,

$$s = s\,(op^A, op^D), \qquad s_1 = (\partial s/\partial p^A) < 0,\ o = 1 \qquad s_2 = (\partial s/\partial p^D) > 0,\ o = 1 \qquad \text{(ii)}$$

where the autarky operator o = 1 if the country trades and equals 0 if the country does not trade. We also make the assumption that $s(0, op^D) = 0$ and $s(op^A, 0) = 1$. Thus, initially, s = 1 and (1-s) = 0, since D does not trade. And finally, s = 0.5 if $p^A = p^D$. In this case, there is no way to differentiate between exports of X from either A or D.

A.4. A Dragon Emerges: Homogeneous X and Y Case

From a position of autarky, D now suddenly throws its doors open to trade. From (2), o = 1 and $s(op^A, op^D)$, and $p^A > p^D$. Since X and Y are homogeneous commodities, and transport cost is either identical or insignificant, s falls from one to zero, and D's export share in the W market (1-s) = 1. A, in effect, becomes autarkic. It loses all its export market for X in W but cannot begin to sell to D (since X is cheaper in D). It wants to import Y but has no hard currency to pay for it apart from borrowing. Nor can it sell the capital-intensive Y to D having become relatively more capital-abundant than D since D can get the same Y cheaper from W.

Claim 1: (Forced Autarky): A reverts to forced autarky when X and Y are homogeneous goods and a previously autarkic but more labor-abundant (than A) country D opens its doors to trade. A's welfare falls.

The result of the emerging (as it were from the cocoon) dragon is a drastically reduced welfare for A. This complete displacement represents the worst possible outcome. The situation of forced autarky remains until the growth and capital accumulation in D eventually equalize factor endowment ratios.

A.5. X as a Spectrum of Goods

Let X be a set of goods rather than a homogeneous commodity. Each $X_i \in X$ has a capital-labor ratio strictly less than that of homogeneous Y: $k_i < k_y$, $\forall i$. So initially, A still exports X to W since A is labor-abundant and imports Y from W.

A.5.a. D Opens Up

Let D be more labor-abundant than A but autarkic initially. When D opens up to trade, A is relatively more capital-abundant, and by HOS, it will export those X_i's which exhibits the lowest k_i's, k_i's $\leq k_i^*$ to A and W (producing these cheaper) and will import X_i's exhibiting higher $k_i > k^*$. A will lose the W market for X such that $k_i \leq k_i^*$. In addition, A will start to trade with D, importing X_i with $k_i < k_i^*$ and exporting X_i with $k_i > k_i^*$. Both A and D will still import Y from W. Intra X trade occurs between A and W.

The welfare effect here is ambiguous. A is forced to upgrade (concentrate on the capital-intensive segment of X), relegating the rest to A. This, more or less, reflects the *flying geese pattern* of consecutive adaptation and relegation of labor-intensive products. There will be adjustment costs but the steady state average k in A is higher and steady state per capita income is higher (see, e.g., Findlay's (1996) characterization of the tradeable sector as a continuum in the Solow-Swan framework). S. Korea and Taiwan are in this position.

> *Claim 2:* Let X be a set of tradeables. Let $X_i \in X$ and k_i be ith capital-labor ratio, but $k_i < k_y$, $\forall_i$. If D opens its door to trade, A (i) retains its exports of X_i to W and starts exporting these to D as long as $k_i > k^*$; (ii) loses its export of X_i to W if $k_i \leq k^*$, and begins to import these from D.

This pattern also mirrors what happens when A and D start out identically and A surges ahead with the expansion of its capital endowment which we will later discuss in connection with the capital abundant dragon.

A.6. With Mobile Capital

If capital is mobile between A and D, the entry of a labor-abundant D will shift comparative advantage for labor-intensive X to D from A. But now, capital from A can and will move to D from A, since capital is now more productive in D, i.e., works with more L. Thus, the capital endowment of A can fall, reducing its grip on the more capital-intensive X_i's. The following is intuitive:

> *Claim 3:* (Negative Pull): Let capital become costlessly mobile between A and D, but not labor, when labor-abundant D opens up. Then with $k^A > k^D$ (where k^A and k^W are weighted aggregate (K/L) in A and D,

respectively), $(w/r)^A > (w/r)^D$ and capital moves from A to D, raises the threshold k* of A's comparative advantage in X and reduces the potential trade between A and D. It also reduces A's export of X to W.

This reduces the relative capital abundance advantage of A and reduces the subset of X that it can hold on to. This leads to reduced trade between A and D, and A and W. This mimics the *Mundell effect* of capital mobility. The negative pull on A can even be more pronounced.

Claim 4: Let capital be costlessly mobile between A and D but not labor. If enough capital moves to D to equalize factor endowment ratios between A and D, then A becomes HOS-identical to D and exactly as poor. With equal poverty, both A and D export X and import Y from W. A suffers *absolute immiserization.*

This is especially true when considerable capital in A is controlled by MNC's with their global reach and facility of relocation. The impact is greater if (a) the capital accumulation in A is heavily dependent on mobile capital (DFI), and (b) the capital-intensive segment of X with $k_i > k_i^*$ is very sparse or under-developed. These are the real source of distress in A due to the emergence of China. Not only are A export shares being contested in W but there is considerable loss of capital (closure of factories). Thailand, Malaysia, Indonesia, Philippines are in this situation.

A.7. Role of Absolute Ricardian Advantage and Scale Economies

While our discussion has so far employed comparative advantage, there are absolute advantage issues as well. Assume D to be initially identical to A and initially autarkic. Let K and L in D rise at the same rate. Now D has absolute advantage in both goods but no comparative advantage since $K^D = \lambda K^A$ and $L^D = \lambda K^A$, $\lambda > 1$. No trade will occur by H-O-S if production technology is identical.

Suppose, however, there is a *Hick's neutral Arrow-type scale economies*, i.e., $H = H(K)$, in the production of X. Then p^D falls below p^A (even if $(w/r)^D = (w/r)^A$, since the (w/r) - p locus shifts, and D will begin to push A out of W market.

Claim 5: Let there be an Arrow *learning-by-doing* in the Hick's neutral parameters of X, i.e., $H_i(K)$, $H_i'(K) > 0$, for each $X_i \in X$. Let D be λ-neutral larger than A, i.e., $K^D = \lambda K^A$ and $L^D = \lambda K^A$, $\lambda > 1$. Then, (i) D's opening up will force A into autarky, if $H_i(K)$ is uniform across i; (ii) if $H_i(K)$ is non-uniform, D's opening will result in a Ricardian comparative advantage between A and D where D concentrates in those X where $H_i(K)$ is largest and A will take up the residual.

The reason for (5)(i) is that D is more productive than A across all X_i's due to uniform Arrow scale economies induced by higher capital endowment. D's labor is richer than A's, i.e., $H(K)^D MP_L = w^D > w^A = H(K)^A MP_L$ since $K^D > K^A$ but X_i's are still cheaper to produce in D, since capital is more productive. Thus, D will export X to W. A has nowhere to export X. D has an absolute Ricardian advantage in X over A. Again, *immiserization* of A results. A retains some X in the case of non-uniform scale economies.

With capital mobile in the trading world, this scale economies effect accelerates. We know that since $H(K)^D MP_K{}^D = r^D > r^A = H(K)^A MP_K{}^A$ and capital will flow into D from A and W. This raises K^D and, thus, $H(K)^D$ further. We have:

Claim 6: if capital mobility is allowed on top of the Arrow learning-by-doing based on K and D being λ-neutral larger than A, capital flows into D from A, and W worsens the plight of A.

The results here point to the overall downward pull on relatively labor-abundant A with the opening up of an absolutely labor-abundant D in a three-country model. D is the poorer country and A is either forced to autarky reduce exports. Adding capital mobility between A and D worsens the negative impact. Some mitigation, however, exists for those A subregions producing more advanced, less labor-intensive X_i's in the heterogeneous X case.

B. The Great Dragon Effect

An open Mainland China is the real counterpart of the emerging labor-abundant dragon. The first thing observers noticed after opening in the 1990s is the very low labor cost, the relatively good infrastructure, the absence of fractious labor disputes and the huge potential market which can support scale economies. East Asia promptly lost first its garment, then its toy industry, and then its sports and sports-shoe industry to factories located in M. China and financed by, heretofore unheard of, levels of DFIs. Although cost of labor in Shanghai is now comparable to other East Asia, the Chinese hinterlands still shelter workers in the hundred millions who are ready to move when circumstances allow. This forms a huge pool of labor that casts a warning shadow on all labor-intensive production in the other East Asia.

C. The Capital-Abundant Dragon

In this section, we treat the case of a three-country trade where the emergence of the third country D flows from a rapid rise of its capital endowment.

C.1. Initial Conditions

Let A and D be initially identical, labor-abundant and trading with W. X and Y are the goods, with X being heterogeneous, labor-intensive, on average, and Y being capital-intensive. No factor-intensity reversal is allowed. Let HOS assumptions hold. Then, for all practical purposes, A and D are subregions of the same country. Their share in exports of X to W will be half-and-half. The autarkic price ratios are $p^A = p^D < p^W$. Trade between A and D does not exist.

C.2. D Emerges

Suppose D forges ahead due to a rapid growth of its effective capital stock (due to either higher savings rate or higher innovation, or human capital growth). Then $(w/r)^D$ rises as r falls and p^D rises above p^A and we have as the autarkic situation: $p^A < p^D < p^W$. In the heterogeneous X case, D will begin to specialize in its trade with W in those $X_i \in X$ such that $k_i > k^*$ and relegate $X_i \in X$ with $k_i \leq k^*$ to A. Furthermore, A and D will begin to trade: A exporting to D, the more labor-intensive

X and importing from D, the less labor-intensive X. The welfare effect of this on A is ambiguous. A's consumers are accessing less labor-intensive X cheaper from D (D's rise in capital means that this segment of X becomes cheaper). But A is also giving up this segment of its exports to W in return for its exports of lower segment to D. The dislocation can be painful.

C.3. Capital Mobility

If capital is mobile between A and D, capital which has become cheaper in D with a rise in K will now move to A where it is scarcer and fetches a higher price. In other words, A receives DFI from D. Thus, A shares in the growing capital-abundance of D resulting in the growth of its own $(w/r)^A$ as r falls as well. The capital inflow mitigates the dislocation in A of the less labor-abundant X. The welfare effect on A with capital mobility in unambiguously positive.

Claim 7: (Positive Pull): If X is heterogeneous and capital is mobile between the rapidly capital accumulating D and the labor-abundant A, A's real wage will grow with D's real wage.

D. The First Great Dragon: Japan

The capital-accumulating dragon D refers to Japan and its positive pull on East Asia in the 1970s and 1980s. Japan's DFI virtually made economic miracles to Thailand, Malaysia and Indonesia. This was the first Great Dragon Effect.

III. EAST ASIAN GROWTH WITH A DRAGON

In Section II, we dealt with the trade pattern and some welfare impact of the entry or emergence of a Great Dragon in a comparative static framework. In this section, we attempt a dynamic characterization of the impact of a dragon on the growth of a smaller neighbor.

A. General Equilibrium Structure With Exogenous Interest Rate

The purpose of this section is to demonstrate how the drive to accumulate capital induces a tight credit policy in a policy environment that approximated that of the East Asian NICs. The model does not attempt to encompass all the compelling features described in the heuristic account but is shown to be consistent with most of them. The model's internal consistency breaks down with Mundell-Fleming capital liberalization.

We construct a model of a small semi-open economy with two sectors: the tradeable sector, T, and the nontradeable sector, N. T includes manufacturing. N includes prominently quasi-tradeables such as infrastructure, intermediation industries (financial, distribution, informal) unemployment and real estate. Each sector uses labour and capital and all factors are accounted for (N includes unemployment). The economy is labour abundant and T is more capital-intensive than N. An alternative useful characterization of N views the sector as consisting of two segments of differing capital intensity, with N's capital-labor ratio being the weighted average of

the two segments' capital-labor ratios. The capital intensive segment, i.e., real estate and banking, is more capital-intensive than T; the labor-intensive segment is more labor-intensive than T. No factor reversal is allowed. Finally, the production technology is constant returns to scale. Let $k = (K_T/L_T)$, $h = (K_N/L_N)$, f(k) the average output in T, g(h), the average output in N, p = Q/P, where Q is the price of N and P is the price of T, the first order conditions for Π maximum are:

$$f'(k) = r \tag{1}$$

$$f(k) - f'(k)k = w \tag{2}$$

$$pg'(h) = \lambda r, \quad \lambda > 1 \tag{3}$$

$$p[g(h) - g'(h)h] = w \tag{4}$$

where w in the wage rate and λr are the interest rate in T and N, respectively. We assume that (1)-(4) characterize a locally stable equilibrium. Note that P is inclusive of tariff on imports of T. The four equations can be solved for four unknowns k, h, p and w. This leaves r to be exogenously determined. Note that p, k, h, and w are functions of r. Since r is exogenous, (1)-(4) is consistent with two different interest rates. Thus, we have a consistent model of an economy where credit policy is a potentially important policy handle. The following results can be derived from (1) - (4) (see e.g., Obsfeldt and Rogoff, 1996):

(i) Since T is more K-intensive than N, a rise in r reduces p, i.e., $p'(r) < 0$, the Stolper-Samuelson relation.
(ii) A rise in p raises N and reduces T for given factor endowments in a full employment setting.
(iii) $k'(r) < 0$, $h'(r) < 0$, $[k'(r) - h'(r)] < 0$ and $w'(r) < 0$, the factor price frontier slope.

In this case, a rise in r has two effects: the *allocative efficiency effect* mediated by a change in (w/r) and the *revenue effect* mediated by a change in the commodity price ratio, p. These can conflict. For example, a rise in r causes a substitution effect away from capital in both T and N ($k'(r) < 0$, $h'(r) < 0$) but as p falls, it raises the demand for capital in T and lowers it further in N (by full employment). We assume the following: *The revenue effect of a rise in r exceeds its allocative efficiency effect on factor demand.* This means that from $L_T(w(r), r, p(r))$, we get in $(dL_T/dr) > 0$ since $p'(r) < 0$ and $(dL_N/dr) < 0$ for the same reason. The results given by (i) to (iii) are equilibrium results, i.e., one expects them after the economy has settled into a new equilibrium. These are, in this sense, long-term outcomes.

B. Growth Rates

From the Rybczynski Proposition, we know that for L* = 0 (which we adopt for simplicity):

$$\begin{aligned} &\text{(i)} \quad T^* = [(L_T/K)\,[(k(r) - h(r)]]^{-1}K^* \\ &\text{(ii)} \quad N^* = [(L_N/K)\,[(k(r) - h(r)]]^{-1}[-K^*]. \end{aligned} \tag{5}$$

Let $H(r) = [.]^{-1}$ in (5i) and $G(r) = [.]^{-1}$ in (5ii). Clearly $H(r) < G(r)$ if T is more K-intensive. It is easy to show that $H(r) > 1$ and $G(r) > 1$ in (5ii). Given $L_T\,(w(r),r,P(r))$, we have $H'(r) = \partial H/\partial r$ as

$$\{(\partial L_T/\partial w)w'(r) + (\partial L_T/\partial r) + (\partial L_T/\partial p)p'(r)\}H$$
$$- (k'(r)-h'(r)(k-h)^{-1}H > 0\ ,$$

since $(\partial L_T/\partial p) < 0$, $(\partial L_T/\partial w) < 0$, $(\partial L_T/\partial r) > 0$, making the expression in brackets $\{.\} > 0$ and, furthermore, $(k - h) >)$ and $[k' - h'] < 0$. By the same token, $G'(r) < 0$. We may thus write for $L^* = 0$:

$$\begin{aligned} &\text{(i)} \qquad T^* = H(r)K^*\ ,\ H' > 0 \\ &\text{(ii)} \qquad N^* = G(r)(-K^*)\ ,\quad G' > 0. \end{aligned} \tag{6}$$

Note that N^* is an average tendency. $N^* < 0$ means that the bulk of N (the labor-intensive segment) is shrinking but the capital-intensive segment may be growing. Finally, in units of tradeables, aggregate income growth is

$$Y^* = \gamma T^* + (N^* + p^*)\,(1-\gamma) \tag{7}$$

where γ is the share of tradeables in Y. Note that we omitted technical progress (TFP) in (7) for convenience only and not as obeisance to Young-Krugman. Aggregate income growth is the weighted sum of tradeable output growth and the growth of nontradeable output (in units of tradeables). The problem is that these two outputs react differently to relevant policy shocks.

Let P_w be the world price of T, E the nominal exchange rate and t the tariff rate. If $P = EP_w\,(1 + t)$, i.e., small country, then

$$p^* = Q^* - (t^*/(1+t)) - P_w^* - E^*. \tag{8}$$

Since p is a negative function of r, p^* is a negative function of r^*, and Q^* is a negative function of r^*. A fall in r ($r^*<0$) raises Q^* and, thus, precipitates an asset-price movement in favor of N. Likewise, trade liberalization ($t^* < 0$) or an absolute currency appreciation ($E^* < 0$) will raise p^*. Any other pressure that pushes Q^* up will raise p^* (e.g., inflow of foreign money into the demand side of the N market).

Since asset price imbalances have turned up as an important feature in the East Asian currency crisis, it is important to peek into what can trigger them in a semi-open small economy. From (8), currency appreciation, trade liberalization and yen, rinminbi and deutschmark depreciations in the face of a dollar-pegged E all contribute to growing asset price imbalance ($p^* > 0$) in favor of N. All these were present in the early 1990s in East Asia. But the most important single contributor is the easing up of credit (explosive growth of domestic credit to accommodate capital inflows is a common element in the crisis) leading to a rapid rise in Q^* which reached bubble proportions. The consequent rise in p, in turn, impacted crucially on the allocation of resources between T and N especially where asset price bubbles in N dominated the

landscape. We do not model asset price bubbles here since our model is an equilibrium model.

Finally, since the real exchange rate RER = (EP^W/P^D) where $P^D = P^{\Upsilon}Q^{1-\Upsilon}$, $\Upsilon = (T/Y)$, and P^W is P^D's world counterpart, we can write

$$RER = [P^W/P_W(1+t)]p^{\Upsilon-1}. \quad (9)$$

Thus, a rise in p leads to currency appreciation.

C. Physical Capital Accumulation

The fledgling East Asian economy is assumed for analytical convenience to possess no capital goods industry of significance and thus physical capital has to be wholly imported. This can be relaxed by assuming a fixed fraction of capital growth due to domestic capital. Exports X finance imports M with the help of the change in foreign exchange reserves, ΔR (a proxy for all exogenous capital flows, e.g., aid, state borrowing, etc.), direct foreign investment (DFI) and Mundell-Fleming flows (MF) -- the last three being capital account items, i.e., $M = \Delta R + X + DFI + hMF$. Consumer imports I_c and producer imports I_K constitute total imports M. Let $I_K = eM$, $0 < e < 0$, and e is a negative function of RER. Now $\Delta K = I_K - \delta K$ or $K^* = (I_K/K) - \delta$, where δ is the constant depreciation rate. Thus, $K^* = (eM/K) - \delta$, and

$$K^* = [e(\Delta R + X + DFI + hMF)/K] - \delta. \quad (10)$$

The impact of X on capital growth mediated by capital import share e. This influence, however, erodes as the capital stock K grows the domestic currency strengthens. The impact of ΔR on K* is identical. Thus, foreign borrowing, foreign aid and other exogenous capital inflows have the same effect on capital accumulation. The impact of MF on capital accumulation is mediated by a function h(p) of the domestic terms of trade. More on this later.

In view of the debate between Rodrik (1995) of the investment-led school and the export-led school of East Asian growth, equation (10) represents the Japanese reconciliation school. Let us state (10) formally as:

Claim 8: Maximizing exports X maximizes capital accumulation K*.

Thus, no contradiction need arise, but this concordance between the two engines of growth, if exploited, results in a particular pattern of development. By (6), this concentrates the focus of growth almost exclusively on T* and away from N*.

D. Exports

We define export X as a Cobb-Douglas function of (a) tradeable goods surplus T-C where C is tradeable consumption and (b) share s in world export W. That is:

$$X = (T - C)^{\alpha} (sW)^{1-\alpha}$$

which in growth rate gives:

$$X^* = \alpha(T-C)^* + (1-\alpha)(s^* + W^*). \quad (11)$$

Thus, export growth X* depends on growth of tradeables surplus (T-C)*, the growth of export share s* and world export growth W*. Note that α may be the "smallness and distortion index" (α = 1 means *small economy and no distortion economy*, i.e., it exports all its surplus; α = 0 means that X = sW and every increment in X is attained by increased share in world export (policy-driven). More on this later.

Now growth of domestic tradeables consumption C* is a positive function of the real wage in terms of T (w/P), and a negative function of the RER:

$$C^* = C(w/P, RER), \quad C_w > 0, C_R < 0 \quad (12)$$

where $C_w = [\partial C/\partial(w/P)]$, and $C_R = [\partial C/\partial(RER)]$. Since the domestic price of T is $P = EP_w(1+t)$, (w/ P) becomes

$$(w/P) = [w/EP_w(1 + t)]. \quad (13)$$

(T-C)* = T*[T/(T-C)] - C*(C/(T-C)). Since T* is a function of K* we finally have:

$$(T-C)^* = H(K^*, (w/P), RER). \quad (14)$$

The growth in world share s* is a negative function of relative real wage and of relative real exchange rate and a positive function of Total Factor Productivity.

$$s^* = s^*(\in (W/P)/(W_C/P_C), (RER/RER_C), TFP) \quad (16)$$

where subscript "c" refers to China. We now use these to analyze the dynamic Great Dragon effect.

IV. THE GREAT DRAGON EFFECT: DYNAMICS

A. Labor-Abundant Dragon

(10) shows the sources of capital accumulation in East Asia over the past half-century. In the 1950s and early 1960s, it was exogenous flows ΔR consisting of foreign aid, military assistance, state borrowing and in the case of Taiwan, overseas Chinese capital. In the late 1960s and early 1970s, it shifted to exports X and, with the advent of export processing zones, also direct foreign investment DFI. In the late 1970s, state borrowing came back with vengeance in the wake of recycled petrodollars. In the late 1980s, it was once again DFIs, mostly Japanese, that underpinned the Asean miracle. In the 1990s, with DFI being strongly contested by China and other LDCs, the capital account was opened further to allow Mundell-Fleming (MF) type flows, largely short-term capital.

The impact of China's entry into the world economic stage impacted on K* via (a) export levels X, and (b) the level of DFIs. With China's capital controls mitigating

its claim on MFs, MFs which, in the early 1990s experienced unprecedented growth, became the darling as source of financing capital growth. As in (10), the effect of MF on capital accumulation is mediated by a function of h(p) which negatively responds and crucially to the domestic terms of trade p. With p on the rise, h(p) falls and marginalizes MF's impact on capital accumulation.

China's entry meant a smaller Asean share of DFIs as China quickly cornered a sizeable chunk. As long as world DFI was growing rapidly as it did in the early 90s, even a smaller share remained an important stimulus for growth. When world MF flow slows down as it will in the late 90s, this translates materially into lowered growth in the Asean.

The second effect of China's entry is via export growth. X* given by (11). Export growth depends first on the growth of world trade W* over which the region has no control. Secondly, it depends on the growth of the region's share s*, (15), which depends (i) negatively on relative real wage $[(w/p)/(w_c/p_c)]$ mediated by the share of labor-intensive exports in total exports "$\in$". The higher is the real wage (w/p) in the Asean relative to China (w_c/p_c) and the higher is $\in$, the slower s* and so is Asean's export growth; (ii) negatively on relative real exchange rates (RER/RER_c) as proxy for relative cost of other immobile factors; the higher is the *cost of doing business* the slower is share growth s* and, thus, export growth. (iii) On the positive side, the faster is Total Factor Productivity (TFP) which proxies for technological upgrade, the faster is share growth and, thus, X*.

Finally, X* depends on (T-C)* which represents the growth of tradeable surplus. This, in turn, depends on the growth of T(T*) and on the growth of tradeable consumption C*. T* depends on K* while C* rises with the real wage (income effect for normal goods) and falls with RER, the relative price of tradeables (a high RER means a shift of consumption from tradeables to nontradeables, the substitution effect). Thus, (T-C)* is related to the economy's savings rate.

Acting on these two crucial factors, China could not but eventually hamstring Asean growth, especially with export slowdown in 1996-97.

B. The Capital-Abundant Dragon

The impact on the Asean of the capital-abundant dragon in the guise of Japan in the 80s is the opposite of China's: (i) increased Japanese DFIs meant higher K* for the Asean. Since these went almost exclusively to Thailand, Malaysia and Indonesia in the 1980s, these economies became DFI miracles overnight. (ii) The increased DFIs also stimulated rapid export growth X* since s* grew with Japanese DFI related exports as well as with substantial DFI-stimulated TFP. (iii) As X rose, so did K* and is a positive feedback X* via T*. It was a veritable *virtuous cycle* of growth.

C. Why the Asian Convulsion?

The Asian Crisis in 1997-98 was partly a response to the challenge posed by China and other LDCs on the Asian niches. From (10), (11) and (14), we know how crucial the real exchange rate RER is in the process. With rising real wages and strengthening currencies, the squeeze was tightening. The response came in the form

of the currency crisis with massive devaluations as part of the package. This *prolongs* the adjustment period to the Great Dragon intrusion (for a lengthy discussion, please see Fabella, 1998).

V. CONCLUSION

In this paper, we study the multitude of possible impacts upon an open economy or region of the opening up a great dragon economy. The latter has one of two factor endowment orders of magnitude greater than the former. We situate the analysis in a two-factor, three-country Hechscher-Ohlin framework. The first dragon is more abundant in labor (to mimic M. China) and the second is more abundant in capital (to mimic Japan). The two factors are labor and capital, the two goods are X and Y and the three economies are A (for East Asia), D (for the great dragon M. China) and WC (for the rest of the world). In the first part with immobile factors, we tackled the case of homogeneous X and Y. This is the most pessimistic case. A which exports X to W is forced to give up all its export share to D and since this is a barter economy, imports are forced to zero and A is forced into autarky (Claim 1). A's welfare falls to autarkic levels.

If X is a spectrum of goods of a range of capital-labor ratios, the opening up of the more labor-abundant D creates a three-country model with A being the country of intermediate endowment. The two commodities, in effect, splits into three with the split in X occurring at some intermediate capital-labor ratio. A retains its exports of the more capital-intensive X but this is now exported to both D and W (Claim 2). Thus, A loses export breath but gains export destination. The welfare impact of A is ambiguous, since trade creation (new exports to D) conflicts with trade constriction (reduction of exports to W). The welfare impact on D and W is unambiguously favorable.

We then introduced capital mobility. The resulting movement of capital from A to D consequent to lower wage-rental ratio in D (Mundell effect) reduces the segment of X to which A holds on to and reduces the potential trade between A and D and between A and W (Claim 3). Capital mobility between A and D alone will tend to lower welfare in A when D opens up. When this effect is without bounds (completely costless), movement of capital from A to D will render A and D H-O-S-identical! This means that if A is richer due to higher capital-labor ratio initially, A experiences *immiserization* (Claim 4).

Ricardian absolute advantage may also be at work at the same time. We introduce an Arrow learning-by-doing based on capital stock and the fact that D has larger endowment of K and L. If this scale economies is uniform across the spectrum of X, A's exports to W will all be bounced by D's exports. A is forced into autarky (Claim 5). If the scale economies is uneven across the spectrum of X, then even as D has absolute advantage in all of X, a *Ricardian comparative advantage* develops in X between A and D. D specializes in those X where the scale economies is most pronounced and A picks up the residual.

The addition of capital mobility between A and D worsens the outlook. Note that because capital is absolutely more productive in D due to scale economies, it will

attract more from abroad (A and W). This process exacerbates the scale-economies imbalance and leaves A farther behind (Claim 6).

When the Great Dragon is capital-abundant, these effects are reversed and a *positive pull* is experienced by A (Claim 7). The Great Dragon here refers to Japan which throughout the 1970s, 1980s and early 1990s pulled East Asia along in its way to closing the gaps between itself and OECD.

In Section III, the dynamics of the process is spelled out again using the H-O-S framework and specifically the Rybzcynski growth equations. The structure of the East Asian model is spelled out which was specialized to maximized capital accumulation via exports. The role of the relative real exchange rate and the relative real wage and the growth of DFI are emphasized. These are where M. China put pressure on the rest of Asia. Its low relative real wage, its higher relative exchange rate and its capture of a large share of DFI all contributed to the squeeze that it placed on other Asian countries and especially the Asean.

M. China is the Great Dragon of the 1990s and into early in the next century, and its impact will be largely negative for those countries with comparable endowments.

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