Economic Freedom as the Foundation of Societal Advancement: A Case Study of Hong Kong's and India's Divergent Growth Paths from 1965 to 1990[1]

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Today, Hong Kong and India are two of the world's nascent economic powers, commanding increasing influence in the domains of trade and finance. Hong Kong's Real Gross Domestic Product per capita is growing at a rate of 8 percent, while India's is growing at a rate of 6.2 percent (Central Intelligence Agency, 2005). It would be fallacious, however, to deduce from these robust economic performances that both countries charted similar courses to attain their current positions. Indeed, for the time frame that I consider in this paper, 1965-90, Hong Kong achieved and sustained such unusually high economic growth that its ascent is widely viewed as miraculous. During this same period, however, India's economy grew at a sluggish pace (hence the derisive use of the term "the Hindu rate of growth").

What accounts for these markedly different performances? Although economists have supplied myriad answers, each of which possesses some legitimacy, I argue that there is a rather simple one: namely, Hong Kong's and India's fundamentally different experiences under colonialism. Great Britain's roughly noninterventionist posture in Hong Kong allowed this once poor colony to emerge as a dynamic, entrepreneurial economy. By contrast, its rapacious governance in India imbued India's postwar leadership with a deep mistrust of capitalist economics, and, accordingly, convinced it of the virtue and necessity of socialist rule. There is a quantitative corollary to this conceptual assertion: namely, while Hong Kong benefited from the growth in its total factor productivity (TFP), it profited far more from the increase in the size and quality of its labor force; by contrast, India's progress derived largely from the growth in its capital stock.

Within this broad framework, I discuss several proximate explanations. For example, Hong Kong's human capital stock was distinctly superior to India's, affording its economy crucial opportunities for expansion. Furthermore, Hong Kong experienced only one major disturbance along its path to growth: its reintegration with mainland China in the early 1980s. This interdependency with China would prove to be a vital boon to its economic growth. India, by contrast, suffered numerous exogenous setbacks to its growth, including natural disasters (extreme drought, for example) and two crippling wars with its neighbor, Pakistan.

Because the discussion that is contained in subsequent sections will be highly analytical, I judge that now is a proper time to volunteer some general remarks about my motivation in drafting this study, as well as the general treatment that cross-country growth dynamics has received in mainstream scholarship to date. It is hoped that this prefatory discussion will help to establish the context for my forthcoming analysis. By way of introduction, I note that few topics that merit, or attract, as much attention in mainstream economic literature as comparisons of certain countries' rates of economic growth. In particular, in the aftermath of the Second World War, most countries pursued variants of capitalistic or collectivistic models. Did one set of countries fare better than the other? If so, can we conclusively ascertain the factor(s) that explain(s) their success? When one sets about to explore such questions, one must first select a growth model for his or her analysis.

Admittedly, almost no two papers on issues of dynamic economic growth employ the same growth model. However, for simplicity's sake, I judge that most models can be subsumed under one of three categories: (1) Solovian, (2) Smithian, and (3) Schumpeterian (Mokyr, 1990). The first illuminates the roles of investments in labor and capital, but also reveals the role of

technological advances; the second to patterns of trade; and the final to dynamic change, owing to changes in the stock of acquired human capital. As intuition suggests, each of these models is more appropriate in certain circumstances than in others. I employ the Solow model in this paper for two reasons. First, it effectively reveals the interdependence of microeconomic and macroeconomic aspects of economic growth. Second, it is well-suited to quantitative and qualitative modifications. Robert E. Lucas, the eminent economist, captures this argument: "There has been a rebirth of confidence – stimulated in large part by Romer's (1986) contribution – that explicit neoclassical growth models in the style of Solow (1956) can be adapted to fit the observed behavior of rich and poor economies alike, interacting in a world of international trade" (1993).

Having selected a model, what motivates the cross-country comparison that I seek to understand in this paper? There is an abundance of work that examines India's growth path in isolation (Joshi, 1994; Denoon, 1998; Panagariya, 2004) and Hong Kong's growth path in isolation (Chow and Papanek, 1981; Shuyong, 1997; Sit, 1998). Furthermore, there is an abundance of work that compares India's growth path with China's (Richman, 1972; Swamy, 1973; Rosen, 1992). However, for reasons of which I am not entirely sure, there is a manifest paucity of scholarship on differing rates of growth in Hong Kong and India. At a basic level, then, this paper endeavors to redress, even if partially, this gap.

At a broader level, I seek to write a paper on cross-country growth dynamics that avoids the deficiencies that characterize much work in this veritable genre. The most salient flaw of the existing literature is its tendency to discuss growth patterns in the absence of their historical roots: omitting such analysis imparts a measure of discontinuity to otherwise superb scholarship. This deficiency manifests most acutely in papers that survey the growth of East Asia from 1945 through the 1990s. To this day, many of them labels its expansion as "miraculous," as if to suggest that extraordinary growth had never occurred in the past and would never occur in the future, and that East Asia was intrinsically primed to experience explosive growth (Page, 1994; Bhagwati, 1996; Campos et al., 1996). I refrain from engaging such explanations, which appear to favor convenient speculation over nuanced analysis. It should be noted here that their fallacies have been documented on numerous occasions (Krugman, 1994; Dixon and Drakakis-Smith, 1996; Grier, 2003).

The other flaw with conventional work on comparative growth patterns is its style. In particular, its highly academic nature is likely to dissuade individuals who are not acquainted with mathematical economics. This paper, then, attempts to illuminate a cross-country comparison of which there is a paucity of analysis by marrying general discussion with analytical rigor. I note here that while this paper's mathematical content will enrich the reader's understanding of its themes, the reader can certainly understand my main thesis and the vast majority of evidence that I adduce without surveying it. The intermediate parts of this paper, as well as the appendix, then, do not require careful attention.

With these preliminary comments in mind, I offer here the basic approach and structure of this paper: Section I presents some key data, in tabular and graphical forms, and also performs some basic growth accounting exercises, the results of which will underpin the analyses contained in subsequent sections; Section II presents a version of the Solow model that has been enriched to take into consideration the roles of economic freedom and human capital, and Section III solves it; Section IV supplies detailed analyses of Hong Kong's and India's divergent growth paths, using the quantitative results contained in Sections I and III to support them.; finally, Section V offers some concluding remarks.

I. Data Presentation and Growth Accounting Exercises

As with most papers on cross-country comparisons of economic growth, this one, too, will begin by employing a simple growth accounting procedure. Consider the following generic production function:

$$Y(t) = F(A(t), K(t), L(t)) \tag{1.1}$$

Here, $Y(t)$ is output; $A(t)$ is the stock of knowledge; and $L(t)$ is the stock of labor. Assuming that the factors of production, labor and capital, are paid their marginal products, it can be proven that the growth rate of output per worker is:

$$\frac{\dot{y}}{y} = s_K \frac{\dot{k}}{k} + s_R \tag{1.2}$$

Here, s_K is the factor share of capital in total income;

$\frac{\dot{k}}{k}$ is the growth rate of capital per worker; and

s_R is the Solow residual, typically thought to reflect changes in the value of TFP.

In Table 1.1, I supply the basic data that is necessary to complete growth accounting exercises for Hong Kong and India.[2]

Table 1.1: Basic Data for Growth Accounting Exercises

	Average Growth Rate (AGR) of Real Gross Domestic Product per Worker (RGPW), 1965-90	Average Growth Rate (AGR) of Capital Stock per Worker (CSPW), 1965-90
Hong Kong	5.15 percent	2.59 percent
India	2.39 percent	3.69 percent

Tables 1.2 – 1.5 list data that will be of use throughout this paper. Before supplying them, however, I note that Table 1.5 makes use of the following formula where RGPC stands for Real Gross Domestic Product per Capita:

$$Labor\ Force = \frac{RGPC}{RGPW} * Population \tag{1.3}$$

Table 1.2: Evolution of AGR of RGPW in Hong Kong and India

	1965-70	1970-75	1975-80	1980-85	1985-90
Hong Kong	5.27 percent	2.97 percent	7.59 percent	3.23 percent	6.78 percent
India	2.09 percent	0.81 percent	2.07 percent	3.48 percent	3.54 percent

Table 1.3: Evolution of AGR of CSPW in Hong Kong and India

	1965-70	1970-75	1975-80	1980-85	1985-90
Hong Kong	5.03 percent	2.55 percent	4.55 percent	- 1.64 percent	2.61 percent
India	5.41 percent	4.24 percent	3.76 percent	2.49 percent	2.6 percent

Table 1.4: Evolution of AGR of TFP in Hong Kong and India

	1965-70	1970-75	1975-80	1980-85	1985-90
Hong Kong	3.51 percent	2.08 percent	6 percent	3.8 percent	5.87 percent
India	0.197 percent	- 0.674 percent	0.75 percent	2.61 percent	2.63 percent

Table 1.5: Evolution of AGR of Labor Force in Hong Kong and India

	1965-70	1970-75	1975-80	1980-85	1985-90
Hong Kong	9.6 percent	19.4 percent	23.88 percent	12.6 percent	5.58 percent
India	6.8 percent	9.74 percent	9.19 percent	11.7 percent	12.2 percent

Given that Section I centers on growth accounting exercises, which, in turn, focus on measurements of TFP, I supply here the three principal figures that model it over time:

Figure 2.1: Evolution of Hong Kong's Average Growth Rate (AGR) of Real Gross Domestic Product per Worker (RGPW) and Total Factor Productivity (TFP)

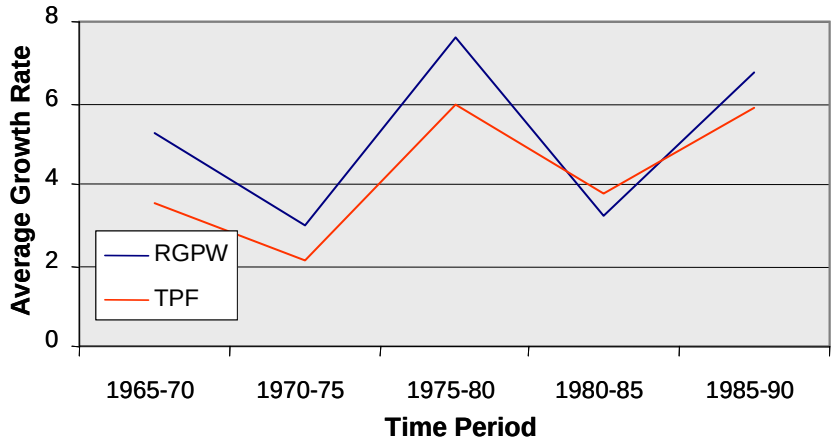


Figure 2.2: Evolution of India's Average Growth Rate (AGR) of Real Gross Domestic Product per Worker (RGPW) and Total Factor Productivity (TFP)

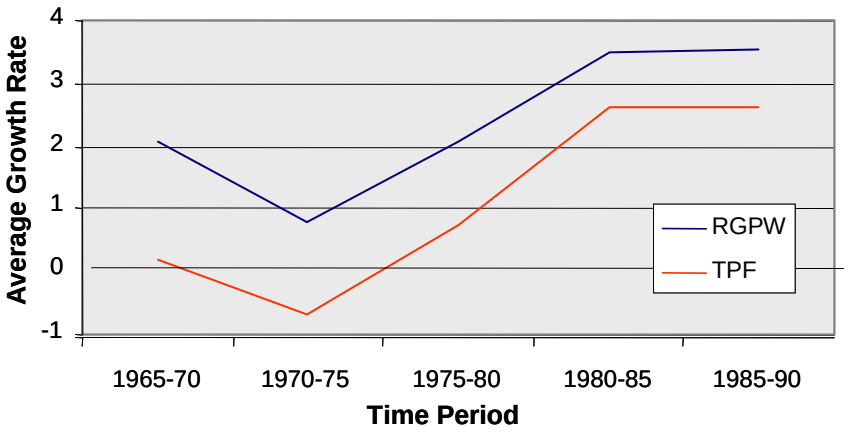
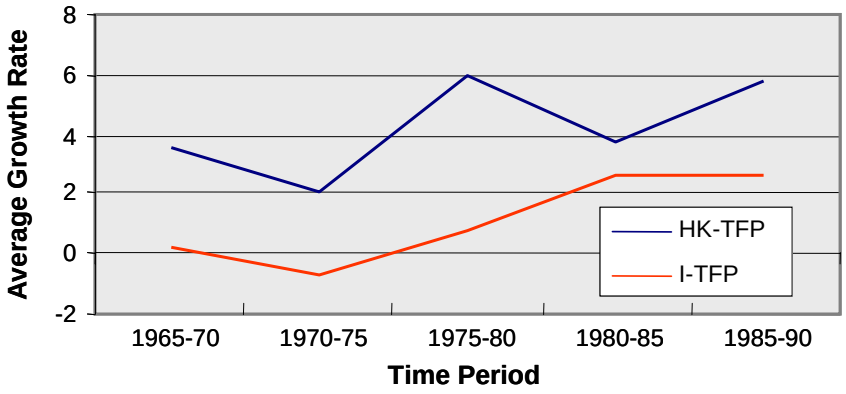


Figure 2.3: Evolution of Average Growth Rate (AGR) of Hong Kong's and India's Respective Total Factor Productivities (TFPs)



Figures 2.1 and 2.2 have an important, if not surprising, implication: that the AGR of TFP roughly follows the AGR of RGPW in both Hong Kong and India from 1965 to 1990. As I discuss in greater detail below, India's productivity gains correlated quite closely to its implementation of reforms aimed at economic liberalization. Of even greater importance, as Figure 2.3 illustrates, is that the AGR of Hong Kong's TFP was consistently higher than that of India during the time period in consideration. As I note later, this difference largely owes to Hong Kong's high level of economic freedom, which helped its economy develop a more dynamic, outward orientation.

To conclude Section I, I calculate each country's Solow residual for 1965-90, yet again a standard exercise of economic papers, and also offer some words of caution in regards to interpreting these results. In between 1965 and 1990, Hong Kong's RGPW grew at an average rate of 5.15 percent, while India's grew at an average rate of 2.39 percent. During this same time period, Hong Kong's CSPW grew at an average rate of 2.59 percent, while India's grew at an average rate of 3.69 percent. Using this data, as well as the conclusion of many empirical studies that s_K approximates 0.35, I calculate each country's respective Solow residual:

$$\text{Hong Kong: } \frac{5.15}{100} = 0.35\left(\frac{2.59}{100}\right) + s_{R,HK} \quad \Rightarrow s_{R,HK} \approx 4.24$$

$$\text{India: } \frac{2.39}{100} = 0.35\left(\frac{3.69}{100}\right) + s_{R,India} \quad \Rightarrow s_{R,India} \approx 1.10$$

$$\frac{s_{R,HK}}{s_{R,India}} \approx 3.85$$

Although this ratio certainly appears impressive, it would be impulsive to deduce from it any sweeping conclusions. The most apparent flaw in this growth accounting exercise is its implicit assumption of perfect competition, an economic system that neither India's nor Hong's postwar economies approached. The further is the divergence between factor prices and returns, the less valid this assumption becomes. Given that Hong Kong's government intervened to generate returns to the private sector, and that India was a socialist economy until the mid-1980s, it is no surprise that the presumption of perfect competition is, at best, highly tenuous, and, more probably, grossly inappropriate.

It should be apparent, furthermore, that the exercise performed above is riddled with other deficiencies that limit its usefulness. In particular, the results that one obtains from growth accounting calculations depend on one's assumptions "about production functions, choice of output measure (value added versus gross output), use of capital stock versus flows of capital services, quality of inputs, cyclical smoothing, time period studied, errors of measurement in the variables, and so on" (Felipe 1997, 21). Furthermore, one's conclusions derive in large part from the type and complexity of one's empirical methodology. Indeed, in their growth accounting exercises, various scholars have employed procedures ranging from cross-country regressions (using detailed specifications to estimate the level of capital stock per worker) to "meta-production functions" (Ibid). While it is unreasonable to expect that all academics will formulate similar assumptions and employ uniform functions in their growth accounting exercises, this lack of empirical homogeneity critically limits these calculations' usefulness.

In this paper, I attempt to present a richer, more realistic model that incorporates economic freedom and human capital. I define the first of these variables as the "individual's unfettered ability to make economic choices unhindered by external forces, whether government or society," as taken from an article in the March 8, 2004 issue of *Business Standard*. I define the second of these variables as the "skills and knowledge intensity of the labor force in an economy, which are essentially acquired through schooling and training" (Andreosso-O'Callaghan, 2002). It is entirely reasonable to ask why, if I chose to enter these variables into my model, I neglected to enter others, such as political freedom or exogenous disturbances (like natural disasters). In response, I would argue that, in order to attain a full understanding of Hong Kong's and India's divergent growth paths, I quite literally would have to enter an infinite number of variables into the enriched Solow model that I develop in this paper. Completing this task, in addition to being impossible, is unnecessary. I seek to model only those variables that appear to be the major determinants of these two countries' growth paths: in my estimation, those are economic freedom and human capital. In appraising these variables and charting their evolution, I illustrate why Hong Kong's economy exploded from 1965 to 1990, while India's grew only moderately.

II. The Model: Variables and Definitions

I introduce here a learning-by-doing model that is set in continuous time, and described by the following equations:

(2.1) $$Y(t) = F_e(t)^{\alpha} K(t)^{\beta} [A(t)H(t)]^{1-\beta} \quad ; 1 > \alpha > 0; 1 > \beta > 0$$

(2.2) $$\dot{K}(t) = sY(t) - \delta K(t) \quad ; 1 > s > 0; 1 > \delta > 0$$

(2.3) $$\dot{A}(t) = (g_{indigenous} + g_{spillover})A(t)$$

(2.4) $$H(t) = L(t)F_e(t)^{\alpha} e^{\Phi E} \quad ; 1 > \Phi > 0$$

(2.5) $$\dot{L}(t) = nL(t) \quad ; n > 0$$

This model, although slightly more complicated, bears many key similarities to the basic Solow model. In particular, (2.2), which quantifies the rate of capital accumulation, presumes a positive rate of savings, s, and a positive rate of capital depreciation, δ. Furthermore the growth rates of knowledge and labor are assumed to be exogenous. To conclude Section II, I define the remaining variables:

$F_e(t)$ is the level of economic freedom that exists in the private sector.[3] Specifying its determinants lies beyond the scope of this paper. Furthermore, there are myriad ways in which to quantitatively introduce economic freedom into an endogenous growth model, most of which would likely be vastly more nuanced and complex than my own. Even so, as I have modeled it, $F_e(t)$ still exerts considerable influence on a country's output level and growth rate of output per capita, as well it should.

$H(t)$ is a country's level of human capital, which is a function of its labor stock, level of economic freedom, and E, the number of years of education per worker. The term $e^{\Phi E}$ reflects "microeconomic evidence [that] suggests that a reasonable approximation is that each additional year of education increases an individual's wage by the same *percentage* amount" (Romer, 2001). Human capital not only depends on the amount of education per worker, but also, perhaps more importantly, on the quality of education per worker. It is quite plausible to suggest that countries with high levels of economic freedom will possess more robust educational infrastructures than those with lower levels.

$g_{indigenous}$ and $g_{spillover}$ are, respectively, the growth rates of indigenous knowledge and spillover knowledge – that which a country learns or imports from external sources.

III. Solving the Model: Results and Simplifications

Along the balanced growth path, all of the variables that are endogenous to the model must grow at the same rate:

$$\frac{\dot{Y}(t)}{Y(t)} = \frac{\dot{K}(t)}{K(t)} \tag{3.1}$$

First, I substitute (2.4) into (2.1), yielding the following result:

$$\begin{aligned} Y(t) &= F_e(t)^{\alpha} K(t)^{\beta} [A(t)L(t)F_e(t)^{\alpha} e^{\Phi E}]^{1-\beta} \\ Y(t) &= F_e(t)^{\alpha} K(t)^{\beta} [A(t)L(t)]^{1-\beta} F_e(t)^{\alpha(1-\beta)} e^{\Phi E(1-\beta)} \\ Y(t) &= F_e(t)^{\alpha+\alpha(1-\beta)} K(t)^{\beta} [A(t)L(t)]^{1-\beta} e^{\Phi E(1-\beta)} \end{aligned} \tag{3.2}$$

To determine the growth rate of output along this path, I take the natural logarithm of each side:

$$\begin{aligned} Ln(Y(t)) &= [\alpha + \alpha(1-\beta)]Ln(F_e(t)) + \beta Ln(K(t)) + [1-\beta]Ln(A(t)L(t)) + \Phi E(1-\beta) \\ \frac{\dot{Y}(t)}{Y(t)} &= \beta \frac{\dot{K}(t)}{K(t)} + [1-\beta][\frac{\dot{A}(t)}{A(t)} + \frac{\dot{L}(t)}{L(t)}] \end{aligned} \tag{3.3}$$

Finally, I substitute (3.1) into (3.3):

$$\frac{\dot{Y}(t)}{Y(t)} = \beta \frac{\dot{Y}(t)}{Y(t)} + [1-\beta][\frac{\dot{A}(t)}{A(t)} + \frac{\dot{L}(t)}{L(t)}]$$

I now rewrite this equation by using conventional notation and eliminating *(t)*:

$$\begin{aligned} g_Y{}^{BGP} &= \beta g_y{}^{BGP} + [1-\beta][g_A + g_L] \\ g_Y{}^{BGP}(1-\beta) &= [1-\beta][g_A + g_L] \\ g_Y{}^{BGP} &= g_A + g_L \end{aligned} \tag{3.4}$$

Substituting (2.3) into (3.4), I find that

$$g_Y{}^{BGP} = g_{indigenous} + g_{spillover} + g_L \tag{3.5}$$

It follows, then, that the growth rate of output per worker along this path is as follows:

$$g_{\frac{Y}{L}}{}^{BGP} = g_{indigenous} + g_{spillover} \tag{3.6}$$

Bearing in mind my above assumptions, (3.6) must be positive. I concede to the reader that this conclusion is highly exaggerated, because economic history is replete with examples of countries

that have, at some point in time, experienced negative growth rates of output per worker. However, this model's central conclusion – that increasing economic freedom and knowledge diffusion results in higher rates of growth – is hardly controversial. Indeed, I intentionally simplified my model so as to illustrate this conclusion in a more convincing manner, without burdening the reader with unnecessary quantitative manipulations or complications. Furthermore, and most crucially, *adding other elements to my model would not alter its basic conclusions*; the reader should be assured, then, that we can still comfortably use (3.6) to discuss comparative statics.

That being said, however, one feature of (3.6) deserves some comment. Its implicit assumption that $g_{indigenous}$ and $g_{spillover}$ are independent is quite simplistic, because the acquisition of *savoir-faire* from external sources can, and often does, nurture the growth of indigenous knowledge. One study of Hong Kong's dynamic growth nicely affirms this principle:

It is postulated that education improves the skill level and knowledge of students, and through intergenerational spillovers, human capital accumulates over time…For an open economy, it is further argued that workers may get learning experience not only through [their] own work, but may also learn from workers in other countries through direct (through personal interactions, for example) and indirect (through the products and other media such as journals) contacts with them (Chou and Wong, 1997).

A more realistic model, then, would treat $g_{indigenous}$ and $g_{spillover}$ as interrelated. Again, however, we can safely neglect this complication.

To conclude Section III, I present here, without outlining the intermediate steps (please see Appendix I for a complete derivation), the steady-state value of output per unit of effective labor:

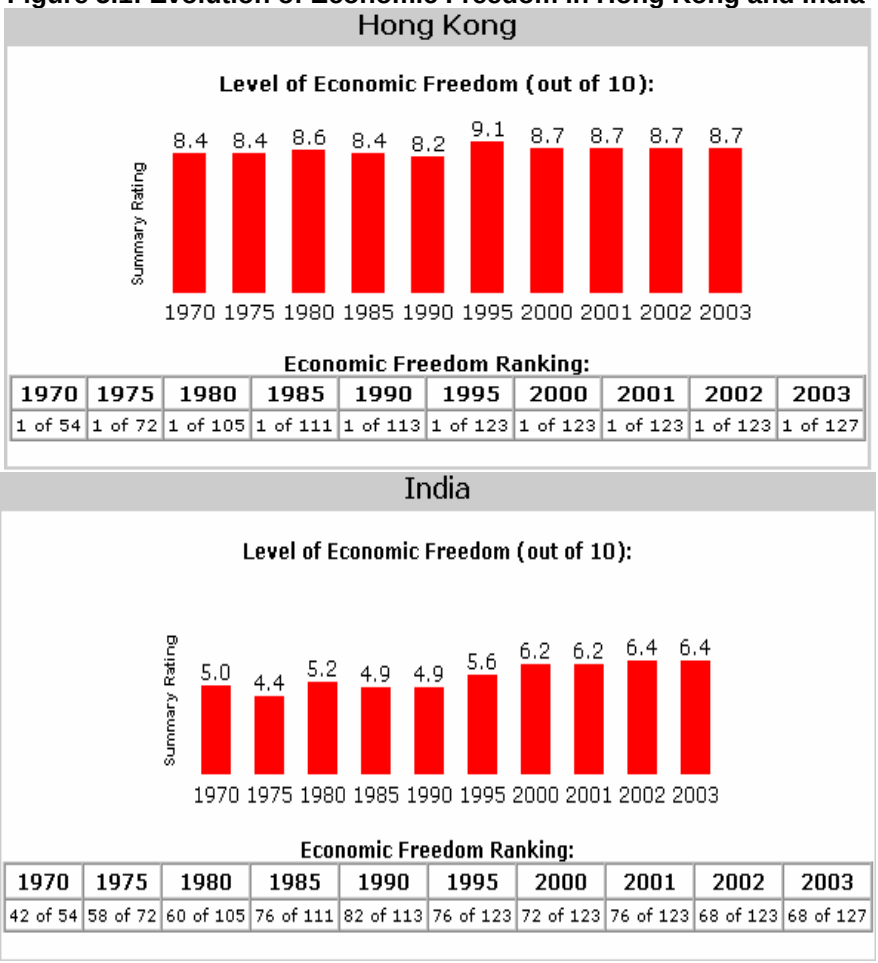
$$y_{steady-state} = F_e\left[\frac{\alpha(2-\beta)}{1-\beta}\right] e^{\Phi E}\left[\frac{s}{\delta + n + g_{indigenous} + g_{spillover}}\right]^{\frac{\beta}{1-\beta}} \tag{3.7}$$

The primary implications of (3.7) are as follows: the impact of the level of economic freedom on the steady-state value of output per unit of effective labor is determined not only by α, but also by the return to capital, β. More specifically, the higher is β, the more influential F_e becomes; the impact of education, E, on $y_{steady-state}$ is very powerful, as we would expect; the degree to which increases in indigenous and spillover knowledge have a beneficial impact on $y_{steady-state}$ correlates directly to the value of β. Each of these implications will reappear in subsequent discussion.

IV. Analysis

As Figure 5.1 reveals, $F_e(t)$ is, and historically has been, far higher for Hong Kong than for India:

Figure 5.1: Evolution of Economic Freedom in Hong Kong and India



Indeed, for the past three decades, Hong Kong has scored highest on the economic freedom index (The Fraser Institute, 2005). It is crucial, however, to clarify the meaning of the term "economic freedom." It is certainly not synonymous with *laissez-faire*; quite to the contrary, as Hong Kong's economic trajectory amply affirms, selective government intervention can accrue substantial returns to the private sector. Thus, Amartya Sen, the recipient of the 1998 Nobel Prize in Economics, speaks of "the great practical advantages of this mixed technique, combining state action with private trade and marketing" (1990).

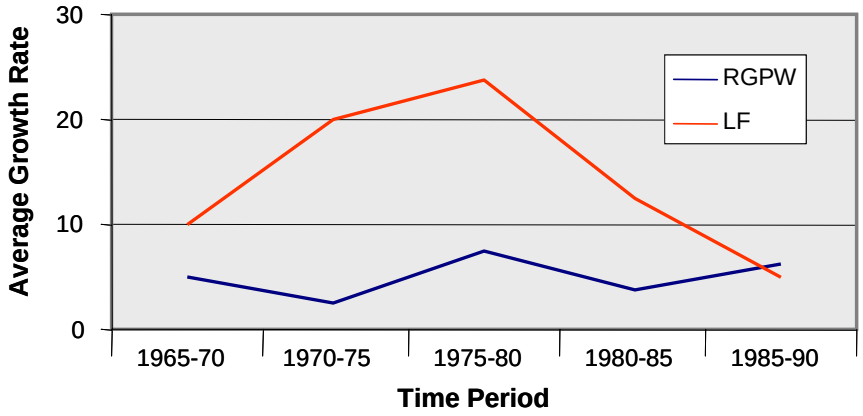
During its period of colonial rule, Britain largely refrained from interfering in Hong Kong's private sector; it intervened to nurture the growth of public housing and education, a task that the private sector certainly could not have been accomplished, and, more importantly, a task that had to be accomplished in order to sustain Hong Kong's economy. It is this complementary approach – namely, of selective government intervention coupled with the private sector's high degree of economic freedom – that proved indispensable to charting and sustaining its economic trajectory.

Some historical background is in order. In between 1910 and 1950, Hong Kong roughly functioned as an *entrepôt*, whereby it served as a junction for depositing and exporting goods to other Asian markets. Several circumstances, however, allowed it to focus on its own growth. In 1950, the United Nations leveled an embargo against China in consideration of its involvement

in the Korean War, and for nearly three decades, until Deng Xiaoping initiated his series of famed liberal reforms, its markets remained closed off to Western penetration. Japan, which had experienced tremendous devastation during World War II, directed the full amount of its postwar energy to restoration rather than ascendance (Public Broadcasting Station, 2002). Finally, as Mao Zedong implemented a sweeping course of nationalization in China, hundreds of thousands of entrepreneurial Chinese fled to Hong Kong, and used their "industrial know-how" to establish the foundations of its textile and plastic industries (Cohen, 2001).

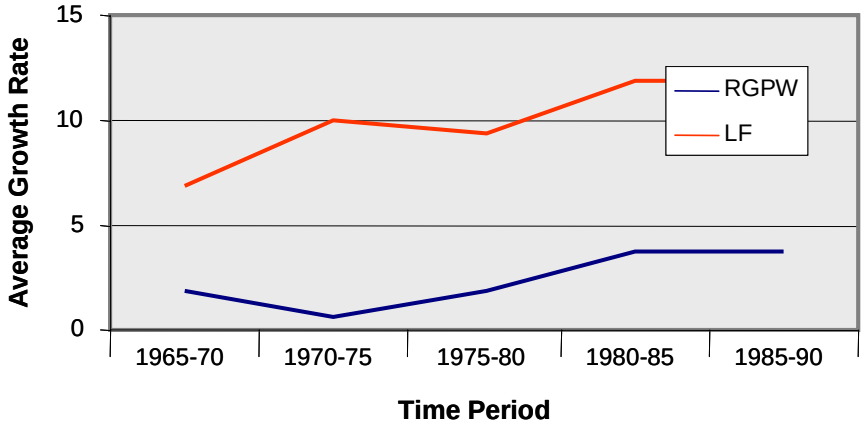
The importance of this mass migration cannot be overstated; indeed, as Figure 5.2 dramatically illustrates, the AGR of its labor force from 1970 to 1980 vastly surpassed that of its RGPW, reflecting this demographic phenomenon:

Figure 5.2: Evolution of Hong Kong's Average Growth Rate (AGR) of Real Gross Domestic Product per Worker (RGPW) and Labor Force (LF)



Before proceeding with further discussion of Hong Kong's economic ascent, I juxtapose Figure 5.2 with the corresponding figure for India:

Figure 5.3: Evolution of India's Average Growth Rate (AGR) of Real Gross Domestic Product per Worker (RGPW) and Labor Force (LF)

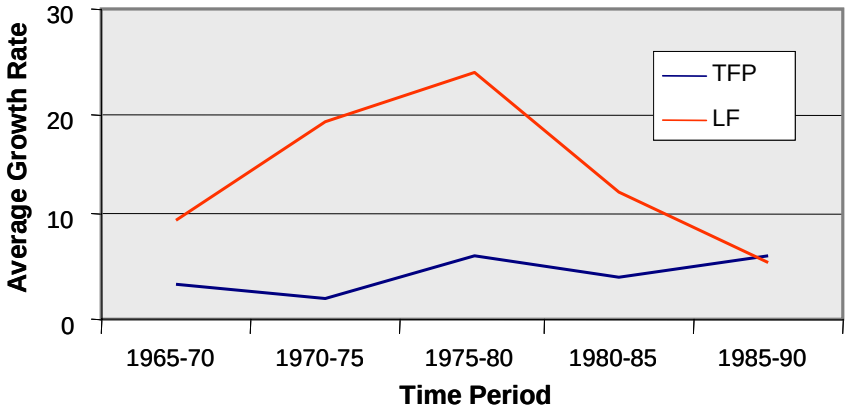


The AGR of LF remained impressively above the AGR of RGPW in India for the time period in consideration. This disparity, however, is far greater for Hong Kong, and merits further discussion.

Indeed, upon closer empirical investigation, we determine that Hong Kong's labor force participation rate (LFPR) increased *along with* its labor force. In fact, from 1965 to 1990, its

LFPR increased from 53.80 percent to 65.07 percent. India's, by contrast, declined from 42.41 percent to 39.01 percent during this same time period. Thus, Hong Kong's labor force grew both in size and productivity, forming the underpinnings of its ascent in the global manufacturing market. This unusual phenomenon lends some credence to the posture that "expanded investment and employment in manufactures," more so than TFP, explains Hong Kong's remarkable period of postwar economic growth (Young, 1994). Figure 5.4 quite dramatically illustrates this point:

Figure 5.4: Evolution of Hong Kong's Average Growth Rate (AGR) of Total Factor Productivity (TFP) and Labor Force (LF)



At the confluence of all of the geopolitical developments outlined above lay Hong Kong's opportunity to establish itself as an economic power.

However, there was an added impetus for Hong Kong to industrialize beyond the aspirations of its people to achieve prosperity: necessity. As noted earlier, it experienced a sustained inflow of Chinese immigrants during the 1950s. Indeed, in between 1950 and 1960, its population swelled from 1,629,000 to 2,615,000, representing a cumulative increase of 60.5 percent and an average AGR of 4.85 percent (United Nations, 2002). Simply ensuring the sustenance, let alone advancing the standard of living, of this augmented population necessitated the adoption of an economic strategy that would yield increasing returns to scale (Government of Hong Kong, 2000). Accordingly, Hong Kong embarked on a dual course: as the government invested heavily in public works, such as housing and education, the private sector proceeded to establish successful industries in areas such as cotton textiles (One of the most unusual, and enduring, features of Hong Kong's growth is its crucial dependence on small firms' innovativeness. Writing in the EH.Net Encyclopedia of Economic and Business History, Catherine R. Schenk of Glasgow University documents that by 1975, in fact, an astounding 96.5 percent of its manufacturing firms employed fewer than 100 employees.). The manufacturing sector's high degree of autonomy was especially powerful in driving Hong Kong's economic growth because Hong Kong's capital stock was highly productive (Frankel, 1998). This assessment affirms the first implication of the result that I derived in Section III: (3.7).

This result also indicates the crucial importance of education: as β rises, so does the steady-state level of output per unit of effective labor. By 1960, the adult literary rate in Hong Kong was 50 percent; by 1985, that figure had risen to 85 percent. Indeed, in stark contrast to India, its educational system was already impressively developed by the time that it was poised to embark on its spectacular growth path (Andreosso-O'Callaghan, 2002). In 1965, Hong Kong

was investing 3 percent of GDP in developing educational infrastructures, and by 1971, students attending government or subsidized schools no longer incurred any expenses (Post, 2003). Furthermore, between 1960 and 1990, the average number of years of education – E in the model – that a given worker in Hong Kong's labor force possessed increased from approximately 3.5 to 9 (Caribbean / Latin American Action and Bellcore International, 1998). As implied earlier, this general improvement in Hong Kong's educational system operated in conjunction with its development of native talent as well as knowledge spillovers from mainland China. Two economists estimated the effects of these factors, among others, on Hong Kong's long-term growth. In particular, they developed the following regression:

$$\hat{y} = 0.34\frac{\hat{K}}{N} - 0.46\hat{N} + 0.42\hat{E} + 0.09\hat{L} + 0.02\hat{I} + 0.01, \text{ where}$$

$\hat{y}$ is the growth rate of output per capita; $\frac{\hat{K}}{N}$ is the growth rate of capital per worker; $\hat{N}$ is the growth rate of the working population; $\hat{E}$ is the growth rate of government expenditures on education, $\hat{L}$ is the growth rate of learning-by-doing, and $\hat{I}$ is the growth rate of foreign direct investment. Furthermore, all of the coefficients are elasticities. They estimate that of Hong Kong's growth from 1975 to 1990, 78.67 percent can be attributed to education and 32.14 percent can be ascribed to learning-by-doing (Chou and Wong, 1997).[4] Such figures underline the key role that education and, by extension, human capital – H in our model – played in driving Hong Kong's postwar economic growth, thereby affirming the second implication of (3.7).

It was this continually improving stock of human capital that allowed Hong Kong to move beyond manufacturing. Indeed, as Western states erected barriers to protect themselves from its textile exports, Hong Kong's leadership quickly realized that sustaining the country's economy growth would require this expansion: "…The government was dependent on its experienced ex-Shanghai entrepreneurs and a workforce that accepted a three-shift system to keep the textile industry buoyant. In the two decades from the early 1950s to the 1970s the colony literally rested on the shoulders of this one sector" (Buckley, 1997). Thus, during the 1970s, it expanded into the realms of toys, artificial flowers, electrical products, footwear, and metal goods. Thereafter, in the 1980s, Hong Kong transitioned from a manufacturing economy to one of the world's principal financial centers, a development that cemented its economic growth. There is one crucial aberration in its growth pattern that merits comment. As Table 1.2 illustrates, the AGR of Hong Kong's RGPW fell by 4.36 percent from the period 1975-1980 to the period 1980-1985. In large part, this sharp decline owed to surging production costs – a product of its rapid economic growth from the 1950s to the 1970s – that harmed local manufacturers' ability to competitively price their products in the global market. The growth of alternative production centers in Southeast Asia exacerbated these manufacturers' difficulties, and led to increased restrictions on Hong Kong's major export markets (Sit, 2004). Its integration with China in the early 1980s, however, served to restore its previous competitiveness, and significantly augmented its investment opportunities. It is not surprising, then, that the AGR of Hong Kong's RGPW rose to 6.78 percent in the period 1985-1990.

Furthermore, it should be noted that it was only after its integration with China that Hong Kong began to experience significant gains in the AGR of its TFP. Prior to this unification, it was largely an insulated economy, whose economic growth centered on the fortification of its domestic manufacturing sector. Indeed, from 1965 to 1980, its openness index only grew by 18.78 percent; from 1980 to 1990, by contrast, its openness index grew by 45.56 percent. It is no

wonder, then, that, as Figure 1.3 illustrates, Hong Kong's AGR of TFP rose dramatically during this same period. After all, scholarly literature has convincingly documented that economies accrue greater TFP gains when they adopt an outward orientation (Baldwin, 2002). What we see, then, is that Hong Kong's economic growth in the postwar period largely owes to the growth in the size and quality of its labor force, and, to a more limited extent (only after its integration with China), gains in TFP.

India's postwar experience, as noted earlier, was vastly different than Hong Kong's; in particular, from 1965 to 1980, India suffered by adopting a socialist economic model, a product of its deeply entrenched distaste for the "commercial classes" (DeLong, 2001). Its implementation of a series of "Five-Year Plans," perhaps more than any other single policy measure, bears this attitude.

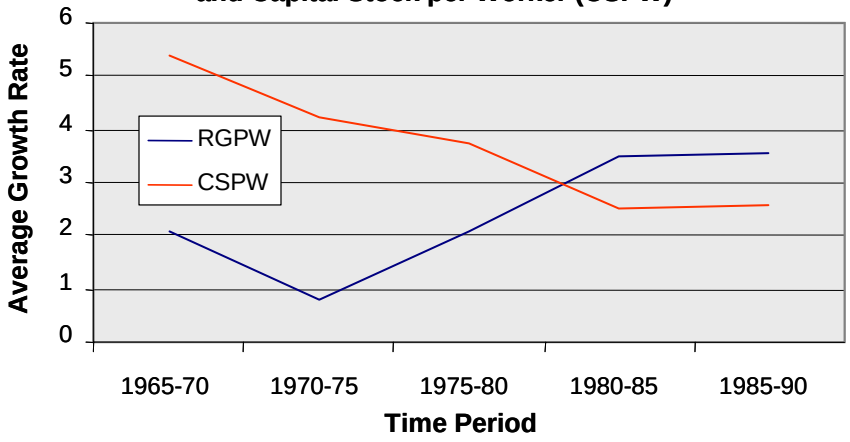
Many narratives of Indian growth begin in the 1960s, by discussing exogenous shocks to its economy. In 1962, as the Cold War inflamed regional tensions across the world, China dealt India a military defeat; three years later, India prevailed, although at great cost, in a war with its central opponent, Pakistan. In preparing for and executing these two campaigns in such a short span of time, India's expenditures on national defense grew rapidly. In between 1961 and 1966, in fact, military spending as a percentage of GDP grew from 1.69 percent to 3.38 percent (Singh, 2000). Its deficit, not surprisingly, swelled as a result of this increase in expenditures, and led to inflationary pressures.

Natural disasters exacerbated these military-political crises. It is widely known that India's economy is heavily centered on agrarian activities, and, as a result, the success or failure of its crop harvests typically depends on the monsoon season's vagaries. In 1964 and 1965, India received scarce rainfall, a regrettable result that, in addition to crippling agricultural production, compelled it to import food (especially grain).[5] In this difficult time, India would ultimately be unable to depend on aid from either the United States (which was explicitly terminated) or the World Bank (which was promised but failed to materialize). The leadership that took over in 1967, reacting bitterly to this failure of external assistance to manifest, made self-sufficiency in creating food one of its central priorities. Accordingly, India began to capitalize on the West's development of high-yield sees for growing wheat, rice, and other grains, and also boosted its use of fertilizers and irrigation: these two parallel developments collectively formed what is now termed the Green Revolution. Unfortunately, the phenomenal opportunities that it presented to India disappeared in the early 1980s, at which point there remained little to no supply of arable land on which to harvest crops:

The rate of growth [of the total area under the high-yielding varieties program] decreased significantly in the late 1980s, however, as additional suitable land was not available… The major benefits of the Green Revolution were experienced mainly in northern and northwestern India between 1965 and the early 1980s… Food-grain yields continued to increase throughout the 1980s, but the dramatic changes in the years between 1965 and 1980 were not duplicated (Library of Congress, 2005).

Figure 5.5 reinforces this conclusion, for it was during the period 1965-80, when the Green Revolution had its most potent impact on India's economy, that India's AGR of CSPW exceeded its AGR of RGPW. Indeed, after the 1975-80 period, India's AGR of RGPW began to surpass its AGR of CSPW:

Figure 5.5: Evolution of India's Average Growth Rate (AGR) of Real Gross Domestic Product per Worker (RGPW) and Capital Stock per Worker (CSPW)



While the articulation of this goal was commendable, it was concomitant with a turn towards authoritarian governance: unlike Hong Kong's, India's government increasingly encroached on the private sector's vital decisions. The introduction of the Monopolistic and Restrictive Trade Practices Act in 1969 and the Foreign Exchange Regulation Act in 1973 are ample illustrations of this trend.[6] Indeed, these pieces of legislation were representative of a deeply rooted, interwoven network of industrial licensing, price controls, and excise duties (among other policies) that proved to be inimical to India's economic growth. During the 1970s, for example, the government was imposing "stringent and often unrealistic price controls on such vital commodities as steel, cement, aluminum, copper, zinc, coal, ships, fertilizers, bulk drugs, chemicals, and ferro alloys" (Jha, 1998). The net impact of these, and other, imprudent regulations was to place increased obstacles in the way of large-scale industries that stood to benefit from economies of scale.

One also sees evidence of this detrimental government intrusion in the realm of finance. In 1969, the Indian government nationalized 14 banks, thereby entrusting it with 90 percent ownership of the banking sector. The introduction of this policy coincided with growing federal deficits: "To finance [the] government's fiscal deficit, the incremental demand and time liabilities of *all banks* were required to be invested in government debt through the mechanism of [the] Statutory Liquidity Ratio (SLR)…banks also had to maintain a Cash Reserve Ratio (CRR) of 15 percent. It [can] be seen from the above that the Indian financial system was tightly regulated [until] the 1990s" (Gupta and Sathye, 2004). The detriment of government intervention in the private sector can be seen in India's inability to grow human capital as quickly or consistently as Hong Kong. In terms of our model, while $g_{indigenous}$ and $g_{spillover}$ were both robust and interrelated in Hong Kong, they were weak and tenuously connected in India. In particular, whereas spillovers in knowledge and technology had an almost immediate impact in Hong Kong, they did not begin to meaningfully accelerate India's economic trajectory until the mid-1970s, and even then, they disproportionately favored certain sectors, such as pharmaceuticals, over others (Kumar, 2002). Furthermore, it is widely documented that Hong Kong's stock of human capital consistently remained superior to India's from 1965 to 1990. One reason for this disparity is that, while Hong Kong has historically directed immense investment towards the establishment of rudimentary educational infrastructures, India has placed a singular emphasis on

bolstering advanced educational infrastructures (comprising institutes of higher learning and research institutes), with the result that Hong Kong has enjoyed a much more reliable and continuous labor pool. Although there are myriad factors that contribute to a country's economic growth, education is properly regarded as one of the most crucial ones (Tilak, 2002). Another, more evident, reason for this disparity is that, aside from agricultural technology, India's capital stock experienced very limited returns – thereby affirming the third implication of (3.7).
The 1980s witnessed modest, but nonetheless important, departures from past economic policies that included gradual reductions of production quotas for manufacturers and import barriers on capital goods. The principal consequence of these reforms was to accelerate productivity growth in the manufacturing sector. For factories, the annual rate of productivity growth rose from 2 percent in the 1970s to 6.3 percent in the 1980s (Mehring, 2004). In light of this information, it appears incongruous that growth during the 1980s was nonetheless modest. It is widely believed that India failed to achieve higher rates of growth because the strategies that it pursued were unsustainable. In particular, its leadership relied on excessive foreign borrowing to finance its macroeconomic reforms (I would be remiss to neglect here the importance that drought and oil shocks – both exogenous crises – played in stunting growth, although temporarily – during this time period.) (Klein and Palanivel, 2000). Furthermore, India's strategies failed to remedy the vast inequities that previous decades of economic mismanagement had created. It is reasonable to suggest, then, that while the 1980s witnessed promising shifts in economic policy, these shifts did not extend far enough. As such, while certain economic indicators progressed during this time, others stagnated or even regressed. Consider, for example, that in between 1947 and 1980, India's share of international trade fell from 2.5 percent to 0.5 percent (Shah and Chaurushiya, 2004).

V. Conclusion

On August 24, 1997, *The Times of India* printed an editorial in which it compared Hong Kong's and India's growth over time:

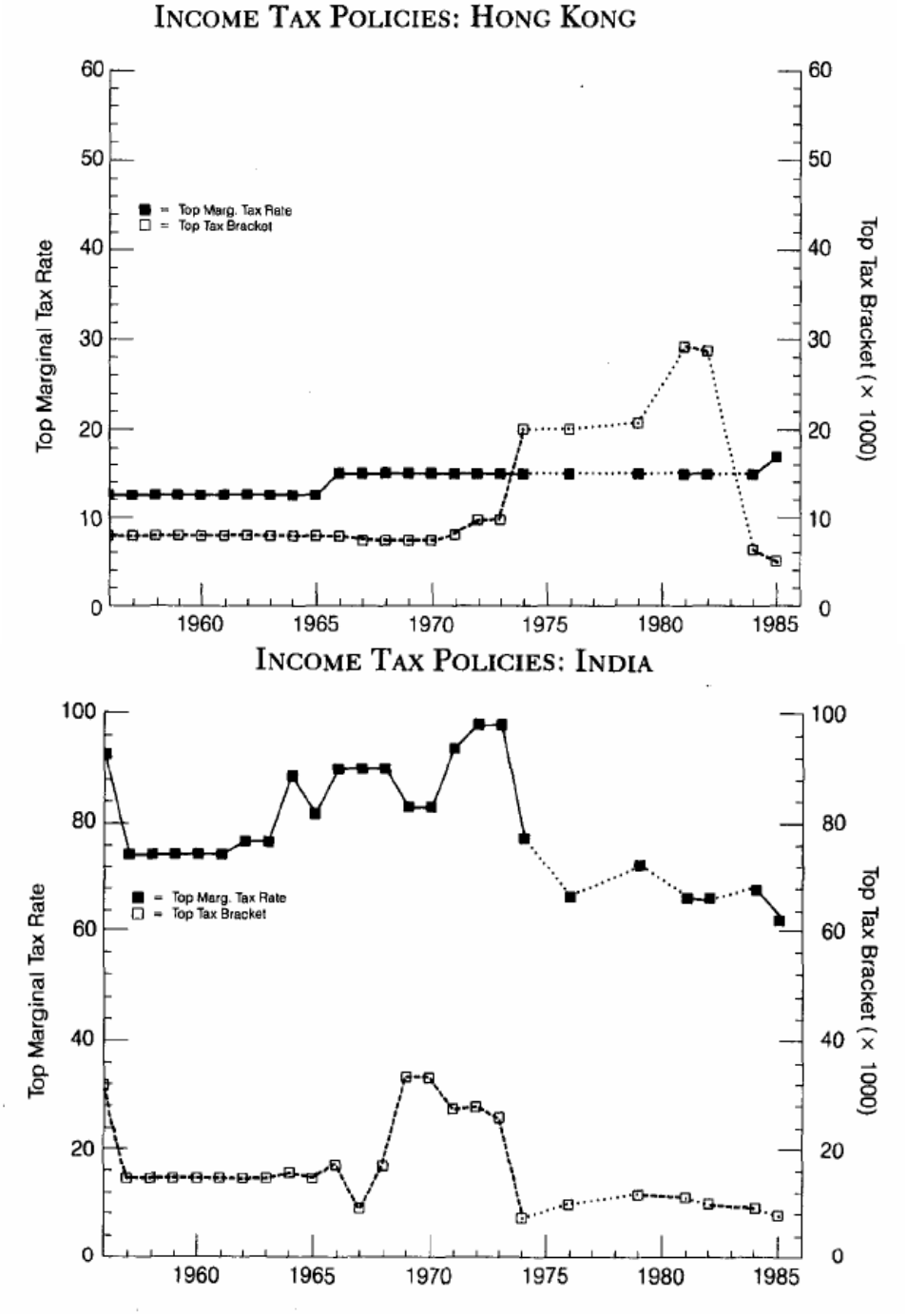
> India contributed to this process. The independence movement exposed the hypocrisy of the white man's burden…In place of the old colonial extraction, the new philosophy poured aid into the colonies and ex-colonies. Hong Kong was a special case. It had no minerals, no peasant population from whom surpluses could be extracted. The British took over Hong Kong to exploit not the locals, but the Chinese market. Trade kept Hong Kong ticking even during the Great Depression and turmoil in China in 1912-49. When world trade boomed in the 1950s (and Mao restored order and economic growth in China), Hong Kong took off. In 1950 it was still a backwater with coolies pulling rickshaws. Today, its per capita income ($ 23,000) is higher than Britain's ($18,700).

From 1965 to 1990, the government played a decisive role in influencing Hong Kong's and India's growth paths. In particular, its intervention was properly applied in Hong Kong's case, so as to provide those infrastructures (social and otherwise) whose functionality critically impacted the private sector's ability to drive economic growth. The government's intrusion in India, however, was far too pervasive, and curtailed its growth prospects. Furthermore, while Hong Kong's openness furthered its ability to benefit from knowledge and technological diffusion, India's complex network of internal and external regulations limited its ability to profit from

foreign advances. Consider, for example, that in between 1965 and 1990, Hong Kong's openness index soared from 152.09 to 262.96, while India's sputtered from 9.23 to 18.76.

Yet another illustration of this contrast is the evolution of the taxation system in both countries. After World War II, public officials in Hong Kong placed great emphasis on maintaining low, stable tax rates, so as to empower a wide cross-section of society. India, however, imposed incredibly high tax rates, thereby stifling sizable segments of the poor and middle classes:

Figure 6.1: Evolution of Tax Rates in Hong Kong and India



Furthermore, given the corruption that has historically pervaded India's bureaucracy, it may well be the case that a considerable proportion of the collected tax revenues was directed not towards the generation of private returns, but rather, to the financing of rent-seeking activities (Rabushka, 1987). And, as noted above, India's growth strategies in the 1980s, while beneficial, to be sure, ignored deeply rooted inequities. Hong Kong, by contrast, gradually expanded its economic base to include manufacturing, finance, and services, such that its path of economic growth was reasonably equitable. Even though India succeeded in reducing its poverty rate during the period in consideration, by 1990, its poverty rate was still five times that of Hong Kong (de Haan and Lipton, 1998).

I will conclude not by offering more specifics such as those that I present above, but rather, by returning to the broader context within which I began to compare and contrast the Hong Kong's and India's growth paths. Hong Kong was forced to adopt large-scale industrialization and, more broadly, economic liberalization, by virtue of necessity. Recall that in the early 1950s, it was abruptly confronted with the prospect of caring for a massive influx of Chinese immigrants. It is highly doubtful that it would have been able to achieve this daunting goal by remaining an entrepôt economy. Initially because of exogenous circumstances, and later resulting from thoughtful choice, Hong Kong embarked on a course of economic liberalization that resulted in its attaining astounding rates of economic growth. The government selectively intervened so as to accrue returns to the private sector.

In sharp contrast, India's unpleasant experience with colonial rule convinced its leadership of the pernicious influence of an economy based on the rule of markets. Accordingly, it adopted an economic mindset that, while well-intentioned, ultimately bred stagnation. During the 1990s, India implemented a series of genuinely liberal economic reforms, in contrast to the uncommitted ones that it had pursued one decade earlier. As expected, it achieved outstanding rates of economic growth, and is now viewed as a central pillar of the global economy.

Looking into the future, Hong Kong and India will need to develop strategies to ensure the sustainability of their current patterns of economic growth. At least at this juncture, Hong Kong seems more poised to achieve consistently high growth rates, because its leadership has taken care to redress socioeconomic disparities. At present, a narrow segment of Indian society is benefiting immensely from economic globalization, while hundreds of millions are sinking further into squalor and despair. The daunting task for India's leadership, then, will be to prevent this gap from becoming a permanent feature of the Indian economy.

VI. Appendix A: A Complete Derivation of (1.15)

Throughout this appendix, in the interests of conserving space, I dispense of *(t)*. I begin by defining output per unit of effective labor:

((A.1) $$y = \frac{Y}{AL}$$

I then substitute (3.2) into (A.1):

$$y = \frac{F_e^{\alpha+\alpha(1-\beta)} K^{\beta} (AL)^{1-\beta} e^{\Phi E(1-\beta)}}{AL}$$

$$y = \frac{F_e^{\alpha+\alpha(1-\beta)} K^{\beta} e^{\Phi E(1-\beta)}}{AL^{\beta}}$$

(A.2) $$y = F_e^{\alpha+\alpha(1-\beta)} e^{\Phi E(1-\beta)} \left(\frac{K}{AL}\right)^{\beta}$$

I now define capital stock per unit of effective labor:

(A.3) $$k = \frac{K}{AL}$$

Substituting (A.3) into (A.2) yields the following result:

(A.4) $$y = F_e^{\alpha+\alpha(1-\beta)} e^{\Phi E(1-\beta)} k^{\beta}$$

In order to determine the steady-state value of output per unit of effective labor, I need only determine the steady-state value of capital stock per unit of effective labor, for it is the sole variable that is endogenous to the model. $F_e, \alpha, \beta, e, \Phi,$ and E are all constants, which, by definition, do not vary with time.

Recalling (A.3), I begin the derivation of $k_{steady-state}$ as follows:

$$\frac{\dot{k}}{k} = \frac{\dot{K}}{K} - \left(\frac{\dot{A}}{A} + \frac{\dot{L}}{L}\right)$$

(A.5) $$\dot{k} = k\left[\frac{\dot{K}}{K} - \left(\frac{\dot{A}}{A} + \frac{\dot{L}}{L}\right)\right]$$

I now substitute (A.3) into (A.5):

$$\dot{k} = \frac{K}{AL}\left[\frac{\dot{K}}{K} - \left(\frac{\dot{A}}{A} + \frac{\dot{L}}{L}\right)\right]$$

(A.6) $$\dot{k} = \frac{\dot{K}}{AL} - k\left(\frac{\dot{A}}{A} + \frac{\dot{L}}{L}\right)$$

I earlier derived that the growth rate of effective labor is $g_{indigenous} + g_{spillover} + g_L$ [(3.5)]. Substituting this result, as well as (3.2), into (A.6), I obtain the following relation:

$$\dot{k} = \frac{sY - \delta K}{AL} - k\left(g_{indigenous} + g_{spillover} + g_L\right)$$

(A.7) $$\dot{k} = \frac{sY}{AL} - \frac{\delta K}{AL} - k\left(g_{indigenous} + g_{spillover} + g_L\right)$$

After substituting (A.3) and (3.2) into (A.7), I determine that

$$\dot{k} = \frac{sF_e^{\alpha+\alpha(1-\beta)} K^{\beta} (AL)^{1-\beta} e^{\Phi E(1-\beta)}}{AL} - \delta k - k\left(g_{indigenous} + g_{spillover} + g_L\right)$$

$$\dot{k} = \frac{sF_e^{\alpha+\alpha(1-\beta)} K^{\beta} e^{\Phi E(1-\beta)}}{AL^{\beta}} - k(\delta + g_{indigenous} + g_{spillover} + g_L)$$

(A.8) $$\dot{k} = sF_e^{\alpha+\alpha(1-\beta)} e^{\Phi E(1-\beta)} \left(\frac{K}{AL}\right)^{\beta} - k(\delta + g_{indigenous} + g_{spillover} + g_L)$$

Upon substituting (A.3) into (A.8), I obtain the desired equation:

(A.9) $$\dot{k} = sF_e^{\alpha+\alpha(1-\beta)} e^{\Phi E(1-\beta)} k^{\beta} - k(\delta + g_{indigenous} + g_{spillover} + g_L)$$

The steady-state value of capital stock per unit of effective labor is that value at which $\dot{k} = 0$:

$$0 = sF_e^{\alpha+\alpha(1-\beta)} e^{\Phi E(1-\beta)} k_{steady-state}^{\beta} - k_{steady-state}(\delta + g_{indigenous} + g_{spillover} + g_L)$$

$$k_{steady-state}(\delta + g_{indigenous} + g_{spillover} + g_L) = sF_e^{\alpha+\alpha(1-\beta)} e^{\Phi E(1-\beta)} k_{steady-state}^{\beta}$$

$$k_{steady-state}^{1-\beta} = \frac{sF_e^{\alpha+\alpha(1-\beta)} e^{\Phi E(1-\beta)}}{\delta + g_{indigenous} + g_{spillover} + g_L}$$

(A.10)
$$k_{steady-state} = \left(\frac{sF_e^{\alpha+\alpha(1-\beta)} e^{\Phi E(1-\beta)}}{\delta + g_{indigenous} + g_{spillover} + g_L} \right)^{1-\beta}$$

Now that I have obtained this value, the remainder of the derivation is straightforward, although the required algebraic manipulations are somewhat tedious. I now substitute (A.10) into (A.4):

$$y_{steady-state} = F_e^{\alpha+\alpha(1-\beta)} e^{\Phi E(1-\beta)} \left(\frac{sF_e^{\alpha+\alpha(1-\beta)} e^{\Phi E(1-\beta)}}{\delta + g_{indigenous} + g_{spillover} + g_L} \right)^{\frac{\beta}{1-\beta}}$$

$$y_{steady-state} = F_e^{\alpha+\alpha(1-\beta)} F_e^{\frac{\beta[\alpha+\alpha(1-\beta)]}{1-\beta}} e^{\Phi E(1-\beta)} e^{\frac{\beta\Phi E(1-\beta)}{1-\beta}} \left(\frac{s}{\delta + g_{indigenous} + g_{spillover} + g_L} \right)^{\frac{\beta}{1-\beta}}$$

$$y_{steady-state} = F_e^{\alpha+\alpha(1-\beta)} F_e^{\frac{\beta\alpha}{1-\beta}+\beta\alpha} e^{\Phi E(1-\beta)} e^{\beta\Phi E} \left(\frac{s}{\delta + g_{indigenous} + g_{spillover} + g_L} \right)^{\frac{\beta}{1-\beta}}$$

With a few more manipulations, I arrive at the following result, which, as desired, is equivalent to (3.7):

$$y_{steady-state} = F_e^{\frac{\alpha(2-\beta)}{1-\beta}} e^{\Phi E} \left(\frac{s}{\delta + g_{indigenous} + g_{spillover} + g_L} \right)^{\frac{\beta}{1-\beta}}$$

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VIII. Endnotes

[1] This paper was originally conceived for a course that I completed at MIT during the Fall 2005 term, "14.05: Intermediate Applied Macroeconomics." I would like to thank Ms. Jessica Lee Cohen, my Teaching Assistant, for her myriad insights into and suggestions on an earlier draft of this paper, which have doubtless improved the quality of this version. And, of course, I express my sincere gratitude to Professor Peter Temin, not only for presenting such an engaging and thorough survey of major macroeconomic themes in 14.05, but also, more importantly, for bringing the subject of economics to life in a manner that only a select few are able to.
[2] All calculations in Section I are based on data from Alan Heston, Robert Summers and Bettina Aten, Penn World Table Version 5.6, Computing in the Humanities and Social Sciences (CHASS) at the University of Toronto, July 1998. In the remainder of this paper, where calculations are not attributed to other sources, the reader should assume that they, too, are based off of the Penn World Tables.
[3] Hereafter, for brevity's sake, I will simply employ the term "economic freedom," rather than "economic freedom in the private sector."
[4] The reason that these numbers add up to over 100 percent is that, according to this particular regression, the number of workers actually contributed negatively (-32.14 percent) to the growth rate of output per capita.
[5] One fascinating econometric study concluded that from 1951 to 2004, 45 percent of the variation in India's economic growth could be explained by deviations in rainfall levels from the average rainfall level of this 53-year period (Virmani 2005).
[6] The provisions of this act prevented its application to a large number of organizations, including any enterprises owned or controlled by the government, corporations, and financial institutions. The result was the proliferation of what economist Jagdish Bhagwati (1982) has termed "directly unproductive, profit-seeking (DUP) activities." Shashi Tharoor (1998), Under-Secretary-General for Communications and Public Information of the United Nations, eloquently affirms this principle: "The 'permit-license-quota' culture of statist socialism allowed the ruling politicians to use politics as a vehicle for self-gratification."