

# Growth: A Tale of Trade

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## Abstract

This paper seeks to describe the sources of economic growth and convergence. International trade has facilitated capital accumulation, which has proven to be the major force in the global growth phenomenon. Most importantly, human capital accumulation has extended the time period for growth as well as lifted the maximum potential for expansion. Policy decisions are intricately tied to economic developments and must be geared toward streamlining government bureaucracy, moving towards a more market-oriented economy, and improving educational opportunities. Growth is a complex economic phenomenon, but its effects are tangible and capable of lifting the hopes of everyone.

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The history of trade in the global marketplace has witnessed trends from complete isolation, to mercantilism, to the present day where the value of trade has reached a new found sense of importance. Few issues have been studied more in macro-economics than international trade. Debates on trade policy have always focused on maximizing welfare, and using the international marketplace to improve growth and eliminate the large income gaps that have risen between developed and developing countries. The Solow growth model has been used as the basic tool for studying growth in an economic context and while its assumptions of convergence are known, the model itself addresses countries existing independent of one another (b. Slaughter, 1997, 1). However, in a world which has largely followed the advice of Ricardo's trade theory on a global scale, any analysis of growth cannot exist in a vacuum, and hence it becomes imperative to add the underlying elements of international actions and affairs to the once static model to create a dynamic definition of growth. This paper seeks to examine the effects of international trade on capital accumulation, with a focus on examining government policies enacted with the hopes of improving growth; the essay concludes that the importance of capital accumulation, particularly human, has been the driving force of growth and the reasons for the existing divergence in growth patterns between countries is a result of correctable differences in the infrastructure among nations.

Growth is a topic that has captured the imagination of economic inquiry. Growth, in an international context, occurs just as "[Adam Smith]'s followers have stressed for generations; trade promotes growth through a myriad of channels: increased specialization, efficient resource allocation according to comparative advantage, diffusion of international knowledge through trade, and heightened domestic competition as a result of international competition" (Sachs, 1993, 3). As countries open to trade, they face "greater competitive pressures upon it and [a] greater need for it to incorporate foreign knowledge into its production processes in order to be able to compete with foreign firms"; hence trade plays an important role in "[facilitating] the diffusion of knowledge and [spurring] the growth process" (Ben-David, 1997, 22). In the long run, Ben-David finds that liberalization has a positive impact on the

steady state growth of open economies due in large part to knowledge spillovers that have impacted income convergence and growth (Ben-David, 1997, 1). As Sachs illustrates, trade liberalization does not exist in isolation; it is usually a sign of inner market reform and a changing structure of the economy, all of which are favorable to increased growth. He presents evidence that from 1970-1989, there is a “strong association between openness and growth, both within the group of developing and the group of developed countries” (Sachs, 1993, 35). It is clear that trade is an integral part of growth, but the next step is to dissect the actual components of economic expansion.

The concept of growth gives hope to all nations that they can provide the means for their citizens to improve their lives. Changes in output over time can be broken down into changes in capital accumulation and changes in productive capacity. Comparing growth rates across countries can help to evaluate whether the gains from trade are accruing to all nations, and whether the growth rates of poor countries are indeed converging towards initially wealthy countries as the Solow model predicts. Conventional wisdom from the endogenous perspective of the Solow growth model suggests that the “relative backwardness” of some countries, in terms of their lower initial level of capital per labor, will actually lend them faster growth rates, eventually propelling their economies to converge with the growth rates of the more developed nations (Keefer, 1997, 1). Hence, it becomes critical to understand the forces of growth in order to find policy options to maximize output potential. If it is true that all economies had the same production function and savings rate, one would presume “convergence would apply in an absolute sense; that is poor places would tend to grow faster per capita than rich ones” (Barro, 1996 4). Unfortunately, this largely rosy view of convergence has seemingly not matched reality. Absolute convergence does not conform to the data, which to date has not indicated convergence across the globe of LDCs to DCs; instead, recent evidence suggests that “global inequality is worsening” (Wade, 2). However, absolute convergence does seem to accurately predict growth patterns when comparing nations of similar standings: those with similar production capacities, savings rates, and depreciation rates, such as those in the OECD (Mankiw, 1992, 425). This has led some to speculate whether “conditional convergence” is a worthy explanation for seemingly different patterns of growth and

convergence across countries similarly situated that share common characteristics. Since the Solow model does predict the presence of a “moving” steady-state target, it is entirely conceivable, and indeed somewhat borne out in the data, that countries converge on a conditional basis since the initial steady-state level of capital, savings, and depreciation vary across nations, and hence follow the Solow model’s prediction of growth (Barro, 1996, 4). However, conditional convergence, that is convergence between similarly situated nations, has no bearing on overall income distribution and growth. In fact, due to the better institutions and higher savings rates of DCs, they have accumulated capital faster and reached overall higher growth rates than LDCs, perpetuating the income gap. Consequently, in order to analyze the different growth rates that seemingly continue to persist between developed countries and LDCs, theories must be propounded to explain the causes of growth.

Those who propose growth being primarily driven by differences in the production function of different nations find fundamental disparities between rich countries and poor countries in patterns of technological advancement and institutional development. One proposition, put forth by Klenow, is that technology plays the primary role in growth, concluding that “richer countries tend to have higher  $K/Y$ , higher  $H/Y$  [human capital/output], and higher  $A$ , with a dominant role for  $A$ ” (Klenow, 2001, 89). Hence, some deem “the fundamental differences in growth rates of  $Y/L$  derive overwhelmingly from differences in growth rates of  $A$ ” (Klenow, 2001, 94). According to Slaughter, “given a country’s endowment of inputs, improved technology implies higher marginal physical productivities for factors and higher prices for these factors” and increased economic prosperity (b. Slaughter, 1997, 5). However, it is very difficult to separate technological improvement from the importance of capital, and given the changes in communication and the ability to replicate new technologies, there are others, who feel that most of the data indicates that changes in growth rates are primarily due to changes in capital accumulation, particularly human. Barro elaborates this point by making the case that technological growth and diffusion has more to do with why the world can continue to grow, but it does not adequately explain differences in relative growth rates between countries; this clearly leads to the conclusion that those variables that affect savings and population growth, and hence capital accumulation, exert more

influence on relative growth rates across countries than changes to production technology (Barro, 1996, 8). In his work, Taylor states that “factor accumulation [including factor flows] was the main source of convergence. In contrast, technology transfer appears to have mattered very little” (Taylor, 1). He goes on to point out that “growth seemed to be almost entirely driven by factor endowments [...] how capital-labor and land-labor ratios evolved over time” (Taylor, 30). While the typical models of growth describe capital accumulation as a purely endogenous process, the integration of the global marketplace dictates that trade plays a role in changing capital accumulation and potentially altering comparative advantage. The presence of North-South trade, multinational corporations, outsourcing, and intra-industry trade has facilitated the movement of physical and human capital across borders. With trade, it becomes possible to accumulate more capital and hence continue the growth process. Solow himself mentions in his work that “to attain a high rate of growth of output, the equivalent stock of capital must grow faster than the input of labor” (Solow, 1963, 84). Mankiw goes on to clarify the neoclassical growth model as one which assumes “diminishing returns [and hence] a country’s per capita growth rate tends to be inversely related to its starting level of income per person (Mankiw, 1992, 422). Growth, in this sense, is due to “the accumulation of human and physical capital” (Mankiw, 1992, 422). One should not conclude that growth is derived solely by either changes in productive capacity or changes in capital accumulation; the two do not exist in a vacuum; both work together, and in an increasingly open global marketplace, the effects of both are critical to any study. Trade facilitates improvements in technology, but most importantly, the ability to acquire the building blocks for growth: capital.

While the effects of accumulating physical capital have typically always been incorporated into most models, the effects of human capital have not been fully internalized. As mentioned by Basu, physical capital in the form of FDI “could have permanent effects on the total factor productivity of the host country through a combined impact of human capital augmentation and technological change” (Basu, 2003, 511). Capital plays a prominent role in the production process and exhibits parallel movements with overall income and output shown by investment data from Summers and Heston which indicates “low-saving countries have capital-output ratios near one and high-saving countries have capital-output

ratios near three” (Mankiw, 1992, 431). While it is clear that physical capital plays a direct role in growth, the role of human capital is that of an intermediate good. Easterly makes the case that “the accumulation of human capital is closely tied to the introduction of new goods into the production process: accumulating human capital simply means learning how to work with a new intermediate input” (Easterly, 1994, 4). The increasing returns to human capacity, inherent in human capital, have the ends of improving all aspects of life: social, political, and economic. In his paper, Mankiw explains that “accumulation of physical capital and population growth have greater impacts on income when accumulation of human capital is taken into account [...] human capital accumulation may be correlated with [higher] savings rates and [lower] population growth rates” both of which would raise the moving-target steady state for output and growth facilitating faster capital accumulation and higher long range growth rates (Mankiw, 1992, 408). The benefits of human capital accretion cannot be understated; in some ways, human capital is longer lasting than physical equipment. Taking the form of an educated and knowledgeable work force, human capital growth entails the accumulation of skills necessary to compete in the 21<sup>st</sup> century. The role it plays in development is critical to understanding the concept of convergence and generating policies to facilitate the growth of both rich and poor nations. The rest of this paper will seek to elaborate methods in which countries can seek to improve their growth potential, by means of institutional reform and human capital accumulation.

Divergence in growth rates and income levels across the globe has several institutional causes. One such source of global inequality is that some countries are simply not opening their markets to the world and are not experiencing the growth potential of trade. Sachs points out in his paper that “open economies tend to converge, but closed economies do not. The lack of convergence in recent decades results from the fact that the poorer countries have been closed to the world” (Sachs, 1993, 3). The history of import-substitution techniques adopted by several developing nations in the 20<sup>th</sup> century has confirmed the data that “outward oriented economies seem to be growing faster than countries that restricted trade” (Ben-David, 4). Inward-looking economies that adopt protectionist tactics must accumulate capital in a purely home-grown manner. In many instances, without the source of foreign

innovation and competition, it becomes difficult to streamline the production process in goods and services to accumulate the necessary amount of capital to service higher growth rates. However, for trade to have a positive impact on capital accumulation and growth, it is necessary that technology “flow from advanced to less-advanced countries,” which in many cases has been diluted by poor protectionist policies and hence these countries cannot accrue the true gains of trade (a. Slaughter, 1998, 5). The world’s poorer countries “tend to surround themselves with greater walls of protection which [...] limits knowledge spillovers to them” (Ben-David, 23). In reality, even under perfect conditions, it is not necessarily rational to assume that capital can flow completely unadulterated between countries; hence, there could be an underlying bias towards an inherent difference in potential growth rates between those who have capital and those who do not. In addition, others such as Bajona suggest that introducing trade could even prove to be a negative influence on convergence since “favorable changes in the terms of trade for poor countries reduce their incentives to accumulate capital” (Bajona, 2006, 1). If poor countries enter the international arena by initially exporting primary commodities based on their comparative advantage, it could actually become profitable for them to continue exploiting their advantage in natural resources rather than seeking alternative sources of income or changing the production process. However, this may not be a bad thing, because in the very rudimentary stages of economic development, it may actually be necessary for initially poor countries to become “net resource importers” in order to accumulate a sufficient level of capital, both human and physical, to facilitate the nascent beginnings of downstream processing (Taylor, 30). In either case, the evidence clearly bears out that those who do not engage in international trade are at a distinct disadvantage in terms of accumulating capital to facilitate higher levels of growth.

Present in any dialogue about economics is politics. The political system of a nation can and does have a large bearing on the risks involved in investment and economic activity and thus exerts an enormous influence on trade and growth. On average, the tendency has been to see a “strong positive influence of the standard of living on a country’s propensity to experience democracy” (Barro, 1996, 1). However, there are aberrations to this rule, such as Chili, Peru, and China, all of which at some point saw

remarkable growth rates even during times of authoritarian rule. In fact, some speculate that democracy could hinder the path to increased economic growth by making it more difficult to pass needed reforms, a problem that has plagued countries such as India. Nevertheless, evidence tends to support the Lender Hypothesis that prosperity and democracy are generally intertwined (Barro, 1996, 33). Stability in the political sphere has direct effects on the stability of the economic market. However, market distortions driven by political power and entrenched inequality can alter market incentives. It is important to maintain a meritocracy in terms of political and economic opportunities or suffer losses due to inefficiency and entrenched division in society (Keefer, 1997, 3). Benabou makes the case that an economy's growth rate "is shown to fall with interest group's rent seeking abilities, as well as with the gap between rich and poor" and hence inequality in terms of access to markets exerts a tremendous influence on business opportunities (Benabou, 1996, 1). If government institutions cannot protect access to the market, "the economy's maximum sustainable growth rate is shown to be negatively related to interest group' rent seeing abilities, as well as to income disparities between them. [...] More generally, the analysis reveals that what really matters is not income inequality per se, but inequality in the relative distribution of earning and political power" (Benabou, 1996, 4). Entrenched inequity of wages leads to disparities in growth, not only on an intra-country analysis, but also between countries.

One needs look no further than a case study involving the Philippines and South Korea. In the 1960s, both countries had the same initial levels of GDP per capita, and similar population, urbanization, and educational levels; however, the Philippines had much more inequality in the distribution of income and land ownership. South Korea had better property rights, despite varying levels of instability, and this was instrumental in creating a better environment for business investment particularly instilling trust in the government. As the latter half of the century bore out, South Korea has seen much higher growth rates than the Philippines and has actually closed the gap of income with its neighbors, thereby following the Solow trend (Benabou, 1996, 3). The effects of inequality create a vicious cycle. If the median voter is poor, growth rates tend to be lower. With increased inequality and a lack of human capital, there are fewer lenders and more borrowers and this leads to higher interest rates which tends to worsen the income



gap. This instability hurts growth and “exacerbates social conflict, which in turn makes property rights less secure” (Benabou, 1996, 31). It becomes difficult to accumulate capital and knowledge in a society that can no longer promise its citizens a fair opportunity to profit in the marketplace by protecting their property. The policy agenda of those in office plays an important role in forming the incentives for capital investment and innovation.

Institutional differences have proven to be the primary source of the divergence in growth rates between rich and poor countries. Keefer points out that multifarious characteristics of a nation’s institutions such as “the rule of law, the pervasiveness of corruption, and the risk of expropriation and contract repudiation [show] that the ability of poor countries to catch up is determined in large part by the institutional environment in which economic activity in these countries takes place” (Keefer, 1997, 1). One such measure of institutional strength is the national innovative capacity of a nation, which has been defined by Stern as “the ability of a country to produce and commercialize a flow of innovative technology over the long term” and is essentially a defining characteristic of a nation’s ability to research and develop new technology to improve productivity and growth (Stern, 2000, 1). Public policies and institutions have large effects in the development of R and D framework, such as choices to enact copyright laws and tax credits. These serve to increase the returns to capital and make downstream processing more viable, which has tremendous positive effects on returns to all elements of the production process in terms of higher rents and wages. A nation’s innovative capacity is not only a statement of creative strength; it is an indication of human capital potential. By increasing the stock of knowledge, an economy facilitates growth simply by increasing the returns of its present resources. Increasing the potential of a country’s resources leads to confidence and foreign investment potential, which has permanent effects “on the total factor productivity of the host country through a combined impact of human capital augmentation and technological change” (Basu, 2003, 511). Risk is also a critical component to growth; as Easterly states, “economies with higher risk aversion invest a higher fraction of the capital stock in the safe technology so that they reduce growth volatility at the cost of a lower mean rate of economic expansion” (Easterly, 1994, 13). Hence, not only is political stability an important

factor in growth, but market stability is as well. Consequently, it is also important for countries to institute independent central banks so that monetary policy can be independent from politics in order to maintain some semblance of price and monetary stability (Barro, 1996, 61). Additionally, financial intermediaries can help to stabilize markets and government policies should be enacted to encourage the creation of such institutions to help allocate funds to their most efficient use (Easterly, 1994, 14). It helps to minimize interference with the market, but it is important to have regulatory mechanisms to prevent catastrophic fluctuations in the domestic stock and commodity markets, as well as the currency markets. Stability is critical to creating the necessary conditions for people to grow and innovate, attract international trade and investment, and most importantly grow. Hence, it becomes critical to foster the necessary institutions to increase human capital.

Governments have an obligation to increase the welfare of their citizens. In order to achieve higher growth rates, governments must enact policies to increase the accumulation of human capital. The most important government policy to accumulate human capital is education. It is important for any society to have a critical mass of scientists and engineers, or more generally a high initial level of technological sophistication to supply the necessary human capital resource base to become an efficient and productive economy; while public policy choices such as copyright laws and tax credits matter and do make an important difference in encouraging more direct investment, building a robust educational infrastructure is a self-fulfilling virtuous cycle (Stern, 2000, 12). As pointed out by Mankiw, “human capital accumulation may be correlated [positively] with savings rates and [negatively] with population growth rates” both of which serve to naturally increase the moving steady-state target for growth (Mankiw, 1992, 408). Increasing the educational opportunities of a nation’s citizenry, particularly women in LDCs, has important economic benefits in increased skill accumulation, lower birth rates, higher savings, and improved returns to capital. In an open, and increasingly competitive, global market, it is imperative for countries to stay competitive by aggrandizing their stock of human capital to maintain a productive edge over the increased competency of their competition. Even industrialized nations such as the U.S. face challenges from developing nations who have increased their stock of human capital and

now compete with the U.S. in areas we thought were impregnable such as the high-tech industry.

Education is not the only public investment that a country can make in its citizens. Public investment in infrastructure, in schools, hospitals, etc., can complement “internationally mobile private capital and labor” and help move the steady state growth rate of nations towards overall convergence (Clarida, 1993, 14).

Growth is a complex phenomenon. The growth of international trade has had significant impacts on growth and this paper has sought to verify the links between increased trade and increased growth. Openness to global markets facilitates the accumulation of capital, particularly human, and has allowed all nations the opportunity to pursue a course of growth to better the lives of their citizens. Unfortunately, the projected convergence of growth between LDCs and DCs has not fomented itself due to institutional differences that have stunted the growth potential of many nations. A cursory glance at two prototype countries illustrates the gross inequality in economic strength that the world faces today: “South Korea places at the top [of growth projections] because it has high educational attainment, strong economic rights, low government spending, lower fertility, high investment, and low inflation” while on the other hand LDCs such as ‘Sierra Leone, have weak enforcement of property rights, low school attainment, high fertility, low life expectancy, no political freedom, high government consumption, moderately high inflation, and virtually no investment’ (Barro, 1996, 29). Predictions from traditional growth models of initially poor countries “converging or even leapfrogging” rich countries have simply not borne out (Ben-David, 1997, 3). Fundamental institutional differences have separated the rich and the poor and prevented convergence. Human capital is not just knowledge; it is potential. Nations seeking to improve their welfare must implement policies designed to foster stability, further educational development, and institute economic policies designed to increase capital accumulation. Growth is a reachable goal; the question is whether countries have the political will and desire to make the necessary reforms to bring about change and prosperity.

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