
Determinants of Economic Growth

*We shall not cease from exploration,
And the end of all our exploring
Will be to arrive where we started
And know the place for the first time.*

—T. S. Eliot, *Little Gidding*, *Four Quartets*

The level of income in an economy at any point in time represents the accumulated growth in incomes over time, so investigating what produces higher incomes is really investigating the determinants of economic growth. But that investigation is complicated by the fact that country experiences with growth are enormously varied and often confusing.

Numerous potential growth determinants have been identified over the years, but mapping reliable channels of growth has been a major problem for analysis. Economic outcomes are often confounded by many causes, and more explanations have been offered for per capita income as an outcome than there are economists, sociologists, and political scientists, not to mention politicians and policymakers. What determines your relative welfare today? Religion? The weather? Your culture? Does democracy promote economic, social, and political progress? Or is democracy the ultimate luxury good, desired by those who can afford it?

What further confounds the search for channels of growth is that what matters for growth differs over time. In the 16th century, geography likely played a critical role. For example, territories with access to the sea fared better than landlocked areas, as did those in a Mediterranean, agriculture-friendly climate. In the 19th century, the strongest determinant became the ability to capitalize on technological change—that is, the capacity to partake in and profit from the Industrial Revolution. After World War II, reconstruction and American aid likely provided the primary impetus for growth. And since 1980, the approximate start of the era of globalization, catching up with the technological frontier is likely the major reason developing economies have grown at rates of more than 5 percent.

But that is all conjecture. In the end, the question remains the same: Is there one basic set of causes, levers that can be pulled, to enhance growth?

The Historical Context

Perhaps exploring the history of the economies that are developing rapidly today can provide clues to the mystery of growth? In 1500, the average incomes of India and China were equal to the world average. By 1960, these societies had been considered doomed to extreme poverty. And in 1980, their average incomes stood at one-fifth the global average. But by 2020, they are expected to again match the global mean.¹ The ground these economies lost over 450 years, they seem poised to gain back in 45. That is both the beauty and the beast of economic growth. When the mid-18th century heralded the arrival of the Industrial Revolution, why was the West able to grasp it first, and why did the two great civilizations of China and India go into a tailspin and stay there long thereafter?

Some argue, with facts and conviction, that colonialism intervened to stymie global progress and development. But, although there are several reasons colonialism was a contributing cause to the lack of progress in a number of economies, this explanation is particularly inapplicable to India and China: India was colonized by the British, the least harmful colonial power (Bhalla 1997), and China was never colonized. There are other confounding details. Latin American economies were rich when they gained independence from their colonial powers in the early 19th century. Sub-Saharan Africa was considerably richer than Asia (excluding Japan) in 1960. Yet between 1980 and 2000, neither Latin America nor sub-Saharan Africa showed any gains in per capita income. In contrast, poor Asia, given up for lost, grew at one of the most rapid annual rates in world history—more than 4.5 percent per capita. And the West grew at an average annual rate of only 1 percent from 1820 to 1913, with the US annual growth rate at 1.7 percent per capita during the same years.

This is one example of how varied the global experience of growth has been over the past several hundred years. And this varied experience has been accompanied by an equal variety of investigations and interpretations—in fact, the oldest type of investigation in economics is into the determinants of economic growth.

Some Explanations of Growth

In the modern era, the earliest answer to the question of what determined growth was from the master himself, Adam Smith, in *The Wealth of Nations*, published in 1776. Nobel Laureate Sir Arthur Lewis laid down the basics in *The Theory of Economic Growth*, which remains as rich and relevant now as at its publication in 1955. In the 1960s, two notable scholars focused on related aspects of the age-old question: Alexander Gerschenkron (1962) voiced concern about the relative pace of growth in some European countries, and Gunnar Myrdal

1. See Bhalla (2007a) and Bhalla (forthcoming) for details.

(1968) offered a rather gloomy outlook on poverty (his book was subtitled *An Inquiry into the Poverty of Nations*).

Robert Solow (1970), another Nobel laureate, and Trevor Swan (1956) provided the mathematical underpinnings of growth with a theoretical framework that still serves as the foundation for discussions of growth. The field has become crowded and the approaches more creative. John Hause (1971) asked, “If You’re So Smart, Why Aren’t You Rich?” Richard Easterlin (1981) wondered, “Why Isn’t the Whole World Developed?” William Easterly (2002) characterized the “quest for growth” as “elusive.” Elhanan Helpman (2005) described it as a “mystery,” and Benjamin Friedman (2005) considered it a moral question. I examined the issue through the prism of the Chinese and Indian middle classes (Bhalla 2007a).²

Such a historical review offers the helpful reminder that there may be nothing really new emerging about the oldest economic investigation. For example, the economics of institutions was fully anticipated by Lewis (1955)—*The Theory of Economic Growth* had a section entitled “Economic Institutions.” Another popular modern theory, on the importance of economic freedom, was articulated and emphasized by both Friedrich von Hayek (1944) and Milton Friedman (1962), and was given prominent mention by Lewis (1955).

In addition to emphasizing the importance of institutions, Lewis (1955) outlined four principles of growth: factor accumulation, human capital, institutions, and policy. He also offered three proximate causes of growth: “effort to economize (efficiency); increase of knowledge and its application; and increasing the amount of capital or other resources per head” (Lewis 1955, 11). In short, growth is about increasing the application of factors, particularly human and physical factors, and obtaining an extra yield (productivity) from these factors, a concept today known as total factor productivity growth. Each generation of economists has built on this framework, but the foundation principles have remained the same.

Growth since 1950

The historical pattern of development can be summarized by looking at growth over time in two groups: developed economies (the so-called Western world, plus Japan, Eastern Europe, and the former Soviet Union) and the developing economies (the rest of the world). Data for these two groups as a whole and for selected economies in each group are reported here.

In 1950, there were 51 developed economies,³ with a population of 0.83 billion or about one-third of the world’s population of 2.55 billion (table 2.1). Purchasing power parity (PPP) 1996 base current income in these economies

2. This study was titled *Second Among Equals: The Middle Class Kingdoms of India and China*. A revised version is in preparation (Bhalla forthcoming).

3. See appendix table A.1 for details on the country composition of the world and other details pertaining to countries, for example, number of small countries and oil-exporting countries.

Table 2.1 Global population and income, 1950–2011

Year	Developed economies	Developing economies	Global total	Developed economies' share of total (percent)
Population (billions)				
1950	0.83	1.72	2.55	32.5
1960	0.95	2.10	3.05	31.1
1980	1.14	3.30	4.44	25.7
2011	1.31	5.60	6.91	19.0
Income (trillions)				
In current US dollars				
1950	—	—	—	—
1960	1.0	0.3	1.3	76.9
1980	8.0	2.4	10.4	76.9
2011	41.7	22.8	64.5	64.7
In constant PPP dollars				
1950	4.6	1.7	6.3	73.0
1960	7.1	2.7	9.8	72.4
1980	15.9	7.4	23.4	67.9
2011	30.5	38.1	68.7	44.4
Per capita income				
In current US dollars				
1950	—	—	—	—
1960	1,972	283	498	
1980	9,897	1,265	2,669	
2011	39,010	9,496	10,283	
In constant PPP dollars				
1950	5,542	988	2,471	
1960	7,474	1,286	3,213	
1980	13,947	2,242	5,270	
2011	23,282	6,804	9,942	

PPP = purchasing power parity

Notes: The sample comprises 204 economies. Current US dollar results are based on a reduced sample of 125 countries. Constant PPP dollars have a base year of 1996.

Sources: Penn World Table 6.1 (Heston, Summers, and Aten 2002); Maddison (2001); IMF, *World Economic Outlook* database; and World Bank, *World Development Indicators*. Data for 2011 are estimates obtained from IMF (2011). See appendix A for details. Hereafter, the constructed dataset is referred to in text and tables as Bhalla (2007a) dataset extended to 2011.

totaled about \$800 billion, or close to 73 percent of global income of \$1.1 trillion. Sixty years later, in 2011, the developed world had only 19 percent of the global population and about 44 percent of global income.

In 1950, an average person in a developing economy earned in constant PPP terms \$988 a year, considerably lower than the \$5,542 earned by the average person in a developed economy.⁴ Table 2.2 reports average real growth in income during 1951–2011. By 2011, there had been considerable improvement in both the absolute and relative income of the average developing-economy inhabitant, whose per capita income had risen to \$6,804, reflecting an average annual growth in income of 3.4 percent during this 71-year period. In the developed economies, per capita incomes increased to \$23,282 a year, reflecting an average annual growth rate of 2.3 percent.

Popular Theories

The remainder of this chapter examines some of the theories offered to explain this differential pattern of income growth in the developed and developing economies. To the extent possible, the theories are presented in historical order, the evolution of which can broadly be described as moving from an emphasis on inheritance (what societies are endowed with), to the importance of hard work and enterprise, and finally to a focus on policy-induced changes.

The importance of particular growth determinants is quantified using an “impact coefficient.” Sometimes this coefficient is culled from the available literature on stylized facts or from conventional wisdom. When possible, it is calculated as an additional variable in the basic growth model pioneered by Robert Barro and Xavier Sala-i-Martin (1992). This model has two variables: The dependent variable is per capita income growth, and the independent variable is the per capita at the start of the time period. The most common form of this basic model uses a cross-country panel dataset with five-year time periods.⁵

Geography Is Not Destiny

The despair over lack of growth in Africa in the postcolonial period (after about 1960) led to the hypothesis that “geography is destiny” (Landes 1998). This thesis contends that countries close to the equator are at a natural disadvantage compared with countries further away, which are destined to be richer because they have a more temperate climate and better soil, which leads to higher productivity and thereby to higher growth. The tropical climate is more favorable to disease and less conducive to work, and therefore slows the potential pace of economic development. In other words, these economies inherit a

4. All income figures are in real dollars, adjusted for inflation using a purchasing power parity (PPP) index with a 1996 base.

5. Unless otherwise specified, the basic model includes time and country dummies in addition to the log of initial per capita income.

Table 2.2 Average (log) growth in per capita income by region, 1951–2011 (percent)

Country	1951–59	1960–72	1973–82	1983–95	1996–2007	2008–11	1960–79	1980–11	1951–2011
World	2.7	2.7	2.2	2.6	4.3	4.0	2.5	3.5	3.2
Developed economies	3.4	4.0	1.6	0.7	2.8	0.2	3.4	1.4	2.3
Germany	6.8	3.6	1.9	2.2	1.4	0.6	3.3	1.5	2.9
Japan	6.6	8.8	2.5	2.7	1.3	-1.1	6.7	1.7	4.0
United Kingdom	2.3	2.4	1.3	2.4	2.2	-1.2	2.3	1.6	1.9
United States	1.4	2.9	1.6	2.4	2.1	-0.7	2.9	1.6	2.0
Developing economies	2.4	2.2	2.4	3.2	4.7	4.9	2.2	4.0	3.4
Brazil	3.7	4.8	3.2	1.0	1.6	2.8	4.8	1.3	2.4
China	3.9	1.7	3.6	6.5	8.7	8.7	2.1	7.5	5.2
India	1.5	2.0	1.6	3.7	5.4	6.0	1.6	4.6	3.2
Korea	4.0	5.2	5.8	7.2	3.8	2.8	6.0	4.9	5.1

Notes: Based on data for 204 countries. See appendix A for details and appendix B for full data. Developed economies include members of the Organization for Economic Cooperation and Development (OECD) and countries in Eastern Europe and the former Soviet Union.

Sources: Bhalla (2007a) dataset extended to 2011. See table 2.1 and appendix A for details.

deck that is stacked against them, which is an additional important reason for slow historical growth in sub-Saharan Africa.

Variants on this theory use various proxies for geography, including latitude, number of days with tropical weather, number of days in frost, minimum temperature, minimum monthly rainfall, and maximum temperature. Such geographic variables tend to be the most “moody” empirically—meaning that they are sometimes significant but are not often meaningful. The most common variable is latitude, and there are enough examples of high-growth economies or faster-growing economies near the equator to throw the entire theory into question. Singapore, which is virtually on the equator, has had one of the world’s fastest growth rates. Kerala, the southernmost state in India (10° north latitude), is its most developed state and has social indicators (such as infant mortality) comparable to those of economies in the West. In Africa itself, Ghana and Uganda performed much better than Lesotho or Mali but are closer to the equator. The list goes on, and the results corroborate that latitude is not at all important in explaining growth differences, over the long term (1960–2011) or the shorter term (1980–2011). None of several other geographical variables—including temperature and rainfall—proved significant in explaining growth performance.

Culture and Religion

A variant on theories that emphasize the role of institutions is the assertion that cultural or religious background can influence the pace of development. For example, this theory would posit that East Asian countries have been successful because they subscribe to Confucianism, or that some Western economies are rich because of the Protestant work ethic. In his detailed studies, Xavier Sala-i-Martin (1997a, 1997b) finds that Confucianism was consistently conducive to higher growth, second in importance to the openness of the economy. I document (Bhalla 1997) how confusing this hypothesis can be: Confucianism was also associated with authoritarianism and with economic freedom. In the context of this book, Confucianism also correlates with a deeply undervalued exchange rate. Therefore, while the cultural and religious theory may be appealing, it has rarely, if ever, been empirically strong: If the world is separated according to religion into four groups—Catholic, Protestant, Muslim, and others—both Catholic- and Muslim-dominated societies have a significantly lower economic growth rate (–0.9 percent below the world average). Protestant-dominated societies do better (–0.5 percent below the global average), but the coefficient is not statistically significant. All the religion variables, however, become insignificant when more variables are introduced into the analysis.

Inequality

Nobel Laureate Simon Kuznets (1955) repopularized the study of the effect of growth on economic equality. He asserted that with development (growth), inequality first worsened and then improved, an effect that became known as

the Kuznets Curve. Testing this theory became a major focus of growth economists, particularly during the 1970s and 1980s. The conventional conclusion is that inequality is empirically intractable but does have a dampening effect on growth.

For 42 developing economies for which there are at least two years of inequality data since the mid-1970s, there is support for the conclusion that high initial inequality leads to lower subsequent growth.⁶ These preliminary results should be treated with caution, however, because inequality data are not available on a consistent basis for the same country, let alone on a consistent cross-country basis. Furthermore, for some countries there are only consumption inequality data, while for others there are only income distribution data, a difference that can and does bias the results.

Factor Accumulation: Capital, Labor, and Human Capital

The simple idea behind the factor accumulation theory is that higher inputs can mean higher outputs. Capital is the oldest known determinant of economic growth: accumulate more capital and grow faster. But during the 1960s and 1970s, before the opening of the global economy, several developing economies, especially India and China, along with Russia and the Latin American countries, demonstrated that investment without openness, or investment without competition, would produce some immediate growth but would be disastrous for growth in the longer term. In the mid-1990s, the conventional wisdom was that East Asia's success was mostly about factor accumulation (Young 1995, Krugman 1994). But recent research indicates that this conclusion was incorrect: There was more capital investment in these economies to be sure, but more important was the fact that their openness to trade and investment and their more-than-competitive exchange rates enabled higher productivity growth.

Another factor of production (and Lewis's second principle of growth) is human capital—knowledge or education. The theory behind the important role of education was not developed until the late 1950s; empirical estimates started trickling out in the mid-1960s. Today, it is a stylized fact and conventional wisdom that private returns to education are high, often very high. No one has yet argued that education is unnecessary for sustained economic growth, development, and catch-up. In the mid-1980s, there was increased attention to the indirect and increasing social returns to education, inspired in part by Paul Romer (1986). However, even though various production function models find that education generates positive returns on an economywide

6. Initial inequality is strongly significant and has an estimated magnitude of -0.15, that is, each 10 percentage point increase in the Gini inequality measure lowers subsequent growth by 1.5 percent a year. However, once the currency valuation measures are introduced into the analysis, the impact coefficient is reduced to less than half its original level (-0.07), although the significance is retained. This issue is examined in Bhalla (forthcoming).

basis, it has proven difficult to find a significant externality effect for education on a smaller scale.⁷

These caveats notwithstanding—there are times when too much capital may not yield extra growth and education may not have significant externalities—a key aspect of growth empirics remains to establish the determinants of human and capital factor accumulation. What causes investment to increase and countries to become richer as a result? I return to this later but first address an important and nearly forgotten determinant of initial step-jump growth: the reallocation of labor from traditional agriculture to modern industry.

Reallocation of Labor

Agriculture is always the starting point for economic growth, whether for Western economies on the eve of the Industrial Revolution or for developing economies at their independence in the mid-20th century. Lewis (1955) famously and accurately described the transition of an economy from agriculture to nonagriculture as the *sine qua non* of economic transformation and economic growth.

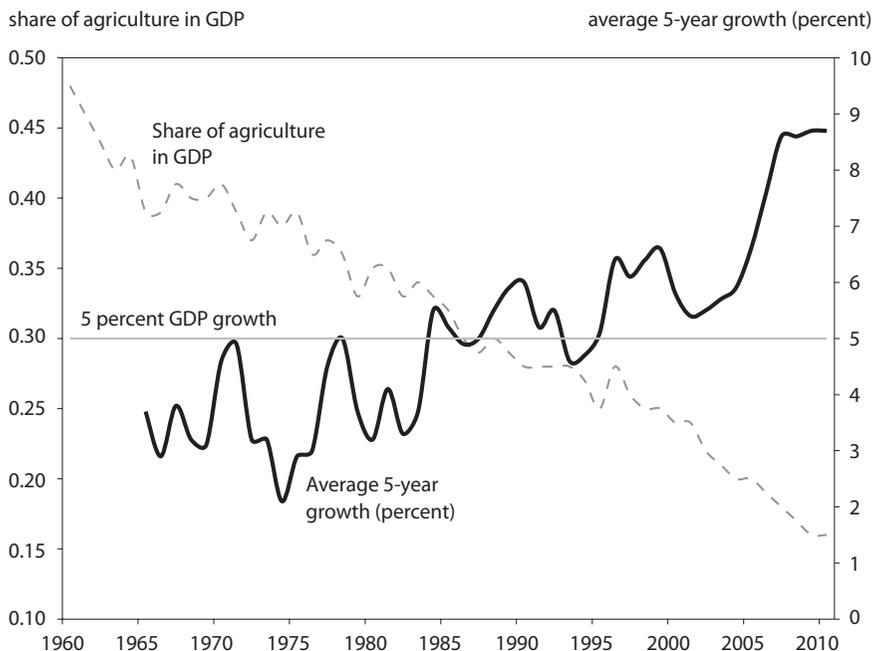
Cheap and unlimited supplies of labor are available in most economies before the onset of rapid economic growth. At this point, the ecosystem is in equilibrium; there is little productivity growth in agriculture; and most people are, and remain, on the farm. Technological growth, either within or outside agriculture, releases labor. If this growth is outside the economy, then outward migration causes the supply of domestic agricultural labor to decline. Alternatively, technological growth in the domestic industry induces labor to leave the farm. In both cases, growth is accompanied by a decline in the share of agriculture in the economy's GDP.

Some of the development literature presumes an unlimited supply of labor à la Lewis, and some follow the structural change school of Hollis Chenery and Moises Syrquin (1975). But all the literature recognizes that, in the early stages of development, any extra growth in an economy is due to the reallocation of labor from the low-productivity agricultural sector to the higher-productivity nonagricultural (industrial or services) sectors. Only in later stages of development do factor accumulation and technological change begin to contribute to higher growth. This factor reallocation has been estimated by Sherman Robinson (1976) to average about 16 to 18 percent during the early growth stages in developing economies.

The reallocation theory has important implications for the evolution of economic growth and therefore standards of living. This reallocation of labor generates an income growth stream (and income stream) that is S-shaped. At first, there is a gradual release of labor from a low-productivity enterprise

7. Some analysis rejects an externality effect of education—a prime ingredient in endogenous growth models—including Bhalla (1994) and Pritchett (2001). For a contrasting view, see Vandembussche, Aghion, and Meghir (2004).

Figure 2.1 Growth in India according to the labor reallocation theory, 1960–2010



Notes: The share of agriculture in GDP is simulated by the reallocation growth model; see text. It is very close to the level actually observed.

Source: World Bank, *World Development Indicators*, 2011.

(agriculture, which has a typical annual growth rate of 3 percent) to a high-productivity enterprise (industry and services, which have a typical annual growth rate of 6 percent). Agriculture initially accounts for a large share (60 percent) of output. Over time, higher-productivity growth and the movement of factors means that the share of agriculture eventually declines to 20 percent and below. At these levels, the reallocation of labor offers little extra growth, and while the descent to this trough is steep, at the base, there is a flattening out. This is the S-shaped pattern of the evolution of income levels, a property that is used to estimate equilibrium real exchange rates in chapter 4.

Under the reallocation theory, growth can be modeled as the weighted average of the growth rates in agriculture and industry, with the relative weights being the shares of each sector in the economy.⁸ Figure 2.1 presents some simulated data for India. In the first year, 1950, it is assumed that 55 percent of real

8. “Industry” is used to refer to both industry and services, given that the two sectors move broadly in tandem and have similar labor productivities due to the operation of wage arbitrage.

output originates in agriculture, and the annual growth rates of agriculture and nonagriculture are assumed to be constant at 2.75 and 6 percent, respectively. (All these assumptions are very close to what has actually been observed in the Indian economy during this period.) These differential growth rates predict a path for agriculture and for overall GDP growth. By 2011, this path brings the share of agriculture down to 17 percent and GDP growth to 5.5 percent. The actual percentages are 16 percent and over 8 percent, respectively. This pure application of the reallocation model shows that India would reach a GDP growth rate of 5 percent, sometimes considered a threshold to more accelerated growth, in 1983, independent of the presence or absence of economic reforms.⁹

Trade Policy

As noted, trade has long been considered an important, if not the most important, determinant of why some countries are rich and others poor: Comparative advantage rules, and maximization of incomes is best achieved through the enhancement of trade. Many developing economies adopted an autarkic, closed, Soviet-style model after independence, in an effort to develop fast. This most often failed, and these economies opened up to external trade as a means of recovering from their self-induced ills. Because many of these economies then grew faster than ever before, “trade causes growth” became a stylized fact.

A contrary line of reasoning, embodied in such works as Rigobon and Rodrik (2004), asserts that, while openness could facilitate trade and trade could facilitate growth, the causality could easily be the reverse. As economies grow, demand increases for a variety of products, leading to expanded trade (more imports and, in turn, more exports to finance the imports). Thus, econometric models that purport to show an acceleration of growth caused by increased trade could actually be showing the reverse.

This problem can be addressed econometrically using techniques to identify the direction of causation, specifically through “instrument” variables—that is, variables that are correlated to one of the independent variables (trade) but not to the other (growth). The operative word is “econometric,” which means an *estimate* of reality. Estimates are subject to error, and the mere presence of a potential error, regardless of its size, allows both sides to claim victory. The protagonists say they have identified the problem away; the opponents say the instruments are weak. The debate goes on.

Trade policy can be assessed either in terms of outcomes—that is, the share of trade in GDP and changes therein—or in terms of the instruments that affect trade. The latter are captured by indicators representing tariff policy, and there is a lack of strong statistical support for such indicators. In many

9. See Bhalla (2010) for a detailed discussion of the role of policy in India’s development from 1950 to 2010.

instances, tariffs have been reduced and import protection has declined, yet growth has failed to accelerate. In others, growth has persisted despite high tariffs. However, no study has actually found that high tariffs have led to faster growth during the postwar era.

There has been more success in measuring trade policy using the share of trade in GDP. If initial trade shares (in 1980) are introduced into the basic growth model, the impact coefficient of trade shares is significant at the 1 percent level of confidence, and this significance remains even when other related determinants of growth (e.g., currency valuation) are introduced into the analysis. Each 10 percentage points of extra trade share adds 0.4 percentage points to subsequent per capita growth.

Economic Openness

The more that economies look outward, the richer they become—a result that holds no matter how far back we go in history. However, openness as an empirical concept was not formally and econometrically investigated until the World Bank's 1991 *World Development Report*. But there has been a constant outpouring of articles and indices since (see Harrison 1996).

Openness had its fair share of critics. A number of scholars and politicians feared that decreasing import tariffs would allow foreign firms, with modern methods and lower costs, to swamp all competition and prevent the development of domestic industry and expertise. As evidence of the potential costs, they cited the experience of developing economies during the colonial era. At that time, free trade was prevalent, and yet the developing economies fell far below the income levels of their colonial masters. Further, the argument went, there was evidence that high tariffs actually helped developed economies grow faster.¹⁰

Jeffrey Sachs and Andrew Warner (1995) developed a popular measure of openness, which was extended by Romain Wacziarg and Karen Horn Welch (2003). Others have offered different measures, including Robert Hall and Charles Jones (1999) and, more recently, Menzie Chinn and Hiro Ito (2008). Somewhat surprisingly, none of these measures of openness are statistically significant in most growth models. The significance of the openness variable improves only after currency valuation measures are introduced. This is consistent with theory and expectations: Openness does not help much when the exchange rate is overvalued—just consider Japan. But if the economy is open and the country has a competitive currency, then growth is likely on the way.

10. See O'Rourke (2000). See also chapter 9, where the evidence presented suggests that the argument that tariffs helped growth in the 19th century is fragile and very weak.

Currency Undervaluation

One of the earliest and most ardent advocates of currency undervaluation¹¹ as a policy determinant of growth was Béla Balassa (1964). Both as an advisor to the World Bank and as an academic, Balassa emphasized the advantages of export-led growth, which came about via competitive exchange rates, a politically correct term for an undervalued exchange rate.

There are large differences between an export-led growth strategy and a currency undervaluation strategy. The former is a classic industrial policy, under which certain firms or sectors are chosen by the government to become highly competitive in the international marketplace (that is, to be successful exporters). The effects of a currency undervaluation strategy are not confined to particular firms or to the export sector. It deliberately has economywide positive ramifications. Market discipline is tapped through trade and the exposure of domestic firms to international markets, thus nullifying the potential political and economic distortions that could result from state favoritism and state intervention.

Theoretically, it is not easy to follow a policy of deliberate currency devaluation, because it involves changing the terms of trade, and not just for the short term. It is virtually impossible for developed economies to follow such a policy, given the large free market in exchange rates, but a number of developing economies may be able to influence the exchange rate by being active players in the currency market. They can use “intervention”—the government either buys or sells dollars depending on whether it wants its currency to go down (depreciate) or go up (appreciate). Using dollars to buy its own currency signals that the authorities believe that the exchange rate is too low (e.g., a rate of 50 rupees per dollar), and selling its own currency to buy dollars signals that they believe the nominal exchange rate is too high (e.g., a rate of 40 rupees per dollar).

There are several problems with the concept of domestic authorities influencing a trillion-dollar daily exchange market by buying and selling a small sum of dollars. Even if they are able to influence the nominal exchange rate, they are unlikely to influence the exchange rate that really matters—the real exchange rate (RER), which can move in counter directions through exchange-rate-induced inflation or deflation. For example, the government injects money into the economy when it buys dollars and sells the domestic currency. This extra money can generate inflation, which can negate any competitive advantage the economy would gain from devaluing its currency. Whether this actually happens and, if so, to what degree is explored in subsequent chapters.

There are other problems with the theory that a competitive exchange rate

11. Currency undervaluation involves greater emphasis on negative values of currency valuation, that is, when a currency is cheap (positive values are when a currency is expensive). A -10 percent valuation means that a currency is undervalued or cheaper by 10 percent; a +10 percent valuation means that a currency is overvalued or more expensive by 10 percent.

equals higher economic growth. There is considerable debate about the methodology to use for measuring the equilibrium value of the exchange rate, a first step in evaluating whether a given exchange rate is competitive. Furthermore, the equilibrium exchange rate is a moving target—it is not constant over time or during different stages of development. All these issues are examined in the rest of this book.

Government Intervention: Fiscal Policy

It is important to analyze the contribution to growth of policy changes. There is general agreement that bad policy outcomes, such as high inflation, are a major handicap for higher growth. Another favorite policy recommendation for both developed and developing economies—one that is almost synonymous with the Washington Consensus—is to reduce the fiscal deficit. The promised benefits are manifold, including greater efficiency in production, fewer losses in government undertakings, and less crowding out of private investment. Government deficits matter, and their reduction is necessary for macroeconomic stability and sustained growth. Indeed, the European Union was founded in part on the notion that government deficits matter a lot. A related notion is that interest rates matter. High fiscal deficits, financed by higher government borrowing, translate into higher real interest rates, which may crowd out private investors.¹²

Fiscal policy is an important explanatory variable in growth models that assess short time periods, such as the five-year periods used extensively in this book. The coefficient for fiscal policy is almost always significant and robustly so, and it has the correct sign. However, this variable is not significant for models that cover longer periods, say, 20 years or more. A simple explanation for the variable's significance in short-term models is that fiscal deficits increase by definition when growth falls and hence there is a robust negative association between growth and fiscal deficits. William Easterly (2005) finds that only outliers cause the fiscal deficit coefficient to be significant.

However, no matter what the empirical specification, or which country is under study, the best empirical effect of fiscal deficits in the literature is about 0.1—that is, for each 1 percentage point reduction in the fiscal deficit, growth is 0.1 percentage point higher. That's it. As a country moves from a fiscal deficit of 4 percent of GDP to a fiscal deficit of zero, it adds only about 0.4 percent to annual GDP growth. This “extra growth” may seem reasonable for developed economies whose potential GDP growth is about 2 to 3 percent, but the total effect is insignificantly small for developing economies, whose average annual GDP growth in the last several years has been above 5 percent.

There is, however, a measurement problem associated with fiscal deficits as traditionally evaluated. The most popular source for the fiscal deficit vari-

12. For India, the causation was likely the other way around, with high managed real interest rates leading to larger interest payments and larger fiscal deficits (Bhalla 2000).

able has been the World Bank's *World Development Indicators*, but this source reports the data for deficits at only the central level, ignoring deficits at the state and local levels. The International Monetary Fund (IMF) now publishes fiscal deficit data on an aggregate basis, including central, state, and local levels. Tests for nearly 100 countries fail to reveal any effect of an initial fiscal deficit (in the initial year of a five-year period) on subsequent growth. This result is obtained with both the central and aggregate deficits. However, if the fiscal deficit variable is entered as an average for each five-year period, then the coefficient is robustly significant, with a magnitude of about 0.16. The reason behind this transformation in significance and magnitude is most likely that high growth is associated with better fiscal outcomes. The most obvious conclusion is that there is very little historical evidence to suggest that fiscal deficits matter for economic growth.

Education

It is almost a tautology that education brings about higher incomes for individuals and societies. Education helps make investment more productive and leads to higher growth. Micro data across the world yield very robust results for the positive effects of education: Each extra year of education adds about 12 percent to a person's lifetime income, although in macro data (five-year periods) there is no significant coefficient for education. Over the long term, 1980–2011 or 1960–2011, there is a robustly significant effect of education: Each extra year of mean education in the labor force adds about 0.4 to 0.6 percentage points to annual GDP growth.¹³ This effect is magnified if the country is open, or more accurately, has an undervalued exchange rate, because this allows for importation of technology that workers with a higher level of education can use to improve their productivity and that allows the economy to catch-up with the frontier.¹⁴ This was a lesson learned by India and China between 1950 and 1980, as well as by several other developing economies (and the former Soviet Union and its empire in Eastern Europe).

Catch-Up

Some additional phenomena are often considered as factors of growth, some of which are rephrasing or extensions of Lewis's (1955) four proximate causes. One, in particular, deserves mention. In a pioneering contribution, Barro and Sala-i-Martin (1992) introduced the now ubiquitous term "catch-up." Catch up means the ability of poorer economies to grow faster than wealthier economies because of two factors. First, income growth for poorer economies can be

13. See Barro and Lee (2010) for details on construction of a variable representing the mean years of educational attainment for a large sample of countries; data were extended until 2011 by trend extrapolation.

14. The interaction between education and openness was first explored in World Bank (1991).

enhanced by simple technology transfer rather than the research and production of new technology, which is an inherently slow process. Second, poorer economies have wages that are lower in international productivity-adjusted terms. The basic growth model is defined with the catch-up term on the right-hand side; the Barro–Sala-i-Martin framework allows us to put a value on this term. Poor economies can grow at about 0.5 to 1.5 percent per annum faster than rich economies, other things equal. This is an extremely robust result. In other words, in seeking to identify patterns of growth, it is important to recognize that poor economies have a natural advantage: They grow faster.

Institutions

The theory that institutions play an important role in growth rests on two arguments. First, economic freedom (property rights) reduces uncertainty and enhances entrepreneurship, among other things, and this leads to greater efficiency and higher growth. Second, political freedom (political liberties and democracy) allows for more sensible decisions because of greater checks and balances. However, the evidence for the second argument is decidedly mixed, indeed the opposite is often argued, that authoritarianism helps growth, as shown by the strong growth example of East Asia. On the other hand, for every East Asian dictator whose economy produced high growth, there are 10 African and Latin American dictators whose did not. The importance of institutions in the determination of economic growth is explored in chapter 10.

Demography

Demographics is a recent addition to the determinants literature. Population growth is a drag on development, but growth in the worker population (an increased supply of workers) is not. The argument is straightforward. In a period of high population growth, the future supply of workers increases sharply. In the transition period, when birth rates decline, the dependency burden on the existing workforce decreases (from an elevated level due to the high fertility earlier). The decline in births results in a higher proportion of the female population being employed, higher saving and investment, and therefore faster growth.

There are two key assumptions underpinning this thesis. First and foremost, the pace of job growth increases to accommodate the expanded number of workers. This may not always be the case. Second, the labor force participation rate (LFPR) of women can differ sharply across countries. In India, the urban LFPR of women is as low as 25 percent, although it is sharply above the 15 percent level prevailing just a decade ago. An increase in the LFPR is likely to be the biggest positive shock for most developing economies—subject, of course, to pursuit of macroeconomic policies conducive to economic growth and employment. To summarize, the demographic dividend is a prolonged period of higher saving and growth that springs from the extra availability

of workers and a decrease in the dependency ratio, coupled with the life-cycle hypothesis of consumption.

Empirical tests confirm the importance of the demographic dividend. Demographic effects are captured by the initial worker-to-dependent ratio (the ratio of the population ages 15–64 in the total population in 1980). This variable is significant and has an elasticity of 0.19 when it is added to the basic growth model—that is, each 1 percentage point increase in the ratio leads to an increase in the per capita annual growth rate of 0.19 percent.

The Middle Class

The importance of a vibrant middle class was discussed by Aristotle and later by John Stuart Mills, Thomas Malthus, Karl Marx, and Barrington Moore (although the latter two had a somewhat different definition of the middle class than the first three).¹⁵ Briefly, the middle class can be expected to positively affect growth because of its commitment to economic reforms and to a level playing field. The middle class holds these purely out of self-interest: The surest way for it to benefit is if merit is rewarded, and the sine qua non of the middle-class mentality is dedication to education and hard work.

Who constitutes the middle class? Following Bhalla (2002a), the line that defines the middle class, much like the poverty line, is absolute and is the same for all peoples of the world. It is based on the population-weighted average of the highest poverty lines or the poverty lines in the wealthy economies of the West (and Japan). In these economies, by definition, the poverty line divides the poor and the nonpoor. Likewise, the lines that define the middle class are those that define the nonpoor on one end and the rich on the other, with the rich defined as those with an income level 10 times higher than the middle-class line (i.e., the beginning of the middle class).

In 1996, based on PPP prices, the per capita daily poverty line for the developed world was \$8.19 (the US poverty line was somewhat higher at \$10.80). In 2011 prices, with the US GDP deflator having increased by 36.6 percent since 1996, the middle-class line for the developed world is \$11.20 per capita per day; for a family of four, this is \$16,350 per year. The rich are those with incomes starting at 10 times the starting level of the middle class, or \$163,500 for a family of four. This means that the middle class in the United States in 2011 is those with incomes between \$16,350 and \$163,500.¹⁶

Does the initial size of the middle class matter in affecting growth? Yes. Even after controlling for currency valuations, the percent of the population

15. I examine the similarities and differences and the theoretical bases for their theories in Bhalla (2007a).

16. Given this definition of the middle class, and given quintile estimates of the distribution of income, I outline a method in Bhalla (2002a) for estimating the percentage of the population below any given income level, such as a dollar a day poverty line and middle-class line.

Table 2.3 Running out of good luck? Growth persistence, 1960–2011

Period	Persistence coefficient	R ²	Correlation coefficient
Versus previous decade			
1960s	0.09	0.13	0.23
1970s	0.35***	0.14	0.37
1980s	0.46***	0.23	0.47
1990s	0.34***	0.15	0.38
2000s	0.29	0.12	0.31
Versus two decades earlier			
1970s versus 1950s	-0.27**	0.11	-0.10
1980s versus 1960s	0.29**	0.12	0.34
1990s versus 1970s	0.36***	0.14	0.37
Versus two-plus decades earlier			
1980–2011 versus 1960–80	0.45***	0.23	0.48

Notes: Statistical significance: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. The model of persistence is as follows: $\dot{y}_t = \alpha + \beta_1 y_0 + \beta_1 \dot{y}_{t-1}$, where \dot{y} is the growth of per capita income in period t and $t - 1$, and y_0 is the log of initial per capita income. All countries are in the sample included in the persistence model, except those with populations of less than 1 million, oil-exporting economies, and countries of Eastern Europe and the former Soviet Union.

Source: Bhalla (2007a) dataset extended to 2011.

that is middle class in each country in 1980 has an important statistical effect: Each 10 percentage point increase in the size of the middle class in 1980 results in 0.3 percent additional annual growth between 1980 and 2011. Five-year panel data reveal almost an identical effect.

Good Fortune

In an oft-cited paper, “Good Policy or Good Luck?” William Easterly, Michael Kremer, Lant Pritchett, and Lawrence Summers (1993) offer a novel hypothesis for differences in levels of development and growth rates. It is all luck. They hold out little hope for countries to control their economic destinies. On the basis of a wide-ranging cross-country analysis, the authors rather convincingly argue:

Growth rates are highly unstable over time, while country characteristics are highly persistent. The correlation across decades of countries’ growth rates of income per capita is around 0.1 to 0.3, while most country characteristics display cross-decade correlations of 0.6 to 0.9. Correlations of growth across periods as long as two decades—period lengths comparable to those used in the cross-section empirical literature—are similarly low. (Easterly et al. 1993, 460)

Table 2.3 retests the “good luck” hypothesis. Contrary to Easterly et al., persistence is remarkably stable across decades, with the impact coefficient

averaging about one-third—each 1 percent growth in the previous time period persists (translates) into a 0.3 percent growth during subsequent decades.¹⁷ There is an even larger persistence if the comparison is made between 1980–2011 and 1960–80; the impact coefficient is 0.45. Luck matters, but persistence matters much more!

Growth Policies: The Washington Consensus

Returning to where this chapter started, even if the causes of growth are identified, there remain important prior questions. For example, what causes savings and investment to increase? What differentiates a successful catch-up developing economy from an unsuccessful one?

Since the end of World War II, there has been a new “exogenous” factor in the growth process—government policy. This is distinct from the long-established role of government as a regulator of economic activity—even Adam Smith emphasized the importance of government (as a nonmarket participant) in setting and policing the rules. For some 150 years, regulation was the extent of government involvement, until John Maynard Keynes set off the intellectual transformation of the government’s role, from passive rule setter to active player. This radical development in economic thought, no surprise, remains controversial even today—perhaps even more so in the wake of the Great Recession, when the old rules of the market seem to have broken down.

Keynesian theory as actually practiced during the past 60 years has produced a wide variety of policies, from the good, to the bad, to the downright ugly. The most popular and comprehensive catalog of *good* policies is John Williamson’s (1990) Washington Consensus, so called because Washington is home to the two central Keynesian Bretton Woods institutions: the International Monetary Fund and the World Bank (formally, the International Bank for Reconstruction and Development). And informed advice for policy interventions to enhance economic growth has come from economists working with those institutions.

Of late, the Washington Consensus has become a term of disdain, because the many recent policy crashes and economic crises have left both economists and the general public without much confidence in the ability of government to act positively through policy. The five years leading up to the crisis in 2008—ironically, the period of the fastest growth in the developing world—were also the time when the consensus among academics diverged significantly from that among practitioners, who implemented policy, especially exchange rate policy, differently than it was prescribed by the experts.¹⁸ Since 2008, policy

17. This is for a sample of 97 developed and developing economies; excluded are those with less than 1 million population in 2008, oil-exporting economies, and countries in Eastern Europe and the former Soviet Union. The difference in the results with the Easterly et al. analysis may result from the use of different sets of Penn data (1996 base rather than a 1985 base) and the use of data for 20 additional years (1990–2010).

18. The 2008 crisis and beyond has made almost everyone look foolish, from those who favor a

Table 2.4 Policies of the Washington Consensus

Old	New
Washington Consensus	“Augmented” Washington Consensus
1. Fiscal discipline	11. Corporate governance
2. Reorientation of public expenditures	12. Anticorruption
3. Tax reform	13. Flexible labor markets
4. Financial liberalization	14. World Trade Organization agreements
5. Unified and competitive exchange rates	15. Financial codes and standards
6. Trade liberalization	16. Prudent capital-account opening
7. Openness to direct foreign investment	17. Nonintermediate exchange rate regimes
8. Privatization	18. Independent central banks/inflation targeting
9. Deregulation	19. Social safety nets
10. Secure property rights	20. Targeted poverty reduction

Sources: Williamson (1990) for the old Washington Consensus; Rodrik (2006) for the “augmented” Washington Consensus.

has made a comeback of sorts, at least temporarily, as countries resorted to policy and government bailouts to correct market failures of all sorts. Over the longer term, however, the majority conclusion—and one that has significant support among academics—is that policy does not matter. However, a slight change in phrasing would lead the proposition to have near-universal support among economists: “Policy matters only when all the appropriate conditions are in place, and when the government is well intentioned.”

Table 2.4 outlines the broad mean of policies available. The left column lists the policies in the original Washington Consensus; the right column contains an enhanced list compiled by Dani Rodrik (2006). There is an argument to be made that the 10 policies in the original Washington Consensus are really only subcomponents of two main policies (openness and fiscal discipline) and one institutional arrangement (secure property rights). In the left column of the table, rows 1 to 3 relate directly or indirectly to fiscal policy: Tax reform enhances tax revenue, and reorientation of public expenditures also helps fiscal discipline. Rows 4 to 7 pertain to openness, including rules for foreign direct investment or competitive exchange rates. Rounding out the Washington Consensus are policies that a decade after their identification were identified as measures of “institutions”: Privatization, deregulation, and secure property rights (rows 8 to 10) all help growth via their effects on incentives to the private sector—that is, these are the institutions needed to enhance growth. The Washington Consensus list is not in priority order, but it is inter-

“markets only” approach to those who favor active institutions, and including some who correctly forecast the crash.

esting that “secure property rights” is last, given the fact that for the advocates of the institutional approach, property rights come first, almost to the exclusion of everything else.

With measures covering fiscal matters and institutions, and a total of 20 policies including Rodrik’s (2006) augmentation, there is no shortage of policy instruments available for promoting economic growth. The track record of countries that have heeded this policy advice, however, is inconsistent. Often, especially in Latin America, the policies seem to have not worked. This raises the all-important question: How robust is the empirical basis of the advocacy? Stated differently, if the Washington Consensus policies are good and desirable, then why are there mixed results?

The rest of the book is concerned with answering these important questions.

