

## **To Grow or Not to Grow: Why Institutions Must Make a Difference**

by Thorvaldur Gylfason\*

This may not surprise you, but when I was a student of economics in the first half of the 1970s, we were taught that economic growth over long periods was always and everywhere a technological phenomenon. The theory of economic growth at the time taught that the rate of growth of national economic output per person in the long run must be equal to the rate of technological progress, which was taken to be outside the purview of economics. So, economic growth was “exogenous” – that is, it was not supposed to react to economic forces.

### **I. Two Views of Growth**

The theory that traced long-run growth to technological advance and nearly nothing else was one of the most elegant economic theories of all time. It was beautiful, and still is. It earned its main founder, Robert Solow of MIT, a well-deserved Nobel Prize in 1987. But even so, the implication of the theory, as it was understood at the time, that long-run growth was solely a matter of technology was not fully satisfying. I for one came from a country where high inflation was creating havoc: Icelanders at the time were busy emptying their bank accounts in order to spare their money holdings from the ravages of double-digit inflation, so domestic saving plunged before our eyes. I was concerned that a collapse in national saving would reduce Iceland’s economic growth potential over the long haul. In my doctoral dissertation, I tried to test the hypothesis that increased inflation in the United States – for the U.S. also had double-digit inflation for a short while in the 1970s! – would discourage saving (I found that it did), and thereby stimulate expenditure and employment in the short run, but I was unable to say anything of value about the likely consequences of less saving for long-run economic growth. True, the theory taught that a reduction in saving, or rather in the fraction of national income that is saved, would dent the economy’s growth rate temporarily, or in the medium term, but there was not much discussion of how long it would take for the adverse effect of reduced saving on economic growth to evaporate. Strange, but somehow this was not an issue. I bumped against the same ceiling as no doubt many others had bumped against before: economic growth was exogenous! Call in the engineers!

This was at Princeton. In between the brilliant lectures in the economics department that some of Solow’s best and brightest former students gave on growth and how growth ultimately had to be immune to all but technological progress, I sneaked across the street to

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hear Sir Arthur Lewis lecture on economic development at the Woodrow Wilson School. His lectures were also superb, and supremely entertaining. He taught us that greater economic efficiency, more and better education, and, yes, more saving and investment were good for growth. He, too, was awarded a Nobel Prize, in 1979. In Lewis's own words (1955, p. 164), "The proximate causes of economic growth are the effort to economize, the accumulation of knowledge, and the accumulation of capital." Notice the reference to "the effort to economize." This phrase encapsulates many different things, including, for instance, foreign trade, for trade allows nations to specialize in what they do best and thus to benefit from their comparative advantages as well as from economies of scale and thus to become more efficient, as had been known from the days of Adam Smith (1776). And Lewis was, unless I misremember, sympathetic to the idea that high inflation could hurt growth, in principle at least, because inflation may discourage the accumulation of capital and perhaps also "the effort to economize." The basic idea is really quite simple: if economic growth depends on "the effort to economize," then virtually everything that enhances economic efficiency, no matter what, is also good for growth.

But there was a problem: there was no "proof." I do not recall Lewis writing a single equation on the blackboard in his fabulous lectures. And Solow's elegant theory that implied that the sources of growth identified by Lewis must be irrelevant to growth in the long run (with the possible exception that technical progress and hence also economic growth might depend on education as pointed out by Nelson and Phelps, 1966) appeared watertight. It did not seem promising – indeed, it looked patently unacceptable – to go and look for empirical evidence for economic relationships that could not conceivably exist in theory. For even if we can find them, facts are not enough: we must also have models that fit the facts. This did not bother many development economists, however, for they kept looking around for economic explanations for growth, albeit not with any great success at the time, but growth economists made no such attempts: as they saw it, there was no point in trying. Development economics and growth theory were two different branches of economics, separated by method as well as by geography: development was a nontechnical, quasi-historical subject confined to poor countries, and growth was a hard-core, high-tech branch of modern macroeconomics reserved for rich countries. There was, in most places, little communication between the two.

As time passed, many economists became increasingly dissatisfied with their inability to say something new and useful about economic growth in the long run. To compound the frustration, more and better data from an increasing number of countries around the world showed that some grew much more rapidly than others. Korea, for example, was poorer than Bangladesh in the 1950s, and yet, by the late 1990s, Korea had an income per head that was ten times higher than that of Bangladesh. Why? Had Korea made more rapid technological progress than Bangladesh? Hardly. There had to be economic forces at work. So economists

went back to their drawing boards. To make a long story short, what happened next was this: new theories were built to make room for the possibility that long-run growth could depend on all kinds of things besides technology and thus to pave the way towards a respectable empirical search for the sources of growth. One branch of the new growth theory emphasized that growth can be driven forward by more and better education, regardless of technology. Another branch stressed that growth depends on saving, investment, and efficiency, just as Lewis had taught (and many others before him, all the way back to Adam Smith), and provided the equations to “prove” it. A third branch showed how growth can be driven forward by technology and organization in ways that make it possible for government policy and institutions to stimulate growth. Economic growth was thus made “endogenous” – economic events, policies, and institutions were shown to be capable, in theory, of influencing economic growth over long periods. This was not, however, achieved by discarding the older theory but rather by digging deeper, for it turned out that endogenous long-run growth according to the new growth theory was not all that different from medium-term growth in the Solow model because the medium term could be quite long – long enough almost to be empirically indistinguishable from the long run. Besides, Solow’s theory had all along given a convincing economic explanation – in terms of saving, investment, and efficiency, much like Lewis – of why the level of income per head differs across countries even if long-run growth was viewed as a technological phenomenon. So the two ways of looking at economic growth over long periods were perhaps not all that different after all. Solow (1997, p. 89) agrees.

I am not changing the subject when I say that, in the 1960s, it cost roughly ten times as much as it costs today for a student from Buenos Aires or Santiago to fly to Boston or Chicago and back. It is not difficult to imagine the implications of this dramatic change. Students from far-away countries can now afford to flock to the United States and Europe to educate themselves, something that only a few could afford a generation ago. The boost to efficiency is twofold: (a) more young people get more and better education and (b) the money that otherwise would have been spent on sky-high airfares can now be put to other productive uses. This improvement did not result from technological advances, for we had essentially the same aircraft in the 1960s as we do now; the jet plane had already entered service. Rather, the improvement resulted from increased efficiency through deregulation of air traffic, increased competition in the skies, scale economies, and so on. The engineers, useful work as they do, had very little to do with this.

The main point about “the effort to economize” is this: increased efficiency increases the amount of output that can be produced by given inputs as if technological progress had taken place. Equivalently, increased efficiency reduces the amount of inputs needed to produce given output, thus releasing the extra inputs to other uses. Thus technological advance can be viewed as one form of increased efficiency. Put differently, there are many – indeed, almost

innumerable! – ways of squeezing more output from given inputs and thus increasing economic efficiency and growth even if technology remains unchanged.

## **II. The Search for the Keys to Growth**

What happened next? Literally hundreds of economists all over the world have spent a good part of the past ten years or so looking for empirical confirmation of endogenous growth. They have not returned empty-handed from their expeditions. There is now a large and rapidly growing literature that indicates that saving and investment are good for growth and, moreover, that many other factors associated with economic efficiency also vary systematically with economic growth across countries as well as over time.

Let us begin with saving and investment. Is it a coincidence that economic growth in Southeast Asia where saving and investment rates of 30 percent of gross domestic product (GDP) have been common since the 1960s has outpaced growth in Africa? – where, at least until recently, saving and investment rates of around ten percent were the norm. Hardly. Figure 1 shows a scatterplot of the average rate of growth of gross national product (GNP) per capita and the average ratio of investment to GDP in 1960-2000, based on data from the World Bank (2003). In order to adjust for the possibility that poor countries grow more rapidly than rich because they are catching up, I have purged the growth variable of that part which can be explained by the country's initial income per head by first regressing growth on the logarithm of initial income per head and then subtracting the initial income component from the observed growth rate. The regression line through the 164 observations, one per country, suggests that an increase in the investment ratio by eight percentage points goes along with an increase in annual per capita growth by about one percentage point. The relationship is statistically as well as economically significant: the rank correlation is 0.41. The slope of the regression line through the scatterplot is consistent with the coefficients on investment in cross-country growth regressions reported in several recent studies. Saving and investment seem to be good for growth, and perhaps vice versa. If so, economic policies and institutions that foster saving and high-quality investment seem likely to spur growth.

How about efficiency? Here the plot thickens a bit because efficiency appears in many different guises and depends on a number of different things. So let me focus on just a few.

I have already mentioned the age-old hypothesis that trade – domestic as well as foreign! – is good for growth. What is the evidence? Figure 2 shows a scatterplot of economic growth as defined above and exports of goods and services in proportion to GDP in 163 countries around the world. The regression line through the scatterplot suggests that an increase of 40 percentage points in the export ratio from one country to another goes along with an increase in per capita growth by one percentage point per year on average. The relationship is economically as well as statistically significant (the rank correlation is 0.20). The data thus

seem to support the view that exports are good for growth, and maybe vice versa. Adam Smith would not have been surprised. Exports, however, are not an ideal measure of openness to trade because large countries depend less on foreign trade than smaller ones that need to extend their home markets beyond their national borders to make up for their small size. If Texas were to trade more with New York and less with Mexico, this would reduce the extent of U.S. foreign trade, but efficiency and growth in the U.S. economy would scarcely suffer. When the export ratio is replaced by a measure of openness defined as the difference between the actual average ratio of exports to GDP during 1960-2000 and the export ratio predicted by country size, an indicator of openness that is positive for countries that are more open to trade than their size predicts and negative otherwise, the pattern that emerges is very similar to that shown in Figure 2. The predicted export ratio was obtained from a linear cross-country regression of the average export ratio on the logarithm of the average population (in thousands) to adjust for country size.

Education is also good for growth, as it turns out, and conversely. Figure 3 shows a scatterplot of economic growth as measured before and secondary-school enrolment for both genders as a percentage of each cohort from 1980 to 1997. Imperfect though it is, secondary-school enrolment is the most commonly used yardstick for education in the empirical growth literature. Even so, other measures of education such as primary-school enrolment rates, tertiary-education enrolment rates, public expenditures on education, and years of schooling for girls or boys yield similar results. If we fit a straight line (not shown) through the 131 observations, Figure 3 shows that a 25 percentage point increase in secondary-school enrolment – an urgent necessity in many developing countries! – goes along with a one percentage point rise in the annual rate of growth of GNP per capita. Actually, the relationship is significantly nonlinear as shown, indicating decreasing returns to education, and either way it is statistically significant (the rank correlation is 0.60). It needs to be emphasized, however, that school enrolment reflects, at best, the quantity of education provided rather than the quality of education received.

We have seen that the accumulation of both physical and human capital is positively related to economic growth. How about social capital? – that is, the infrastructure and institutions of society in a broad sense: its culture, cohesion, law, system of justice, rules and customs and so on, including honesty, liberty, and trust. This is a long list, so let us first consider corruption and then political oppression, to take but two aspects of social capital corrosion into account. Figure 4 shows the relationship between economic growth and corruption across 88 countries, the maximum number for which reasonably reliable data are available. I use the corruption perceptions index from Transparency International, Berlin, for the year 2000 on the assumption that corruption changes slowly. The index is constructed from information obtained from businessmen who are willing to report how often and how

forcefully bribes and the like are demanded of them in various countries, and how high these are, and so on. The index extends from zero, in countries where corruption is rampant, to ten, where it is practically nonexistent. The figure suggests that an increase in the corruption perceptions index (i.e., a decrease in corruption) by two points from one place to another goes along with an increase in per capita growth by more than one percentage point per year on average, for given initial income. This is not a small effect – if it is an effect, that is, as opposed to a mere correlation. The pattern is significant; the rank correlation is 0.73. Honesty, it seems, is good for growth because corruption breeds inefficiency, and vice versa.

How about political oppression? Figure 5 shows the relationship between per capita growth as measured before and political liberties across 65 countries. The political liberties index is an average for the years 1972-1990 and is taken from Przeworski et al. (2000). The index ranges from 1 (full civil liberties) to 7 (negligible civil liberties). The rank correlation, at -0.64, is significant statistically as well as economically. An increase in political liberties by two points from one country to another, corresponding to the difference in liberties between India (index = 2.0) and Bolivia (index = 4.0), or between Bolivia and Ghana (index = 6.0), goes along with an increase in per capita growth by more than one percentage point per year. Hence, political liberty seems good for growth because oppression hurts efficiency.

At last, consider this: From 1960 to 2000, GNP per capita in the Organization of Petroleum Exporting Countries (OPEC) increased on average by only 0.3 percent per year. How come? Abundant oil and other natural resources may seem an unlikely impediment to economic growth, but they can nevertheless lead to (a) an overvalued and unstable currency that in turn can hurt manufacturing exports and foreign investment and thereby also economic growth (the Dutch disease); (b) rampant and socially divisive rent seeking that diverts valuable time and effort away from useful production, and corruption and oppression may follow; and (c) a false sense of security that can lead to a feeling that anything goes and thereby weaken people's understanding of the need for good economic management, good investments, and good education: if you are awash in cash, then why exert yourself? In sum, unless they are carefully managed, abundant natural resources can weaken the foundations of growth, including investment (Fig. 1), trade (Fig. 2), education (Fig. 3), honesty (Fig. 4), and liberty (Fig. 5).

Figure 6 shows a scatterplot of economic growth and the share of primary (i.e., nonmanufacturing) production in GDP. Other measures of the weight of natural-resource-based activity in economic life such as the share of primary exports in total exports or in GDP and the share of the primary sector in employment give similar results. The regression line through the scatterplot of 164 countries in the figure suggests that an increase of about six percentage points in the primary-sector share from one country to another is associated with a decrease in per capita growth by one percentage point per year on average. The relationship is

also significant in a statistical sense (the rank correlation is -0.64), and conforms to the results that have been reported in multiple regression analyses where other relevant determinants of growth (investment, trade, education, etc., as well as initial income to account for catch-up and convergence) are taken into account. The data seem to confirm that manna from heaven can be a mixed blessing.

The correlations reviewed above do not by themselves establish cause and effect even if we have some pretty good reasons to believe that growth may be affected by the variables shown on the horizontal axes in Figures 1 to 6. It is conceivable that increased growth across countries stimulates investment, trade, education, honesty, liberty, and diversification away from heavy dependence on natural resources. But this does not mean that investment, trade, education, honesty, liberty, and diversification do not stimulate growth. Most likely, some of the causal relationships work both ways. Moreover, there may be still other factors that influence some or all of these variables, helping to generate some of the patterns observed.

The main point here, however, is this. Some of the key determinants of economic growth that have been identified in recent studies and briefly described above depend in important ways on institutions as well as on economic policy undertakings from year to year. It takes an efficient financial system and probably also an independent central bank to channel national saving into ample high-quality investment. It takes an outward-looking, liberal exchange and trade regime to foster rapidly expanding foreign trade. It takes a good, subsidized, incentive-compatible education system to offer a good education to all. It takes an honest and independent judiciary to keep corruption under control. It takes liberal laws and constitutions to secure political and civil liberties. Likewise, it may take institutional reforms – such as, for example, in Norway where the management of the Petroleum Fund was transferred from the Ministry of Finance to the more independent Central Bank in 1999 – in order to avert the adverse consequences that otherwise may follow from heavy dependence on nature's bounty. In short, institutions make a difference: they must.

### **III. A Matter of Choice**

The economics of endogenous growth and development has made swift progress over the past 15 to 20 years. It is now understood that, over long periods, even the older theory of exogenous growth can include considerably more factors than technological progress, including economic policies and institutions that encourage investment, trade, and education as well as honesty, liberty, and diversification away from natural resources. In one important respect, the recent revolution in growth theory resembles the revolution in macroeconomic theory which John Maynard Keynes set in motion in the 1930s: just as Keynes rebelled against the powerlessness of public authorities in dealing with mass unemployment during the Great Depression and rejected the theory which lay at the root of this impotence, the new

growth theory has challenged the powerlessness of public authorities faced with abject poverty in developing countries. The new theory does not, however, have to completely jettison older theories of economic growth, but instead merely reinterpret, improve, expand upon, and strengthen them. This work is well underway around the world. The emerging synthesis is rich in its implications for economic policy.

With appropriate policies and institutions, rapid economic growth is, or at least ought to be, achievable almost anywhere. True, there are important natural and political obstacles to growth-friendly reforms, including conflicts, real or imagined, between economic growth and other policy objectives and also conflicts of interest between the many who gain from reforms and the few who lose. Even so, it now seems clear that to grow or not to grow is in large measure a matter not of technology but of choice.

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Figure 1. Investment and growth

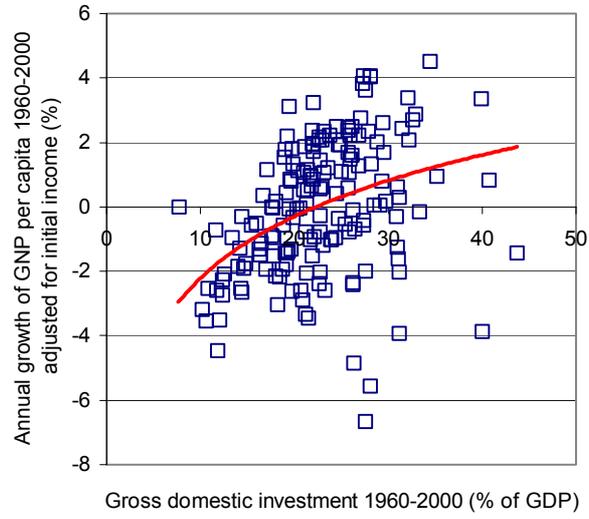


Figure 2. Exports and growth

