Progress reports

Deep determinants of economic growth: institutions, geography and openness to trade

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1 Introduction

In our first progress report, Bloch and Tang (2001), we examined the importance of the ‘Solow residual’, or total factor productivity growth (TFPG), in the process of economic growth, particularly in the context of the East Asian economic growth ‘miracle’. We demonstrated that while TFPG has been less important in explaining growth in East Asia than in the advanced industrial economies, it still has played an important role in the susceptibility of some of these economies to shocks, particularly the crisis of 1997 (see Tang, 2002, for application to a broader set of countries). In our second report, Bloch and Tang (2003), we focused on the role of financial development and its link to capital accumulation and economic growth. We concluded that while financial development is clearly an essential part of the growth process, it has not been demonstrated, particularly in the context of East Asian growth, that such development is a precondition for economic growth. We are left with a view that both TFPG and financial development are important to economic growth, but that neither is necessary. More importantly, we are left without an explanation of the underlying forces behind economic growth and development.

Knowledge of the process of economic growth and development has evolved substantially over the past five decades. In particular, there is now a general view that the neoclassical model of growth that emerged in the 1950s, particularly Solow’s (1956 and 1957) path-breaking contributions, offers neither an explanation of the experience of the Third World countries nor practical guidance for sustained economic development. The main problem is that the neoclassical model focuses on the ‘proximate determinants’ of growth that appear in the neoclassical growth equation, particularly capital accumulation and TFPG. We learn little from the model about what drives TFPG and how to improve it. Moreover, the same problems

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confront us when we examine the accumulation of physical capital or human capital, which are also essential arguments in the neoclassical growth equation. As a result, the field of development economics has increasingly switched its attention from the variables in the neoclassical growth equation to the ‘deep determinants’ of economic growth and development. (See the discussion of the evolution of development economics as a discipline in Meier and Stiglitz, 2000.)

In this progress report, we review knowledge of the deep determinants of economic growth. In the next three sections we discuss studies that have examined three possible deep determinants of economic growth and development, namely institutions, geography and openness to trade. The links between these deep determinants and the proximate determinants are explored in a flowchart in Section V before we close with some final remarks on the process of economic growth and development.

II Institutions

Institutions, undoubtedly, are a deep determinant of economic growth. Many economists argue that definite political institutions are the key precondition of economic development, assuming an even more important role than geography and openness to trade. William Easterly, a research economist at the World Bank of 16 years standing, lists all the things that so far have not worked: ‘The list of failed panaceas includes foreign aid, foreign investment, education, family planning, big infrastructure projects, conditional aid, debt forgiveness and so on’ (Easterly, 2001: 21). He says that none of those activities have any impact on development unless the Third World countries meet the basic institutional requirements: protection of property rights, rule of law, efficient bureaucracy, corruption-free government and political constraint on executive.

What are the mechanisms for institutions to affect growth and development? Early studies by North and Thomas (1973), Jones (1981) and North (1981) point out that the lack of protection of property rights inhibits investment in both physical and human capital, which are the proximate determinants of economic growth. Knack and Keefer (1995), Mauro (1995), Hall and Jones (1999) and Rodrik (1999) all find cross-country econometric evidence to support the positive link between measures of property rights and economic development. Furthermore, a series of studies by Acemoglu et al. (2001, 2002, 2003) investigate causation rather than correlation between institutions and growth. They confirm that stronger institutional quality ‘causes’ higher per capita income and lower macroeconomic volatility and crises.

Another line of research points to technical change as an important mediating channel through which institutions affect economic growth, as Knack (2002: 1) argues that: ‘…in countries where institutions related to property rights are in place, there is not only greater efficiency in the use of resources but also greater technological progress and innovation leading to economic growth and poverty reduction’. A study by Tang et al. (2003: Abstract) confirms: ‘…a robust positive causation for better institutional quality to accelerate technical change, which reduces macroeconomic volatility, mitigates crises and enhances long-run economic growth rate. This result is not due to weak data, simultaneity bias, measurement errors or misspecification and is remarkably robust to a large number of alternative specifications’. 
Every country has its own distinctively historical, religious and cultural background, so that a blueprint of institutional development fitting all countries does not exist. Rodrik (2002) argues that institutional changes cannot simply be copied from the West, instead they have to be modified to suit the local environment. China, for example, has been able to grow tremendously for the past two decades even without having proper laws for protecting property rights. There, the key institutional changes were allowing family land ownership and deregulating township and rural industries. Russia, on the other hand, with formal laws for protecting property rights, experiences disappointing growth. The lesson seems to indicate that a comprehensive set of institutional changes is not required for initiating growth. Rather, small, but key, changes in institutions can have a large positive effect on growth at the initial phase of development. Of course, the problem is to identify the most pressing institutional changes that are required to stimulate growth, which clearly differ from country to country.

We illustrate in Table 1 the roles of institutions and technical change in affecting the standard of living or real per capita GDP, including both a sample of East Asian economies and the major industrial powers. In the second column of the

### Table 1  Correlation between institutions, technical change and 1995 per capita GDP

<table>
<thead>
<tr>
<th>Country</th>
<th>Natural logarithm of 1995 real per capita GDP (rank)a</th>
<th>Index of institutions (rank)b</th>
<th>Kim and Lau (1996) contribution of technical progress, % (rank)c</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>7.89 (14)</td>
<td>6.34 (13)</td>
<td>−1.4 (12)</td>
</tr>
<tr>
<td>Hong Kong</td>
<td>10.01 (3)</td>
<td>8.14 (9)</td>
<td>28.2 (6)</td>
</tr>
<tr>
<td>Indonesia</td>
<td>7.98 (13)</td>
<td>7.59 (11)</td>
<td>−27.2 (14)</td>
</tr>
<tr>
<td>Japan</td>
<td>10.07 (2)</td>
<td>9.72 (3)</td>
<td>32.4 (5)</td>
</tr>
<tr>
<td>Malaysia</td>
<td>8.92 (10)</td>
<td>7.95 (10)</td>
<td>10.5 (9)</td>
</tr>
<tr>
<td>Philippines</td>
<td>8.20 (12)</td>
<td>4.71 (14)</td>
<td>−17.5 (13)</td>
</tr>
<tr>
<td>Singapore</td>
<td>9.87 (7)</td>
<td>9.32 (5)</td>
<td>20.1 (7)</td>
</tr>
<tr>
<td>Korea</td>
<td>9.53 (9)</td>
<td>8.69 (8)</td>
<td>1.0 (11)</td>
</tr>
<tr>
<td>Taiwan</td>
<td>9.61 (8)</td>
<td>9.15 (6)</td>
<td>2.5 (10)</td>
</tr>
<tr>
<td>Thailand</td>
<td>8.74 (11)</td>
<td>7.25 (12)</td>
<td>15.3 (8)</td>
</tr>
<tr>
<td>France</td>
<td>9.96 (5)</td>
<td>8.85 (7)</td>
<td>63.5 (1)</td>
</tr>
<tr>
<td>Germany</td>
<td>10.00 (4)</td>
<td>9.80 (2)</td>
<td>62.6 (2)</td>
</tr>
<tr>
<td>UK</td>
<td>9.90 (6)</td>
<td>9.55 (4)</td>
<td>50.3 (3)</td>
</tr>
<tr>
<td>USA</td>
<td>10.25 (1)</td>
<td>10.00 (1)</td>
<td>41.0 (4)</td>
</tr>
</tbody>
</table>

Coefficient of rank correlation between:
- Institutions and 1995 GDP per capita 0.8505
- Institutions and technical change 0.7451
- Technical change and 1995 GDP per capita 0.8242

**Notes:**

a1995 real per capita GDP are taken from Penn world table mark 5.6 (http://pwt.econ.upenn.edu/) (last accessed 26 April 2004) RGDPL, Laspeyres index, 1985 international prices) and 2002 world development indicators CD-ROM.

bInstitutions are measured by the index of expropriation risk, which is the risk of ‘outright confiscation’ or ‘forced nationalization’ assessed by International country risk guide (http://www.countrydata.com) (last accessed 26 April 2004). It is scaled from zero to ten, with lower scores for higher risks. We average the months of January of the monthly index between 1984 and 1995.

cContribution of technical progress is taken from Kim and Lau (1996).

dThe critical value for a two-tailed test at 0.01 significance level and 14 observations is 0.716.
table, we list the 1995 real per capita GDP for the 14 selected countries included in a study by Kim and Lau (1996). Note that China, Indonesia and the Philippines are the poorest economies, whereas USA, Japan and Hong Kong are the richest ones. The third column lists the index of institutional quality measured by the risk of expropriation by the state, which is a measure employed by Acemoglu et al. (2001). The index is scaled from 1 to 10, with a higher score indicating a stronger institutional quality. In the last column of Table 1, the extent of technical progress in accounting for a country’s growth experience, which is taken from Kim and Lau (1996), is listed.

We observe that stronger institutional quality is highly correlated with higher 1995 per capita GDP and this correlation is statistically significant above the 1% level, as indicated by the rank correlation coefficient of 0.8505 in Table 1. Similarly, we observe an equally significant correlation between stronger institutional quality and higher technical progress and between higher technical progress and higher 1995 per capita GDP. Thus, the limited set of data in Table 1 shows a clear example that institutions matter for increasing living standards and that the effects of institutions on GDP per capita or growth may be channelled through technical change.

III Geography

Another deep determinant of economic growth that has received much attention is geography. The effects of geography on long-run economic growth are multifaceted. Health, population growth, food productivity, resources endowment and mobility of factors of production are all characteristics of geography that play important roles in affecting long-run economic growth. Hall and Jones (1999) find a positive correlation between the absolute value of latitude and per capita income in a cross-section of countries. Gallup et al. (1999) show that tropical climate has adverse effects on human health and agricultural productivity, which result in lower levels of per capita income. Masters and McMillan (2000) stress the positive effects of winter frost on agricultural productivity, stimulating an overall economic development. Acemoglu et al. (2001) argue that colonies with adverse disease ecology (such as malaria and yellow fever), which caused a high death rate among European settlers, were subject to an extractive mode of colonial governance. As a result, these colonies tended to develop weaker institutions compared with institutions of those colonies that had offered favourable settlement conditions such as Canada and USA.

A debate on the relative contributions of geography and institutions to economic growth and development has been waging for the past few years. The debate is not whether geography or institutions are individually important in stimulating growth. Rather, it is a debate on how important is each of these factors in the presence of the other in accounting for cross-country differences in per capita income. On the one side, scholars such as Acemoglu et al. (2001, 2002, 2003), Easterly (2001), Rodrik (2002) and Rodrik et al. (2002), among others, argue strongly that geography is important, but not as important as institutions. Specifically, their cross-country econometric studies show that once institutions are accounted for, there is little for geography to add to the explanation of the cross-country differences in per capita income. These studies use a variety of measures of geography including the absolute value of latitude, proportion of land within 100 km of the coast, average temperature and rainfall, soil quality and disease ecology. On the other side, scholars such as
Sachs and Warner (1995b, 1999, 2001), McArthur and Sachs (2001) and Gallup et al. (1999), among others, reject the claim by the institutional school, arguing that the results of the institutional school are plighted by sampling, mis-specification and, in particular, simultaneity biases. They counter with cross-country econometric evidence that supports the supremacy of geography.

If geography is of utmost importance, then we expect that resource-rich countries should experience a faster growth and a higher per capita income relative to those countries that are resource-poor. It has been observed, however, that the opposite is closer to the reality. Studies by Auty (1990), Gelb (1988), Sachs and Warner (1995a, 1999, 2001), among others, find that resource-poor countries grew two to three times faster than resource-rich countries between 1960 and 1990, even after adjusting for differences in population, initial per capita income and other variables.

What explains such a puzzling observation? The answer lies in the sudden windfall of oil wealth to the oil-rich countries after the formation of the Organization of Petroleum Exporting Countries (OPEC) in 1970s. Not properly managed, huge oil revenue in the Middle East and elsewhere brought a sudden expansion of domestic spending by about 50% between 1974 and 1979. It enriched the elite, created white-elephant projects and fuelled inflation of more than 15% per year. Venezuela has earned over US$600 billion in oil revenue since the 1970s, but the real per capita income of its citizens fell by 15% between 1973 and 1985. It continues to fall today. Indonesia and Nigeria are other examples of resource-rich countries suffering from falling real income. An additional burden of oil wealth is the increased likelihood of civil conflicts. Ross (2001) argues that since the oil infrastructure can be easily controlled by a few, it tends to lead to a concentration of political power, which worsens poverty by stunning democratic development. Even industrialized countries with well established institutions can have their traditional industries adversely affected by resource booms, as illustrated by the experience of the Netherlands following the development of North Sea oil and gas fields as discussed by Corden (1984).

The complex, and often perverse, impact of natural resources on development illustrates the difficulty in believing that geography is of utmost importance in determining economic growth. So long as we observe some countries with superior geography suffering from falling real income while others with poor geography are prospering, we must then look beyond geography for a better explanation of long-run economic growth. There is no doubt that superior geography, such as strategic location and abundant resources, helps spur economic growth, but it is neither necessary nor sufficient.

IV Openness to trade

Another deep determinant of growth is openness to trade. Ever since Adam Smith (1937 (1776)) and David Ricardo (1973 (1821)), economists have recognized the positive effects of openness to trade on economic development. Not only can trade increase per capita income directly via absolute and/or comparative advantage, it can also boost efficiency indirectly via other channels such as technology transfer, increasing scale economies and the competitive influence of interaction with foreign firms in markets at home and abroad.
Numerous empirical studies have documented the importance of trade for growth in the very long run. Among them, Frankel and Romer (1999) exploit the causal link between growth and the geographical deep determinant of trade (specifically, countries that are landlocked and/or remote tend to trade less than those that are not). Dollar (1992), Edwards (1998), Barro and Sala-i-Martin (1995), Sachs and Warner (1995b), Greenaway and Morgan (1998), and Vamvakidis (1998) are some examples of studies that use cross-country regressions and find that trade distortions caused by government intervention lead to slow growth rates. Balasubramanyam et al. (1996) find evidence that the positive effect of foreign direct investment on growth is stronger in countries with an export orientation than in countries with an import-substitution orientation. Harrison (1996) shows that estimates of a variety of openness measures are more significant in panel-data regressions than in cross-country regressions. Lee (1996) studies industry-level data for Korea and finds that trade protection reduces both labour productivity and total factor productivity for the period 1963 to 1983.

The success of the high-performing Asian economies (Hong Kong, Korea, Singapore and Taiwan) in the past three decades provides a strong argument for export-led growth. The spectacular growth rates enjoyed by these economies improved their standard of living to be comparable with those of the rich industrialized countries. There appears to be a consensus that the success achieved by these economies is largely due to their unusual export performance, especially manufactured exports. For example, Pack and Page (1994) show that high investment ratios and initial levels of education of the high-performing Asian economies cannot totally explain the spectacular growth performance of these economies. Spectacular export performance not only allowed the high-performing Asian economies to reap economies of scale from expanding market size, it also gave them an ability to move to a new, higher production function typical of OECD countries. The seven channels identified by Pack and Page through which the high-performing Asian economies achieved best practice include (1) new equipment, (2) direct foreign investment, (3) technology licensing, (4) transfer of nonproprietary technology, (5) information provided by purchasers, (6) returning nationals and (7) research and development.

However, not everyone agrees that openness to trade is of paramount importance for growth. Many studies show that empirical evidence supporting openness to trade as a significant determinant of growth is at best circumstantial. Rodriguez and Rodrik (1999) demonstrate that the positive correlation between openness and growth found in Dollar (1992), Sachs and Warner (1995b), Ben-David (1993) and Edwards (1998) is not robust, as a result either of problems in the measures of openness or lack of appropriate control variables. Levine and Renelt (1992) show that the direct effect of openness on growth is not robust. Openness, they argue, only has an indirect effect on growth through higher investment. Using historical data from 1870 to the present, Vamvakidis (2002) finds no positive correlation between openness and growth before 1970, suggesting the positive correlation between openness and growth is only a recent phenomenon. Harrison and Hanson (1999) question whether there is a positive employment impact of liberalization and suggest that liberalization may raise wage inequality. Xu (2000) finds little evidence that technology transfer from US multinational enterprises has a positive effect on productivity growth of less developed countries.
Those who reject openness to trade as the main source of growth are not advocates of trade restrictions, but rather are advocates of the relative importance of other deep determinants of growth, especially institutions. Recently, papers by Alcala and Ciccone (2002), and Dollar and Kraay (2003) address the question of the relative importance of trade and institutions in accounting for growth. Alcala and Ciccone report that both trade and institutions are equally significant in accounting for growth. Dollar and Kraay, on the other hand, find that trade has a larger effect on growth than that of institutions over the short run, but in the long run trade and institutions are both equally important for growth. They also criticize the usual cross-country regressions, which regress the log-level of per capita GDP on instrumented measures of trade and institutional quality, as uninformative about the relative importance of trade and institutions in the long run, because of the very high correlation between the latter two variables. In responding to Alcala and Ciccone and Dollar and Kraay, Rodrik et al. (2002: Abstract) conclude that: ‘Our results indicate that the quality of institutions “trumps” everything else. Once institutions are controlled for, measures of geography have at best weak direct effects on incomes, although they have a strong indirect effect by influencing the quality of institutions. Similarly, once institutions are controlled for, trade is almost always insignificant’.

Perhaps it is not surprising to find contradictory empirical conclusions on the question of the relative importance of trade and institutions in accounting for growth. One particular source of contradiction arises from the choice of the measure of openness. Rodrik et al. (2002) demonstrate that the strong effect of trade on growth in both Alcala and Ciccone (2002) and Dollar and Kraay (2003) comes from their choice of measuring openness by using ‘real openness’ (nominal trade divided by GDP adjusted for purchasing power parity) rather than the conventional measure of openness (nominal trade divided by nominal GDP). Rodrik et al. (2002) show that real openness is a dubious measure of openness, which always introduces a positive bias in the estimated effect of openness on growth. In addition to the measurement issue, there are other methodological issues, such as sampling, simultaneity and mis-specification biases that are under debate. So, the debate will likely to continue for some time on the subject. However, on balance, we believe that the weight of evidence so far seems to suggest that the effect of institutions on growth is more robust than that of either trade or geography. Institutional quality thus appears to be the most important deep determinant of growth and development.

V Flowchart of growth, volatility and crises

Figure 1 summarizes the main causal linkages between the deep determinants of growth and macroeconomic performance discussed so far in the paper. In addition, we include in Figure 1 the two important proximate determinants of growth (discussed in Bloch and Tang, 2001, 2003): technical change and financial development. Geography is placed at the bottom of the diagram to show its exogeneity. Empirical evidence suggests that geography is important to the extent that it indirectly affects growth through institutions (arrow E) and trade (arrow F), both of which are represented by a unidirectional arrow since geography is exogenous. Next, institutions affect macroeconomic performance directly (arrow B) and indirectly through technical change (arrow A), financial development (arrow C) and trade (arrow D). Finally,
openness to trade does not have any independent, direct effect on macroeconomic performance, but only indirect effects through financial development and capital accumulation (arrow G).

VI Final remarks

Our discussion suggests that institutions, geography and openness to trade each have a role to play as a ‘deep determinant’ in enhancing economic growth. The roles are often complex and certainly are interrelated, as is indicated in the flowchart above. In our view trying to identify one deep determinant as crucial, or even most important, is of limited use. There is much more to be gained, especially for policy making purposes, from viewing the deep determinants as complements, rather than substitutes, and working for progressive change wherever one can. After all, geography is beyond the control of policy makers and changes to institutions and openness likely involve difficult political struggles and very long time horizons.

It should also be noted that economic growth is itself only a proximate contributor to development and human progress. Indeed, when economic growth is achieved through expansion of the market, as occurs with openness to trade and with institutional change to secure property rights, there is an inherent bias in economic
growth as a measure of progress. Replacement of traditional modes of production with production for the market shows up as an increase in measured economic activity without necessarily expanding the volume of production.

More fundamentally, consideration needs be given to whether particular institutional changes or other market opening activities make a net contribution to human development in all its aspects. Economists have concentrated on demonstrating that market expansion makes a net positive contribution to economic well being, albeit under a fairly restrictive set of assumptions on the ‘perfection’ of the market and on the existence of compensation mechanisms. This leaves unanswered questions concerning the impact on the broader set of aspects of human development, including freedom, dignity and self-respect. Consideration of such issues is outside the scope of our progress report and beyond our expertise.

References


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