

Institutional Determinants of Growth

Reading:

- Robert E. Hall and Charles I. Jones (1999), "Why Do Some Countries Produce So Much More Output per Worker than Others?," *Quarterly Journal of Economics*, 83-116.
- Acemoglu, Johnson and Robinson (2004), "Institutions as the Fundamental Cause of Long-Run Growth," *Handbook of Economic Growth*, http://econ-www.mit.edu/faculty/download_pdf.php?id=1183.

Are Institutions Important?

Cross-country differences in output per worker can be explained only partially by cross-country variation in stock of physical and human capital, and these stocks fail to converge over time (Lucas, 1990, and Feldstein and Horioka, 1980).

Example: 1988 US output per worker was 35 times that of Niger. US has more physical capital per worker and it has more human capital: differences in endowments of physical and human capital suggest US output should be 1.5 and 3.1 times higher than Niger's, respectively. The remainder, factor of 7.7, is unexplained.

Hall and Jones (1999) decompose differences in output per worker into contributions of differences in capital intensity, human capital per worker and *productivity*. Consider the following Cobb-Douglas PF:

$$Y = K^\alpha (AH)^{1-\alpha}$$

where H stand for labor adjusted to take account of human-capital (education), E ,

$$H = e^{\phi(E)} L$$

with $e^{\phi(E)}$ capturing the return to education. This can be transformed as follows

$$\frac{Y}{L} = \left(\frac{K}{Y}\right)^{\frac{\alpha}{1-\alpha}} \frac{H}{L} A$$

so that output per worker can be decomposed into contributions of capital intensity, human capital per worker and *productivity*. They carry out this analysis with 1988 data for 127 countries.

Output per worker is correlated with productivity (Solow residual) is 0.89: richer countries tend to be more productive and vice versa (Figure I). Productivity is also correlated with human capital: 0.52. Much of the differences between output in the US and in LDCs is due to differences in productivity rather than due to factor endowments (Table I). Capital intensity, human capital and productivity explain differences in output per worker between five richest and five poorest countries with factors of 1.8, 2.2 and 8.3.

Hall and Jones attribute these differences to *social infrastructure*: institutions and redistributive policies. These can be thought as including:

- *Redistributive policy*: marginal tax rates on labor and capital income.
- *Formal institutions*: rule of law, protection of private property, enforcement of contracts, economic freedom; note that formal institutions may offer different

protection against predation by other private actors and by the government.

- *Informal institutions*: culture, corruption, social capital.

Hall and Jones construct an index of social infrastructure as the average of :

- Index of government antidiversion policies (GADP) which combines five institutional measures: law and order, bureaucratic quality, corruption, risk of expropriation, and government repudiation of contracts (as published by the International Country Risk Guide)
- Sachs-Warner index of openness:

Social infrastructure can affect growth in two ways:

- *Investment*: The return on investment in physical or human capital can be subject to predation by the government (taxation, corruption, expropriation) or by other individuals (crime). The return on investment can also be affected by externalities caused by the actions of others. Predation and externalities lower the *expected* return on investment and therefore reduce the incentive to invest.
- *Production vs Rent Seeking*: Individuals can spend their endowments of labor and capital either to produce or to seek to expropriate the output of others. The former increases the overall output of the economy, the latter redistributes it. Therefore, production is *socially* desirable while rent seeking is not, although engaging in rent seeking may be *individually* optimal. Rent seeking can take the form of theft, taxation and tariffs, tax loopholes and subsidies, tax evasion, monopoly, etc.

Institutions can be endogenous in output per worker and therefore they use instruments to remove the potential endogeneity bias: distance from equator, fraction of population speaking English and Western European languages as mother tongues (both proxy for colonial influence), and predicted trade based on a gravity model.

Output per worker is closely correlated with social infrastructure (Figure II). In regression analysis, social infrastructure has a positive effect and is strongly significant (and accounting for the potential endogeneity of institutions increases the effect further). The country with the best institutions is predicted to have between 25 and 38 times higher output per worker than the country with the worst institutions. Differences in social infrastructure rather than differences in factor endowments therefore account for most of the observed variation in output per worker.

Other studies (Dawson, 1998, *Economic Inquiry*; Adkins, Moomaw and Savvides, 2002, *Southern Econ Journal*; Méon and Weill, 2005, *Economics of Governance*) find that economic freedom and good governance foster growth directly and also indirectly by increasing investment. Dawson finds that political freedom also increases investment while it does not affect growth directly.

Analysis of historical examples (North 1990, 1993; Olson, 1982; Landes, 1999) – Western Europe vs Spain and Portugal, China, India, the Ottoman Empire – also suggest that good institutions are crucial for economic growth and development. North (1993, *The Paradox of the West*): economic and political freedoms are preconditions for sustained economic growth. Economic and political freedoms reduce uncertainty and ensure secure property rights to assets and profits. In Great Britain and the Netherlands, institutional constraints

on the monarch's power to tax and expropriate created incentives for productive activity. In China, Ottoman Empire and Spain, centralization and absolute power of the monarch caused uncertainty about government actions and in turn created a disincentive to invest and produce.

Digression: Democracy:

It is clear why economic freedom, rule of law and secure property rights foster economic growth. The role of political freedom (democracy) is less clear.

Essentially all developed economies are democracies. Only a single poor country (India) has sustained democracy in the long term. Autocracies tend to democratize once they become affluent (e.g. Chile, South Korea, Taiwan) but poor countries that democratize tend to experience regime reversals. Przeworski (2005, *Public Choice*) argues that no country with GDP per capita higher than Argentina in 1975 (6K in 1988 \$s) has reverted to dictatorship, and that probability of survival of democracy increases linearly in per capita income.

Democracy is an important safeguard of property rights: in autocracies, private property can be expropriated by the government at will without the government having to fear to lose power. Therefore, there is little incentive to accumulate property and invest.

Yet, democracy also makes the government vulnerable against political backlash in case it implements policies that are costly in the short-term, even if they would deliver higher growth in the long run. Therefore, democratic governments tend to avoid costly reforms and display a *status-quo bias* (Fernandez and Rodrik, AER 1991; Alesina and Drazen, AER 1991). Democracies also tend to submit to various interests groups and therefore engage in more redistribution (and therefore have higher taxes).

Most empirical studies yield inconclusive findings about the impact of democracy on growth (Przeworski and Limongi, 1993; Helliwell, 1994; Barro, 1996). Tavares and Wacziarg (2001) find that that democracy encourages accumulation of human capital and reduces income inequality, but it also discourages accumulation of physical capital and leads to larger government size. As a result, the overall effect of democracy on growth is moderately negative.

Tabellini and Giavazzi (2004, CEPR DP) investigate the impact of economic and political liberalizations on growth in a broad cross-section of 140 countries over 1960-00. They find that liberalization tends to be followed by improvements in growth and that countries that implement economic liberalization first and only then political liberalization tend to do better than those that start with political liberalization. They also find evidence of feedback effects between economic and political liberalization but do not test for the direction of causality.

Fidrmuc (2003, EJPE) considers economic and political liberalizations in a sample of 25 post-communist countries. He finds that the direct effect of democratization on growth is ambiguous. However, democratization *causes* economic liberalization which in turn is associated with better growth performance. When accounting for this indirect effect of political liberalization, its impact on growth is found to be positive.

Endogeneity of Institutions

The choice of institutions reflects the initial distribution of political power and resources. *Interest groups* may succeed in pushing through institutions that are favorable to them at the expense of the society as a whole.

The findings on the relationship between growth and institutions can be interpreted as suggesting that developing countries, especially Sub-Saharan Africa and Latin America, owe much of their low level of economic development to choosing poor institutions.

The choice of institutions reflects the initial distribution of political power and resources. *Interest groups* may succeed in pushing through institutions that are favorable to them at the expense of the society as a whole.

Growth regressions may be subject to omitted variable bias and measurement errors. If that is the case, the results may be biased. The results can be biased also because institutions may be endogenous in the level of development: only relatively well-off countries can afford to implement and sustain good institutions.

A possible solution is to consider natural experiments (Olson, JEP 1996): i.e. divided countries such as Germany (East vs West), Korea (North vs South) and China (PRC vs Taiwan and Hong Kong). Divided countries shared the same initial conditions in terms of formal institutions, culture, climate, history and economy but subsequently implemented very different political and economic institutions.

Another solution is to find suitable instruments for institutions to account for the endogeneity bias.

Historical Legacies

Per-capita incomes are strongly correlated with distance from the equator. Similarly, quality of institutions tends to improve with distance from the equator.

The pattern for income can be due to climate and prevalence of tropical diseases. However, it is more difficult to attribute institutional quality to climate, disease environment or even low level of economic development (European countries embraced growth-enhancing institutions when they also were relatively poor).

Acemoglu, Johnson and Robinson (2001 AER) relate quality of institutions in the developing countries to the nature of their colonial experience. They argue that imperial powers treated different colonies differently, reflecting their suitability for settlement by Europeans. Colonies in temperate climates (North America, Southern South America, South Africa, Australia, New Zealand) were suitable for agriculture and many Europeans settled there. As a result, they brought with them, or demanded, similar institutions as those in their home countries. In contrast, colonies with adverse climatic conditions and rampant diseases received few European settlers and were seen mainly as source of revenue. The imperial powers therefore put in place *extractive* institutions, i.e. institutions whose main purpose was to facilitate extraction of resources and their transfer to the imperial power, with little regard for private property rights for the indigenous population (e.g.: Belgian Congo). After the end of the colonial era, these institutions then largely remained in place: colonial rule was replaced by home-grown dictators who continued to use the extractive

institutions for their personal benefit.

Acemoglu et al. use data on mortality of European settlers, soldiers and missionaries to explain institutions in developing countries. They find a strong negative correlation between Europeans' mortality and quality of institutions. They argue that mortality of Europeans is a valid instrument and not a proxy for climate and geography because tropical countries were often among the richest countries prior to colonization (e.g. Mughal Empire in India, Aztecs in Mexico and Incas in Peru), and because the native populations have developed (partial) immunity to tropical diseases.

When using institutions instrumented by the mortality figures to explain differences in per-capita incomes across countries, they find that institutions account for up to three quarters of the variation in incomes across countries.

Berkowitz and Clay (2003) find evidence of a similar impact of the initial disease environment, along with the identity of the colonial power (Great Britain, France, Spain, Mexico, and the Netherlands), on present-day institutions in a cross section of US states.

Nunn (2007, 2009) considers the impact of slavery on African countries: present-day institutions can be explained by the volume of slave exports from the various countries, so that differences in current economic development can in turn be ascribed to differences in institutions.

Acemoglu, Johnson and Robinson (2002 QJE) develop a different though related argument. They point out that, throughout history, population density and urbanization has been positively correlated with contemporaneous income per capita. Yet, among former colonies, population density and urbanization in 1500s is inversely related with present-day income per capita. They argue that densely inhabited colonies were more attractive for exploitation and less attractive for settlement. Therefore, Europeans again put in place extractive institutions, or maintained existing extractive institutions already in place, so as to facilitate exploitation of resources, collect tax revenue, build plantations etc with little regard for the protection of property rights of the indigenous majority. Sparsely inhabited colonies, in contrast, were more likely to become destination of European migrants, and therefore received better institutions. Acemoglu et al. use population density and urbanization in 1500 as instruments for present-day institutions in the former colonies and show that institutions are robustly related to present-day differences in per-capita incomes.

Criticism: Acemoglu et al. have a very restrictive interpretation of colonization and only consider former colonies in the New World, disregarding Old-World colonies, e.g. Ireland (former British colony) Netherlands (former Spanish colony), Poland (former Russian colony), etc.