

Governments & growth

Old theories suggests growth drops
from the sky, but it doesn't

New
Economy

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One of the key roles of government should be to do what it can to promote growth and hence provide higher standards of living for its citizens. To understand how it can best do this in our increasingly globalised and uncertain world we need to understand the engines of economic growth. It is strange therefore that until about ten years ago growth was a neglected topic of economic research. Only recently have economists developed theories that actually relate long-run growth rates to underlying factors like property rights, R&D, education, infrastructure, government consumption and debt, fertility rates, the division of labour, and international trade.

Engines of growth

In the traditional view production depends on factor inputs – physical capital and labour – and technical progress. There are decreasing returns to each factor so that the increment to output from each extra unit of the factor becomes less and less, but constant returns to scale with respect to all factors together. This means that expansion of the capital stock implies a fall in the return on further expansion

and for this reason ultimately has to stop. Technical progress is unexplained. It simply occurs through the passage of time. Technical progress improves the productivity of both labour and capital and so prevents the rate of return on investment from falling. Per-capita capital and output eventually grow at the exogenous rate of technical progress.

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This story of economic growth can explain some well-known facts: a steady growth rate of output per worker, a fairly constant capital-output ratio and return on private investment, and relatively stable shares of wages and profits in value

added. However, if one studies the adjustment towards balanced growth paths, the predictions for the speed of convergence and the share of capital national income are much too high. In fact, on average only about 2 per cent of the gap between income per head in poor and rich countries disappears in a year.

Empirical work in this tradition attributes output growth to changes in the stock of productive factors. The residual output growth, not explained by factors of production, is ascribed to technical progress. These residual growth rates can be quite large. For example, for the United Kingdom growth in gross domestic

product during the period 1950-73 was on average 3.0 per cent, half of which was unexplained by changes in productive factors.

Endogenous growth

By contrast, new theories of endogenous growth aim to *explain* the growth residuals by modelling technical progress instead of treating it as manna from heaven. The key idea is to reject decreasing returns to a fairly narrow concept of capital at the firm level in favour of constant returns to a much broader measure of capital at the macro level. The definition of capital is enlarged to include things like investment in human capital through schooling, training, build-up of know-how through spending on R&D, investment in public infrastructure, and reclamation of land by building dykes. Given the much broader scope of capital and the presence of positive spill-over effects from accumulation of capital by one firm to productivity of other firms, it is reasonable to assume constant (or increasing) returns to capital at the macro level.

In this explanation of economic growth four factors seem to be especially important. *Investment in knowledge* – since knowledge cannot be wholly patented or denied to other firms, investment in knowledge by one firm also improves production possibilities of other firms. Because firms cannot fully internalise the effects of their investment on the economy-wide stock of knowledge, their investment in it, and hence the rate of economic growth, will be below the socially optimal level (Romer, 1986). One implication is that governments should intervene to correct for the absence of patent markets.

Education – devoting time to learning rather than to work or leisure, is another engine of growth (Lucas, 1988). Education is a public good. The most striking example is language. There is no point in speaking a language if people that you socialise with do not speak the same language. Other examples are the use of computer software and many other skills. Again, this level of investment in a

market economy is too low. Hence, there is a strong rationale for government subsidies for schooling, and general training programmes. *R&D* – leading to blueprints for new or better quality products, is another engine of economic growth (Aghion & Howitt, 1992). The search for new and better products or production techniques is the basis for technical progress. The patent on a blueprint guarantees temporary monopoly profits and expensive innovative efforts depend on these. Consumers benefit from innovation, because they enjoy a bigger variety of quality goods and economic growth increases. By studying the attributes of newly invented products, the revenues of R&D can partly be appropriated by other firms. This provides a case for the government to stimulate R&D through subsidies or tax incentives.

Public infrastructure – is the last engine of growth (Barro, 1990). Government investment in roads, railways, bridges, etc and the less tangible infrastructure (protection of property rights, education) boost growth by raising the productivity of private capital. However, the taxes that are necessary to finance government investment depress the after-tax productivity of private capital. Hence, there is an optimal national income share of government investment.

Knowledge is often a rival production factor. For example, a lawyer can devote attention to only one client at a time. Congestion on roads or in recreation areas makes even public infrastructure a rival public good. Examples of non-rival public goods are dykes and television programmes, because these can be enjoyed even after other people have used them. Non-rival technology opens up the possibility of increasing returns to scale and ever-increasing growth. In practice, growth will be bounded as population growth falls or (natural) resources become scarce.

Does government debt matter?

Most people believe that high levels of government debt and government consumption

are bad for economic growth. This is only true if government debt matters (Alogoskoufis and van der Ploeg, 1991). However, lowering taxes today by running up public debt and pushing up taxes in the future may not affect private consumption if citizens are smart enough to provide for the increase in future taxes by saving today. Then, none of the tax cut is spent on consumption. Government borrowing is exactly offset by the rise in private savings. Economists call this Ricardian debt neutrality.

If debt neutrality holds, a rise in government debt does not affect private consumption and thus does not alter the resources available for investment purposes. In that case, government borrowing does not affect the rate of economic growth.

Although it is difficult to reject Ricardian debt neutrality empirically, most economists believe that it is unrealistic for a variety of reasons including the fact that citizens are not that rational, foresighted and smart and that many citizens are unable to borrow in order to smooth their consumption. The jury is still out, but these reasons suggest that private consumption depends on current disposable income and government debt matters.

If this is the case government borrowing, induced by a temporary cut in taxes, depresses the rate of economic growth. Since citizens do not save all of the boost to their after-tax current income, they consume more and leave less resources available for private investment. Hence, growth tapers off.

In a small open economy with international capital mobility and a risk premium on foreign debt, a rise in the ratio of government debt to national income pushes up domestic interest rates, lowers the value of the stockmarket, leads to a build-up of foreign debt and depresses saving, investment and economic growth.

In a world with integrated capital markets interest rates in different countries cannot diverge too much. People across the globe thus have the same incentive to postpone consumption. Hence, growth rates of different countries

have a tendency to converge. Furthermore, a rise in government debt in one country does not only damage the growth prospects of that country but also that of all the other countries. This works through a rise in the global interest rate and a fall in stockmarkets throughout the world. Countries with loose budgetary policies suffer current account deficits and a build-up of foreign debt, so that the citizens of those countries end up with lower levels of wealth and consumption than countries with tight budgetary policies.

Supply-side policies

What about the effects of a rise in the share of government consumption in national income. If Ricardian debt neutrality holds, the rise in government consumption is exactly offset by a fall in private consumption (hundred percent crowding out) thus leaving private investment unaffected. Consequently, interest rates, stockmarket values and the rate of economic growth are unaffected. However, if Ricardian debt neutrality does not hold, a tax-financed rise in the national income share of government consumption induces less than full crowding out of private consumption. As a result, less resources are available for investment and the rate of economic growth falls. With a global capital market, a bigger public sector drags down economic growth in other countries as well.

Does a boost to government investment as a share of national income depress the rate of economic growth as well? It depends. Typically, a bigger share of government investment boosts the marginal productivity of private capital. This pushes up real interest rates, which in turn provides people with a bigger incentive to save. Private investment rises because it is more attractive and more funds become available as people save more. The boost to both public and private investment fosters economic growth. If these effects outweigh the reduction in resources available for private investment, resulting from the rise in taxes, economic growth indeed takes off.

In practice, governments levy distortionary taxes on capital or (capital) income which depress the after-tax productivity of private capital and hamper economic growth. Clearly, taxes induce crowding out of private investment by public investment.

Trade and migration

Trade and economic integration improve the dynamic performance of economies. The traditional argument in favour of trade stresses specialisation in production. By selling on a global market firms benefit from returns to scale through specialisation in the use of inputs (custom-made machines, special computer programmes, etc.). Consumers profit from lower prices and a bigger variety of products. Economic growth typically increases, but may fall if resources are devoted to production rather than R&D. If there are also returns to scale in R&D, the boost to growth resulting from free trade is larger. Through the international communication of research ideas and results firms can exploit economies of scale and boost the productivity of R&D.

Trade expands the size of the market and increases the reward from R&D, but it also engenders competition and depresses profits. Trade also boosts growth by forcing firms to direct efforts toward inventing new products rather than imitating existing products. Trade in goods encourages international competition in R&D, even if blueprints for new and better products are not traded. Reallocation of resources may occur if dissimilar countries engage in trade.

Migration of labour is induced by regional differences in per-capita income, especially if rich and poor countries block trade. Free trade between poor and rich countries benefits both poor and rich countries and diminishes the need for labour migration. The higher population density in rich countries eventually also

makes migration less attractive.

Catch up?

What explains the huge differences in economic growth between countries? Why do China and the tigers grow faster than the old economies of Europe and the United States? Why does Portugal grow faster than Germany? Why is economic growth on many parts of the African Continent so miserable? The following explanations are relevant.

The traditional view implies that poor countries grow faster than rich countries. Poor countries with a small or dilapidated capital stock have lots of investment opportunities and face a high marginal productivity of capital. Consequently, real interest rates are high and people have a big incentive to save and make resources available for investment and economic growth. This is why poor countries grow faster than rich countries. Given that technology is now also available for poor countries production per head in poor and rich countries should converge. The theory suggests that 2 per cent of the gap is closed each year, so that the time it takes to close half (three quarters) of the initial gap is

be 35 (70) years. This tantalisingly slow convergence rate applies to the regions of the US, Europe or Germany.

The snag is that many poor countries need all their income to survive and fulfil their basic consumption needs. Resources go towards subsistence rather than saving and investment: they are caught in

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a low growth trap and grow slower than even the richest economies. This is why these countries must be helped with good access to international capital markets and investment funds. The ever-increasing flow of funds from North to South speeds up convergence and aids rapid development. Since the global capital market does not work to the full advantage of the poorest countries, development aid should be aimed at tackling this problem.

Traditional and endogenous stories of economic growth are reconciled by having international capital mobility and decreasing returns to capital at the national level, but constant returns at the global level. This leaves room for convergence of growth rates between countries along adjustment paths, while the global growth rate is endogenous.

Just like international capital mobility, international spill-overs of technology speed up convergence. They raise the marginal productivity of capital in backward areas above that in advanced areas, providing a bigger incentive to invest in backward areas. Poor countries benefit from the transfer of technology by multinationals, so that they can compete on low labour costs without necessarily being backward technologically. However, if invention and production of consumer and capital good varieties are related, a large country can exploit economies of scale and profit from an advantage in R&D at the expense of smaller countries.

Countries, such as the tigers of South East Asia and some of the countries of Eastern Europe, that spend more on schooling, general training and R&D grow faster than countries that don't. Countries with a good infrastructure also have higher growth rates. Governments should step in to correct for externalities and other market failures and provide subsidies for schooling, training and R&D. Also, governments encourage growth by cooperating with the private sector and undertaking infrastructure programmes where needed.

Countries that have low national income shares of government consumption and government debt, avoid a bloated welfare state, stimulate private saving and have low taxes on capital enjoy higher growth rates. Countries with a fair and just distribution of income and wealth enjoy higher growth rates, since the election of populist governments pursuing 'bad' macroeconomic policies (including heavy taxes on capital) is avoided.

Effective systems of property rights and patents encourage risky investment and growth. Standardisation of government regu-

lation, open procurement of government spending, the liberalisation of financial markets imply a gain in efficiency, release resources and foster economic growth.

Export-oriented economies tender for a global market and exploit economies of scale. Eliminating barriers to trade (border controls, import duties and quota, etc) supports a strategy of high growth.

Conditional convergence

If factors such as education, infrastructure, property rights, etc. are held constant, *conditional* convergence holds: poor countries grow faster than rich countries. The problem is that many poor countries suffer from poor education, infrastructure and government policies and thus there is no *absolute* convergence: the gap between many poor and rich countries widens rather than narrows. The high growth rates of South Korea and Taiwan resulted from a massive amount of saving and investment given an extremely well-educated labour force relative to physical capital, rendering the latent return on capital very high (Rodrik, 1995). The emphasis on exports, equitable distributions of incomes and wealth and effective property rights helped the tigers as well. With sound macroeconomic policies, the tigers have managed to converge much faster than traditional theory suggested. East Germany also had a well-educated labour force and closed the gap with the West since 1991 at an astonishing 8 per cent per year, partly reflecting the German government's massive subsidies (Barro 1996).

Equally things can be worse than traditional theory suggests if government get their policies wrong. Many of the poorest countries grow slowly, because they squander labour and other resources. The former Soviet Union demonstrated that high levels of investment is not a recipe for high growth if markets function badly and lots of resources are wasted.

Economic growth, we now know, is influenced by government policy. It is important that governments accept this and take the appropriate action ●