

On Policy Consistency

To what extent does government economic policy affect incentives in the decision-making of people and businesses, preferably in a good way from the point of view of society, but perhaps at times in a bad way? In light of what has happened in the past few years in economies all over the world, this is an especially timely question.

The field of macroeconomics deals with entire nations, or the interaction among multiple nations. While macroeconomics is concerned with the aggregate (that is, the sum across all relevant units) of the consumption decisions of millions of individuals and households, for example, and the investment decisions (building factories, purchasing machines, erecting office buildings) of thousands of businesses, it is important to consider the incentives of all the individual decision makers who make those decisions.

An example may be instructive at this point. Suppose a firm contemplates investing in a factory, costing perhaps tens or hundreds of millions of dollars. This is a large expense to incur in the course of the construction period, during which the factory will produce nothing to be sold. Presumably, in order to have the incentive to go ahead with this project, the firm would be quite confident that it can more than make up for the cost in the form of income over the factory's life, perhaps ten or twenty years, from selling the products for which it was designed.

This factory, when completed, becomes part of the nation's stock of productive capital. The nation's capital is combined with labor input – that is, workers of various skills – to produce output of goods and services (some consumed by households, some used by businesses as investment in new capital,

some used by federal and state and local governments), what in the statistics is called real gross domestic product (GDP). The total income from doing so can be divided into labor income, going to the workers in the forms of wages and salaries, and capital income, compensating the business owners.

ROLE OF GOVERNMENT

In order for governments to provide the services they do, they need to generate enough revenue to cover their costs. Two major sources of revenues are taxes on capital and labor income. If the business owner knows that out of every dollar earned he has to pay the government 30 cents, then that would be taken into account in the estimate of whether or not building the factory will eventually pay off. Interestingly, suppose that after a couple of years of operation of the factory the government were to pull a surprise by announcing that, from now on, one instead has to pay 40 cents in taxes out of every dollar of income. That could easily turn a project (here, the building of the new factory) from being profitable to one that the owners, after the fact, wish they had passed on. But now, of course, as the cost has already been incurred, most likely it would not be in the firm's interest to shut down the factory.

Another way in which the government can affect the future profitability of a factory is by imposing new regulatory constraints that make it costlier to operate. In some countries, it may even be rational to worry about whether the factory, at some point in the future, might be confiscated (nationalized) by the government, with little or no compensation.

EXPECTATIONS OF FUTURE POLICY

The main point is that the business owner's impression of what the policy environment will be like for many years into

the future plays an important role for the decision to invest today. Moreover, the government has the potential to inject considerable uncertainty into the calculations needed to decide whether such new investment projects will be profitable or not.

One can come up with many such examples of the importance of expectations about future government behavior for decisions made today by individuals and businesses. A potentially dramatic one relates to the government debt. I mentioned above that capital and labor income taxation are important sources of revenues for the government. So are sales taxes, property taxes, duties, and other sources. But what if these revenues, in a given year, say, do not cover the desired amount of government expenditures? Then the government may borrow the difference (if it can). That is, the government debt increases. At times, and in some countries, this increase in government debt would reach unsustainable levels. So rather than repay the debt, as one would expect responsible governments to do, in the history of many nations one has seen them essentially renege on most or all of their current debt. That is to say, typically they don't renege officially. Instead they do so indirectly by speeding up the money printing presses, sometimes even to the extent of creating what we call a hyperinflation, during which prices over some period rise at annual rates into the hundreds or thousands of percent.

It is easy to find such examples, from the post-World War I hyperinflation in Germany after the nation was saddled with war reparations and therefore a huge increase in its debt, to the modern case of Zimbabwe. I have in my possession an official banknote issued in 2008 by the Federal Bank of Zimbabwe on which it says 50 trillion dollars. I presume, at the time, one could purchase virtually nothing for this piece of cash, as prices continued to surge ahead. For a while around the 1980s, several Latin American nations, such as Argentina and

Bolivia, engineered spectacular hyperinflations. The economist Philip Cagan, in 1956, wrote an article that included a survey of the hyperinflations up until his time of writing. The record was held by Hungary in the mid-1940s. Typically, prices will increase the fastest right before the hyperinflation finally comes to an end. Cagan's table of hyperinflations indicates that, for Hungary, in the month of the greatest price increase, prices on the average tripled every day. To get a sense of what that means, suppose a hamburger, say, cost \$1 on the first day of the month, \$3 on the second, \$9 on the third, \$27 on the fourth, and so on. You can readily calculate that, by the middle of the month (even if it were February), the price of a hamburger would exceed one million dollars!

One can also imagine someone, at the beginning of the month, being in possession of a government bond (non-indexed, to be precise) for the amount of \$1000. After only a few days, the bond would be worth virtually nothing in terms of what it could purchase. This illustrates a way in which a government can pretty much rid itself of loads of debt, of course in the process inflicting pain on large numbers of its population: for example, pensioners who would see their savings – intended to get them through their retirement age – evaporate virtually in front of their eyes.

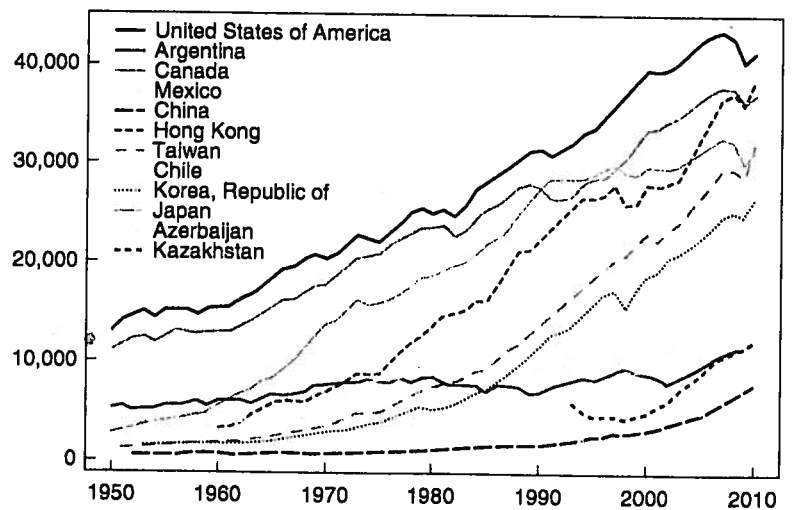
INCOME INEQUALITY ACROSS THE GLOBE

The disparity in nations' income levels, say as measured by income per capita according to official statistics, is tremendous. To be sure, measured income may provide a skewed picture of the associated welfare of the typical citizen of that nation. In some countries, an extensive informal sector (black markets) means that many people are better off than the statistics suggest. In other cases, the statistics on per-capita income may mask considerable inequality within that nation. Still,

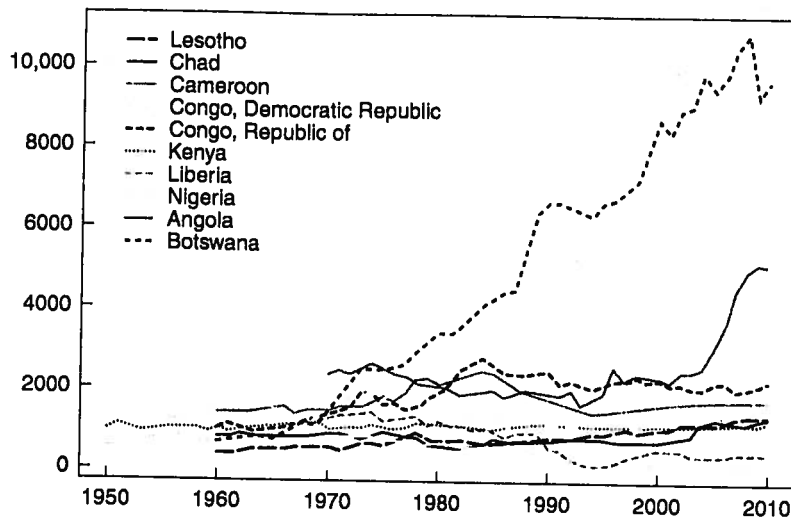
we have to take the statistics seriously, especially when the differences are large. Western European nations, along with countries such as the United States, Canada, Australia, Japan, Korea, and Taiwan have annual per-capita incomes of about \$30,000 and higher. Lots of nations hover in the \$10,000–20,000 range. And then we have all those poor nations, many in Africa, with per-capita incomes under \$5000, some even under \$1000. Zimbabwe is officially listed as having a yearly per-capita income under \$100!

Figures 6.1 and 6.2 display these contrasts. Figure 6.1 pictures per-capita real GDP in a diverse set of nations (all the numbers are in constant 2005 dollars; that is, they are inflation adjusted. To convert to 2013 dollars, one needs to raise them all by about 17 percent). Some are notable for rather healthy and steady growth rates, trying to catch up with the United States and Canada. These include Korea, Taiwan, Hong Kong, and Japan, although Japan has faltered somewhat in the

Figure 6.1 Real GDP for several countries



Source: Penn World Table 7.1 (base year = 2005)

Figure 6.2 Real GDP for African nations

Source: Penn World Table 7.1 (base year = 2005)

past 15–20 years. Some countries were at fairly similar levels around the 1960s, but have since grown much more slowly than those other countries. They include Argentina, Chile, and Mexico. Included are two nations that were created after the break-up of the Soviet Union, namely Azerbaijan and Kazakhstan. These are both resource-rich nations that seem to have put that wealth to reasonably good use (note that a given steepness of a curve near the bottom of the chart corresponds to much higher rate of growth than does that same steepness near the top of the chart). Finally, considering the attention China gets for its size, it may surprise you to see its low per-capita GDP.

Figure 6.2 depicts a set of African nations. Observe the different scale on the vertical axis as compared with Figure 6.1. If I hadn't included Botswana, another relatively resource-rich nation, I could have got by with a scale going to about \$5000, as opposed to about \$40,000 in Figure 6.1.

TIME INCONSISTENCY OF OPTIMAL POLICY

What can account for such immense disparities? The evidence suggests that in large part it comes down to the nature of nations' governments, political systems and institutions, the presence of corruption or lack thereof, and so on. But, perhaps surprisingly, there is a potential source of problems even for the more well-to-do nations. One may refer to it as *The Time Inconsistency of Optimal Government Policy*. That's a mouthful, and I'll try to give a sense of what it means (see also Kydland and Prescott 1977).

For now, let's imagine an 'ideal' world. Suppose there were a way to quantify, using a mathematical formulation, the welfare of the nation's citizens, today and into the future. A benign policy maker could then select policy (including tax policy) for the indefinite future so as to maximize the expression for the citizens' welfare. We may call that *optimal policy*. Naturally, this policy would take into account the effect that the portion of it pertaining to the future has on earlier decisions, such as the effect that future capital-income taxes have in the investment example above. In general, such a policy would represent a prescription for what to do under various pre-specified circumstances (as governments are not the *only* source of uncertainty in the world!).

As this policy is being implemented, suppose everything is moving along hunky-dory. But suppose also, after five years, say, the policy maker (or some hot-shot quantitative expert in his office) gets the bright idea of recalculating the optimal policy from that point on. That really ought to be unnecessary, since in our ideal world the original calculated plan includes a blueprint for what to do for the upcoming future as well. But suppose one goes ahead anyway. To everyone's surprise, perhaps, a completely different policy path will be found from the continuation of the original plan. The implication

seems to be that policy must change, in the interest of the nation's citizens. No! Indeed, theory suggests that if the policy maker falls for the temptation to change, it could be very bad for society.

What is the intuition for this inconsistency over time? Suppose we refer to year 0 as the year in which the original policy plan was determined. As mentioned, this policy took into account, among other things, the effect that policy (for example tax policy) from year 5 and beyond would have on private decisions (such as investment) in years 0, 1, 2, 3, and 4. But when year 5 arrives, those decisions for years 0-4 have already been made. So in the recalculation in year 5, only the policy effects on investment and other private-economy decisions in year 5 and beyond would be taken into account, resulting in a completely different policy prescription than the continuation of the original plan. In particular, it would surely suggest raising taxes on the income from capital that has already been built, with the promise of reducing taxes to previous levels in the future. The government might try to justify the change by arguing that it is facing a near-emergency situation. But potential investors would have to worry about the possibility of the policy maker pulling that one off again in the future. Even the mere uncertainty about whether or not it would happen again could be enough to depress investment activity and therefore longer-term growth of the economy.

Now you may ask (and it is a good question): if this is the situation under 'ideal' circumstances, then what about the more realistic world where policy is chosen under all kinds of political pressure from interest groups and others? Well, that should make it all the more likely that time inconsistency will rear its ugly head, especially in nations with weak institutions and poor property rights. Indeed, once one has understood this problem, an amazing number of developments in nations' economic histories can be seen in a new light.

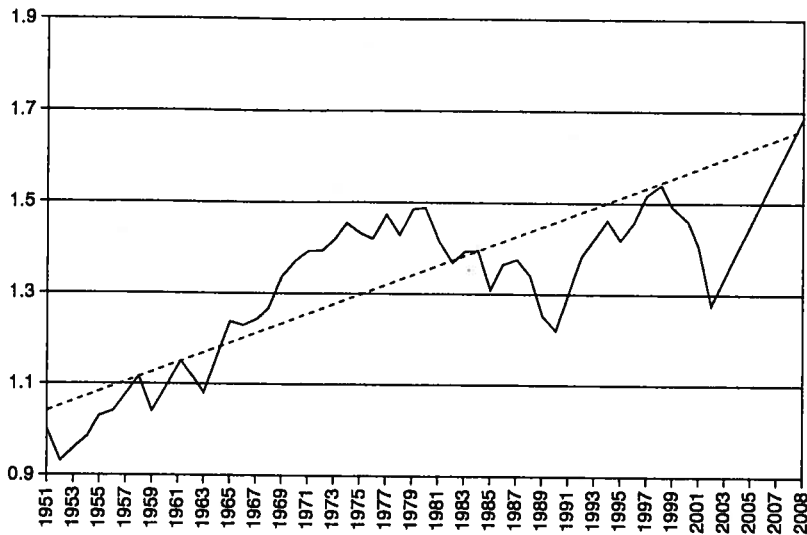
BENEFITS OF A COMMITMENT MECHANISM

An implication of this theory is that it is advantageous to shield policy making from political pressure, as kind of a commitment mechanism to ensure that promised good policy will be carried out in the future. This principle has been understood and implemented by several nations in the arena of monetary policy, which is carried out by central banks that are independent, to varying degrees, depending on the nation. For example, the Bundesbank in Germany for decades was regarded as the champion of consistency and transparency in their policy making. The Federal Reserve Bank in the United States has not been far behind, in that sense. The Bank of England was formally made independent in 1997. The central banks in Scandinavia are generally regarded to be quite independent.

At the other end of the spectrum are central banks such as that of Argentina. One sign of a central bank's independence is that the president or chairperson remains in that position for a number of years. In the United States, for example, Ben Bernanke is only the sixth chairperson since 1951. Argentina's central bank has had 54 presidents over the 67-year period since 1945 – an average of only 1.25 years per president. In the especially tumultuous two years of 2001–2, the head of the central bank changed four times.

Argentina is an interesting case in that it tried a different commitment mechanism – a currency board. In 1990, the nation was attempting to recover from the awful decade of the 1980s – the so-called lost decade, which ended in hyperinflation, defaults on government debt, losses of pensions, and during which the nation's output per capita had dropped by well over 20 percent. Figure 6.3 shows real GDP per working-age person over much of the post-World War II period. (Note that, unlike Figures 6.1 and 6.2, this chart is on proportional scale. In practice, that is done by plotting the natural logarithm of each of the underlying numbers. In such a plot, a constant growth rate is shown

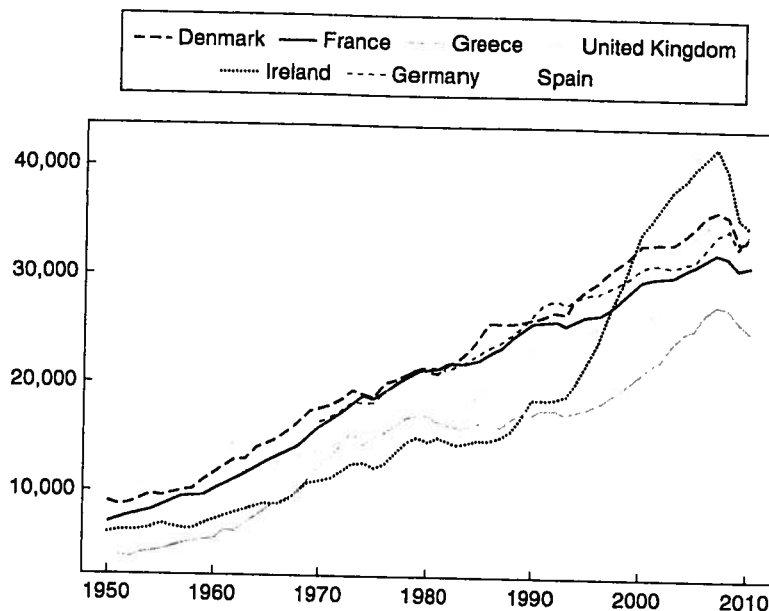
Figure 6.3 Real GDP per working-age person (log scale) for Argentina



as a straight line, for example the drawn one representing the average growth over the entire period, instead of a steeper and steeper line.) When Carlos Menem became president in 1990 he decided, in order to raise the confidence among investors in his nation, to make the Argentine peso exchangeable one for one with the dollar, accumulating enough dollar reserves to make that policy credible. To the naked eye (as in Figure 6.3), looking at growth rates over the next half-dozen years, this policy seemed to work well. But then, starting around 1998, it all fell apart. Output per capita fell again by over 20 percent, this time over a much shorter period of less than five years; the peso had to be devalued, that is, each dollar suddenly corresponded to multiple pesos; bank deposits were frozen, and all sorts of bad things transpired in the economy.

The explanation usually given for the failure of this 'commitment mechanism' is that, while Argentina seemed to have fixed their monetary problems, they forgot about fiscal policy,

Figure 6.4 Real GDP for Western European nations



Source: Penn World Table 7.1 (base year = 2005)

that is, tax and spending policy. Monetary policy cannot be completely separate from fiscal policy. For one thing, both are part of the same budget constraint. Yes, the government is subject to a budget constraint just as you and I and everyone else are subject to such constraints. The provinces borrowed heavily, even in the seemingly good times of the 1990s. When it became clear they couldn't meet their debt obligations, they came running to the federal government who had to bail them out, and federal debt ballooned. That is when everything fell apart.

As an indication of how bad things can get when the 'time-inconsistency disease' attacks, consider the behavior of Argentina's stock of business capital per working-age person, which in a healthy nation ought to grow steadily over the long run. Its level peaked in 1982. As of 2008, the last year for

which comparable data are available, this ratio was still about 10 percent below its 1982 level. It's a good bet that, even three decades after 1982, it is still below.

An opposite example is Ireland over that same time period, from 1990 until the early 2000s. Starting in the 1960s and 1970s, Ireland had made secondary education free of charge. As a consequence, by 1990 the nation found itself with a potentially skillful workforce, but not enough factories and machines with which to put all of these skills to use. So the government decided to do their best to remove any uncertainty about future taxation. They announced that if you set up shop in Ireland, whether an Irish citizen or a foreigner, these will be your (not very high) tax rates in 1992, 1993, and so on, all the way to 2009. Of course there may have been other favorable factors as well. The bottom line is that Ireland grew spectacularly (have you heard of the Celtic Tiger?). In the course of about a dozen years it went from being one of the lower per-capita-income countries in Western Europe to one of the highest (see Figure 6.4). But alas, this story does not have a happy ending, on account of policy makers panicking at the onset of the financial crisis in 2008. In the last few years of the economic boom, a debt-driven property boom took hold. When property prices plunged in 2008, major Irish banks faced insolvency. The government made the highly questionable decision to bail them out, in the process saddling tax payers with a huge increase in government debt. This ending, however, does not take away from the lesson of the experience in the 1990s, when removal of uncertainty about the tax environment for the foreseeable future encouraged many companies, including foreign ones, to establish and expand productive capacity in Ireland.

REBUILD CREDIBILITY?

An interesting question is: if a nation, such as Argentina, falls prey to the 'time inconsistency disease', how easy is it to

rebuild its credibility? The answer has to be, not easy at all. As already mentioned, Argentina, after the lost decade of the 1980s, seemed to grow at acceptable rates. It is possible, however, to 'check the temperature' of a nation using a standard economic model as the 'thermometer'. As reported in Kydland and Zarazaga (2007), using the best available measurements of the nation's level of technology, if Argentina were healthy it should have grown substantially faster even over this period. In particular, the capital stock in the data grew much more slowly than the model suggested ought to have been the case. This indicates that, in spite of President Menem's best intentions, the nation still suffered from lack of credibility among potential investors.

BUT THE MERE CONSISTENCY OF POLICY IS NOT SUFFICIENT

It is important to emphasize that policy consistency is not *sufficient* for healthy growth. Notice the word *optimal* in the description on page 86 above of the basic time inconsistency problem. It would not be good if a country carried out a consistent, but *bad*, policy. One may argue that China is such an example. Its economic policy certainly appears quite consistent. Admittedly, China has made important strides toward greater development, although its income per capita is still very low by international standards.

A stylized description of how nations grow in the long run is as follows. Entrepreneurial and innovative activity takes place, resulting in new and better ways of producing things: new production processes, new products, often with the help of considerable research and development. Factories, machines, and office buildings are needed to implement these innovative ideas. Workers are hired. And so on. In order to facilitate all of this activity, a healthy banking system, or financial system, more

generally, is important, as many of these forward-looking decisions cannot be undertaken without the ability to borrow the necessary funds.

As documented in an article by Song, Storesletten, and Zilibotti (2011), in China almost all banks are state owned. These banks favor the state-owned companies. These state-owned companies have easy access to credit and, so far, at least, to cheap labor. They do not need to be very innovative and productive to show profits. In the meantime, the entrepreneurs with the really innovative new ideas for products or ways of doing things have a hard time getting the necessary loans. Typically, they have to save up in advance before they can implement their ideas. Naturally, activities that are relatively intensive in labor rather than capital are easier to finance, as the initial set-up costs are smaller. The overall result is considerable waste of resources. It is a good bet that unless China opens up for more competition in the financial sector, this problem will eventually hurt their ability to grow at acceptable rates in the long run.

SOME FINAL COMMENTS ON RECENT EVENTS

These ideas provide food for thought about what is going on currently in many areas of the world, including in the United States and Western Europe. In the United States, real per-capita GDP declined in 2008 and 2009 to more than 10 percent below the trend that had prevailed from 1947 to 2007, and it has so far shown no sign of moving back toward that old trend. Unemployment has remained high for over four years. Government debt has risen dramatically, in the face of dire predictions about further increases as the so-called baby boomers retire, with predictable demands on the expenditure side of the government budget constraint. Are potential innovators and investors in new productive capacity holding back

because they are worried that the fruits of such activities will be taxed more heavily in the future? Will the United States catch at least a sneeze of time inconsistency?

In Europe, the eurozone, with its fixed exchange rate among a large number of countries, was conceived with seemingly little attention to enforceable fiscal rules to accompany the new monetary arrangement. As we know, some nations borrowed heavily and have had to be bailed out. Even *within* a nation, such as Spain, much unchecked accumulation of debt by the provinces has taken place. One is reminded of Argentina in the 1990s.

It is probably fair to say that an unprecedented amount of uncertainty prevails about future economic policy in European Union countries as well as in the United States. In Europe, we have seen politicians reacting to short-run developments without any clear plan for next year and beyond. As has been argued in this chapter, this kind of uncertainty is likely to be bad for growth over the next few years. One cannot fault potential innovators and investors in business capital if they choose to wait on the sidelines for a while. Worse, the insights from the time inconsistency literature give reasons to be pessimistic as to whether this uncertainty will be removed soon in any meaningful way.

Admittedly, these problems pale in comparison with the situation in large parts of Africa, as illustrated in Figure 6.2. One of the most pressing and challenging issues in economics is to figure out how nations that are poor can begin to catch up in a significant way.

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