Implementing Growth Analytics: Motivation, Background, and Implementation

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Introduction

This note has been prepared as a background to assist DFID in adopting a “growth analytics” approach in fostering its goal of promoting inclusive growth in the countries in which it works. It has five sections (with one annex and three appendices that deal in more technical detail with the issues raised in the text).

The first section gives the rationale for an increased emphasis on growth analytics, particularly why economic growth per se remains an important goal for a development agency.

The second section outlines why a distinctively new approach to promoting economic growth, which growth analytics is intended to be, is needed. This section provides the (i) economics disciplinary, (ii) policy and (iii) donor organizational background to the emergence of new approaches to the promotion of economic growth.

The third section discusses the technical issues in the implementation of growth diagnostics, one type of growth analytics, with emphasis on three aspects: (i) the use of the variety of available indicators in a “differential” diagnosis as part of the growth analytics, (ii) the priority setting process. In large measure this refers the reader to the technical details of the implementation of growth diagnostics to a paper that is in many ways a companion to this work; Hausmann, Klinger, Wagner (Sept 2008).

The fourth section emphasizes a country “implementation diagnostics” that matches priority reforms to country specific capabilities for adopting and implementing credible reforms of various types.

The fifth and final section discusses the choices in the administrative implementation of growth analytics for an organization like DFID.

While I try to give an overview of the state of play and suggestions for a way forward, the account will a bit centered about the research that I have been close to and the experiences I have had. This will add in some ways, as I have both been involved in growth research both at the World Bank and also at the Kennedy School at Harvard. I have also, as a World Bank staff, been involved in the practice of structural adjustment lending (in Argentina in the late 1980s, in Africa in the early 1990s, in Indonesia in the crisis of 1998). That said, I want to acknowledge up front that it is easier (and more honest) to summarize the evolution of one’s own views than a supposed dispassionate account of the evolution of “the field” of development.

1In keeping with the nature of the paper as a note to be used for training and not a full on review of the literature, there are “suggestions for further reading” but no references.
1) Why growth analytics as a development emphasis? Growth as a development objective

Successful implementation of an organizational shift in emphasis is facilitated by a broad understanding for the reasons for the shift and a combination of respect and comprehension of the rationales for previous efforts with the motivations for changed strategy. While we cannot speak for DFID as an organization, an emphasis on growth analytics in the development field generally is the result of two shifts: (i) a resurgence of interest in broad based economic growth as a priority target of development efforts and (ii) a shift in thinking about the means of promoting economic growth.

One of the motivations of growth analytics is not just how to promote growth but also a return to broad based economic growth as a priority agenda for development agencies. Since there has been a field called development there has been contestation about the meaning of “development.” It would take many volumes to discuss all of the approaches taken to the question and to the shifts over time, both in the rhetoric about what “development” is as well as the actions of the array of actors and stakeholders to promote “development”, and we obviously cannot do justice to these many questions. However, it is worth a brief discussion as the swinging of rhetorical pendulum often lead to slogans and caricatured views that exaggerate differences. We wish to briefly discuss how one might justify the resurgence in broad based economic growth as a development target.

1.A) Growth and “poverty” in the development agenda.

One of the moves away from economic growth as a goal was to an emphasis on “poverty reduction” as the goal of development, with economic growth seen as exclusively instrumental to that goal. There have been three realizations that lead to a resurgence in interest in growth per se and the promotion of growth as a policy goal.

Poverty lines are arbitrary, particularly upper bounds for poverty lines. When it was claimed that there would be more focus on “poverty reduction” it was not entirely clear by what standard of poverty that would be measured. Clearly measuring everything gain against a lower-bound, penurious standard of “dollar a day” poverty is too limiting a goal. Does anyone really believe that income gains to someone making a dollar and ten cents a day should for exactly zero in poverty reduction as the literal application of a dollar a day standard suggests? There is a move towards utilizing various standards for poverty, appropriate to the context, including a lower bound poverty line, national poverty lines, and global poverty lines. When the notion of income/expenditure poverty is suitably expanded it becomes more and more obvious that growth and poverty reduction cannot be disentangled. (For a slightly more developed argument see Appendix 1 and for a fully articulated case, see Pritchett 2006, “Who is not poor”).

Poverty gains are driven mostly by growth gains. Even if one were to take as the objective of development a measure of poverty with a lower bound poverty line, it is an empirical question of how much of the observed pace of poverty reduction, so defined, varies with growth in aggregate incomes/expenditures and how much this varies with
other determinants of the pace of poverty reduction (such as the level or change in the distribution of income/expenditures). Kraay (2007) has shown that if one compares poverty reduction to aggregate growth in the same measures as used to construct poverty lines over long spells of the data (e.g. spanning five years of more) one finds that nearly all of the cross-national differences in the pace of poverty reduction are due to differences in economic growth.

Of course, at the same time there is a continued interest by DFID and others in the distribution of gains from growth under a variety of guises—“inclusive growth” or “pro-poor growth” or “broad based growth” with emphasis on the “distributional incidence” of growth. This is certainly a major agenda that all donors are integrating into their overall objectives. Nevertheless, the “growth” is a major partner in the “inclusive growth” agenda and that without growth (and particularly rapid growth) the ability of distributional gains alone to produce major reductions in poverty is limited.

1.B) Growth and other development agendas.

While there has been a lively debate about the relative importance of objectives in development with some proposing a greater emphasis on aspects of human well-being that were not reflected in standard measures of aggregate marketable income (such as GDP or consumption expenditures) such as health, education, However, while this has been incorporated into development objectives (as in the MDGs), it is also widely recognized that without growth (preferably broad based growth) the prospects for attaining the MDGs (or improvements in the HDI) are limited.

The upshot is that the resurgence of interesting in promoting economic growth is the recognition that the legitimate agendas that were seen at some early stages of debate as “competing” objectives to economic growth are in fact complements with economic growth—so that growth makes these objectives easier to accomplish and accomplishing objectives about nutrition, health, education, safety nets can themselves promote growth.

This opening is section mainly just by way of motivation of the “growth analytics” relative to other priorities and areas of emphasis of other donors. There is no contradiction between “growth analytics” and “inclusive growth/pro-poor growth/broad based growth/poverty focused growth/benefit incidence sensitive growth/distribution adjusted growth” or “whatever modifier about the incidence of growth gains across the income distribution one cares to choose growth.” Also, as we will see, there is less contradiction to “growth analytics” agendas and meeting other targets for service.

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2 It turns out that some of the debate about whether “growth” promotes “poverty reduction” hinges on comparing household survey based measures of income/expenditures with national accounts based estimates of growth. On close investigation in India for instance, much of the apparent failure of growth to translate income commensurately rapid gains in poverty is because national account growth of aggregate consumption is higher than household reported growth of aggregate consumption (rather than changes in inequality) (Deaton and Kozel 2005). This leads one into quite technical issues about why these two differ but which are not fundamentally about the question of the relationship of growth and poverty (Deaton 2005).
provision than with other characterizations of the macro agenda which emphasize stabilization.

2) The limitations of prior approaches to promoting economic growth

In understanding how to apply a new approach it is of considerable value to consider why the prior approach is now thought to have failed. This helps keep clearly in mind the dangers the new approach faces, both analytically, empirically, and in practice. This subsection addresses briefly why the previous attempts at promoting growth have proved inadequate (i) analytically and empirically as a description of the relevant aspects of economic growth as related to development concerns, (ii) as a guide to country strategy in “policy reform” and (iii) in guiding the actions, instruments. The tactics by donor agencies interested in promoting growth are addressed in section 5.

2.A) Disciplinary Experience: Growth theory, macro, and the standard economics of “reform” as an inadequate guide

There is something of an ongoing paradigm shift in people thinking about the promotion of economic growth for development, and *a la* Kuhn, like any paradigm shift it has as much to do with a cumulative failure in the belief that the “normal” science of the previous paradigm would lead to answers to questions of interest as with having alternative theories which have yet provided robustly superior answers.

While any brief overview of this highly controversial topic will be open to critique, let me at least present a narrative. In economics there has a standard three-fold division between:

- **“growth theory”** (of either the neo-classical or the endogenous variety, which is much less important for development than it might seem, more on this below) which was about the evolution of the equilibrium steady state level of output (per person or per worker),

- **“cyclical fluctuations”** which was about the temporary, short-run deviations of the economy from its steady state path of potential output, and

- **“microeconomics”** which is about individual sectors or topics and which usually focused on the consequences for equilibrium levels or efficiencies of outcomes under different policies.
Table 1: Evolution of economic approaches

<table>
<thead>
<tr>
<th></th>
<th>First era of development economics (50s to 1982)</th>
<th>Era of stabilization and adjustment (1982-2002)</th>
<th>Growth Analytics critique</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fluctuations, cycles, “macro”</td>
<td>Not too much attention</td>
<td>Major focus was the elimination of the internal and external disequilibria</td>
<td>Stabilization of very large disequilibria is necessary, but “more is not better” and far from sufficient</td>
</tr>
<tr>
<td>Growth economics</td>
<td>Driven by investment/capital and two gap models</td>
<td>Solow model and its extensions (Barro, MRW) and endogenous growth models</td>
<td>Growth economics about long-run/ steady-state equilibrium does not explain variations in time and space of growth over relevant horizons</td>
</tr>
<tr>
<td>“Microeconomics”, economics of the sectors (e.g. infrastructure)</td>
<td>Markets generally regarded as weak and thin and hence need strong state intervention</td>
<td>“Getting prices right”, emphasis on reforms to increase “efficiency” in markets</td>
<td>“Growth” gains oversold (relative to microeconomic estimates)—need much more complex dynamics to make gains large</td>
</tr>
<tr>
<td>General view of the capacity of the state</td>
<td>The state seen as the main instrument of modernization and economic transformation</td>
<td>States seen as unable as unable to pre-commit to stable policies, weak in implementation, at worst, predatory</td>
<td>State capacity varies widely across states and even across areas of policy within states, modalities of intervention less susceptible</td>
</tr>
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The first burst—1960s to 1982. In this era the notion was that expanding investments in physical (and human capital, which was not neglected) would be sufficient for growth. A key problem was that markets (including capital markets) were weak so that the key growth gaps (savings-investment and foreign exchange) would have to be actively planned and managed by the state. The state was seen as a modernizing force and the most progressive instrument as compared to markets (which were thought to be thin, weak, dominated by external actors and/or domestic elites) or other social forces.

Stabilization, adjustment, growth, and “reform”: 1982-2002. A new area of thinking about development and policies was initiated by default or incipient default on external debts. The proximate cause was the Volker shock of reduced financing and increased interest rates that precipitated economic crisis in many economies that had been financing large current account deficits and hence accumulated large stocks of debt. This debt crisis led to a need to simultaneously “stabilize” these economies and to “adjust” and promote more rapid economic growth. The stabilization needed had intrinsically had nothing to do with increasing economic growth rather was about a set of policies that led
to both absorption reducing and expenditure switching policies to address the dual internal and external deficits that were unsustainable. The “adjustment” component of the reforms was intended to increase the efficiency of the economies by eliminating distortions and also increase private sector investment.

This set of very practical, very urgent, policy imperatives combined with a disappointment at the results of the previous growth strategies led to the related, but distinct, three-fold, set of ideas that could be called something like the “Washington Consensus.”

What were the key failings of economics (of growth, of fluctuations, or reform) during this period? See Appendix 2 for a brief overview of the empirical issues raised in the research on economic growth—in particular (i) why the linear growth regressions, in spite of thousands of papers, are of almost no help at all and (ii) why the “exogenous” versus “endogenous” approach to modeling is also of almost not real relevance.

Conceptually the two distinctions between (i) fluctuations and growth and (ii) micro and macro are central to understanding a new approach to growth analytics.

First, there could easily be confusion between the discussions of “fluctuations” or macroeconomic issues and “growth.” In particular, the resolution of (huge) macroeconomic imbalances did not necessarily correspond to an “acceleration” of growth. Stabilization programs frequently staunched the losses and ended periods of crisis related negative growth, but without necessarily restoring positive growth. But, in retrospect, there was very little in the actual theories of macroeconomic stabilization—which was essentially about reducing volatility around a trend that was often assumed pre-determined—that would have suggested large growth effects from stabilization.

Again, the literature has come to have a much more nuanced view that indicators of macroeconomic imbalance (like inflation or the black market premium) while associated with growth, are (a) non-linearly related to growth so that reduction from very high levels is associated with growth performance primarily be staunching falls in output rather than accelerating the long-run growth trend (which macroeconomic theories of fluctuations never claimed) (the best evidence on this is for inflation in Bruno and Easterly (1995) and (b) these macro imbalances are difficult to disentangle from other just large messes (e.g. just bad governance or large negative shocks or both) and hence attribute causality (a point emphasized by Rodrik in the context of distinguishing indicators of “trade policy” from “external crisis” e.g. Rodriguez and Rodrik 1999 “A Sceptic’s Guide…”).

The second distinction that economics needs in explaining the questions of interest around economic growth was the inability to reconcile the microeconomics of sectoral reform with the expected or actual growth impacts, what I call the Harberger triangle-Solow Invariance problem.

One way to think about growth impact of microeconomic reform is that the efficiency gains produce higher sustainable levels of output. As the economy transits from the
lower to the higher level of income there are transition effects of higher growth. Following this logic one could call the sectoral reform elements of “structural adjustment” programs “growth” policies even though in most standard growth models there were only level effects of policy reforms (for reasons that went very deep into the analytics/mathematics of the Solow models). The problem with reconciling the microeconomics of reform and efficiency gains and level effects and “growth” policies were two fold.

One, nearly all of the micro-economic estimates of the gains of reform was using comparative statics and did not in fact specify a transition path of the reform. Would realizing the efficiency gains take one year? Five years? Ten years? Was the path of the gains non-linear? Non-monotonic? It was not implausible in many cases that since reforms first eliminated distortions and affected existing industries and only then would the efficiency gains come as resources were allocated to new activities, that the transition path would first have losses and only later gains. But, as with many areas of economics, the transition issues were difficult (if not intractable) and hence the dynamics were mostly hoped for, rather than well-specified.

Two, the original Harberger insight, about the gains from trade reform in Chile, was that welfare gains, the “triangles” were always pretty small, even in the face of pretty substantial distortions. It was difficult to come up with analysis of the gains from any microeconomic reform (e.g. financial sector, trade reform) that predicted efficiency gains much larger than, say, 5 percent of GDP. Suppose a linear transition path in which the full accomplishment of these gains takes 5 years—then this reform would add one percent per year to growth and lead to a level of output five percent higher after five years.

The problem with both of those calculations is that they were small relative to the volatility in growth rates that are actually observed in practice and smaller than the ambitions of policy induced growth acceleration. Growth accelerations of 3 to 5 percent per annum sustained over 10 years or more are not uncommon. But 5 percent higher growth for 10 years implies that output is 63 percent higher.

Figures 1 and 2 are hypothetical simulations that illustrate the distinction between “growth” effects, in the sense of long-run, steady state changes in the growth rate, and “level” effects (either permanent or temporary) with their associated dynamics of economic growth as a transition across levels.

In Figure 1 illustrates a country growing at a base case of 2 percent per annum that then (at year 5) experiences and three different types of positive shocks. One is a permanent increase in the rate of growth of 2 percent per annum (this magnitude was chosen because 2 percent is roughly the mean developing country growth rate and 2 percent is also roughly the cross national standard deviation). Another is a permanent increase in the level of output, suppose from an efficiency enhancing micro-economic reform, with 5 percent chosen as a typical Harberger level effect. A third is a temporary
positive shock to the level of output—like a positive resource boon or exceptionally favorable weather.

The three panels show the simulated evolution of output, growth rates of output (as five year moving averages), and deviations of output from baseline assuming very simple dynamics for the level effects (e.g. the permanent and temporary level effects are achieved by closing a certain fraction of the gap between current and new steady state GDP in any given year such that half of the gain happens in five years. The dynamics are that the growth gain is immediate (but shows up only slowly of course in five year averages).

Figure 2 is exactly the same, with the difference that in this case the permanent and temporary innovations/shocks to the level of output are 25 percent, instead of 5 percent, with the same dynamics of adjustment.

These two graphs illustrate the key notion that the key difference in the dynamics of output over the medium (5) to longer (10, 15, 20) run is not only whether a reform brings about “growth” effects or “level” effects. The real question is whether the level effects of the reform shock are large.

Figure 1 illustrates the Harberger triangle problem that modest sized efficiency gains combined with gradual adjustment dynamics cannot be the source of any substantial fraction of the observed variations on growth rates, either across countries or over time (e.g. growth acceleration).

Figure 2 illustrates that if the level effects are large then the growth implications over medium to long-run horizons are indistinguishable. In this simulation both the growth rate and level effects are higher for the large (25 percent) increase in the steady state level of output than for the large impact (2 ppa) on the steady state growth rate.
Figure 1: Illustration of medium run dynamics of growth with modestly sized shocks to output levels

Evolution of output, with reform at year t=5, baseline growth of 2%

Impulse response function: Five year growth rates

Impulse response function: Cumulative increase in level of output
Figure 2: Illustration of medium run dynamics of growth with large shocks to output levels

Evolution of output, with reform at year $t=5$, baseline growth of 2%

Impulse response function: Five year growth rates

Impulse response function: Cumulative increase in level of output
The main point of this comparison, and a point that is in some ways central to a growth analytics approach, is to think of the “impulse response functions” of output to a set of possible actions at various time horizons (e.g. one year, five year, 10 year, etc.). The “long run” impacts or “steady state” or “equilibrium” coefficients are the impulse response function at infinity\(^3\). But growth analytics is interested in the impulse response function of levels and growth rates at horizons of 5 and 10 years.

One way to conceptualize the goal of a diagnostic or growth analytic is to identify the action that will produce (has an impulse response function) an anticipated, large, sustained increase in output and hence a substantial and sustained episode of rapid growth as an adjustment to that higher perceived sustainable level.

2.B) Policy Experience: The strategy of promoting economic growth—countries and implementation

The connection between the experience of economics as a discipline and the experience of implementation of economic reforms is often not made clear. While there is some connection, one should not confuse a narrative of economic thought and research with a narrative of what practitioners in policy were experiencing and thinking as these often diverge or conflict for significant periods. There are three points to be made about the country specific results from growth promoting policy reform, which provides a another, different, set of lessons from the disciplinary experience.

2.B.i) Market oriented reform can work-orthodox principles, heterodox implementations.

It is not the case that the experience of the 1980s and 1990s until today “proves” that the model of market oriented economic reform was misguided. In fact, one of the major puzzles is that in many instances there seemed to be “too much” growth responsiveness to what were relatively modest reforms in moving to more “market oriented.” The star growth performers of the 1990s (and until today) were nearly all formerly socialist countries moving to become more market economies—the three obvious examples being the world’s two largest countries China and India (plus Vietnam).

For instance, there is a debate about economic growth in India. The data is clear that there is a clear acceleration of trend growth by at least 2 percentage points per year that began in the late 1970s/ early 1980s. It is almost certainly going overboard to use that growth acceleration to downplay the significance of the reforms in 1991 as it is easy to

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\(^3\) The main distinction between “exogenous” and “endogenous” growth models is whether the impulse response function of any policy action is non-infinite (the Solow invariance property since the impulse response function of growth must tend to zero) or infinite. I think it can be safely said that if there are available actions that increase sustainable income per capita by even a factor of 2 (which if the adjustment took 20 years would accelerate growth by 4 ppa) this is of enormous “growth” interest even if the steady-state impact on growth is zero. The development question is not about infinite versus finite (the exogenous/endogenous) at the infinite horizon but about big (factor multiple not percentages) medium to long (2 to 30 year) versus small (Harberger triangles) impacts on levels.
argue from the growth slowdowns in Latin America that without further reform the growth (which also may have been in large part sustained in the late 1980s by fiscal stimulus) growth would have tapered off. The interesting point is that growth did accelerate and while there are legitimate points on all sides of this debate, what is striking is that at the time there was not a perception of a big bang reform. The fact that there is a debate about whether the growth acceleration was caused by “business friendly” moves by the government (Rodrik and Subramanian) or early liberalization (Panagariya) or fiscal stimulus reveals that the cause must be subtle—even though it proved to have major, and with the view of hindsight and intervening policy decisions, sustained growth impact.

There has been considerable intellectual pushback against many of the mainstays of market oriented reform. At its root this is not based on evidence that economic reforms of the quite standard, dare we say, “neo-liberal” type (e.g. trade liberalization, financial sector reform, tax reform) never pay off. Nearly all of the reforms that have been pursued have at least some episodes of growth acceleration that appear to be associated with the onset of reforms that move towards, rather than away from, market-oriented fundamentals.

However, what is clear is that orthodox reforms implemented in orthodox ways have not always paid off. For instance, Figure 3 shows the evolution over time of an index of “policy” that roughly measures conformity to the Washington Consensus set of policies with a box-plot for all Latin American countries for each year. What is striking about the figure (and the reason for showing the distribution across countries in the region and not just regional averages) is that by the end of the 1990s nearly all countries have “better” policies than the best country in 1985. And yet the growth pay-offs were modest, at best. Most Latin American countries arrived at 2002 with roughly the same per capita income as in 1982 (the onset of the debt crisis). To blame this on a lack of reform (as Anne Krueger has done, in her piece, Meant Well, Tried Little, Failed Much: Policy Reforms in Emerging Market Economies) does not square with the facts.
The important point about country experiences is not so much that the fundamental principles behind most orthodox reforms were misguided but that the way in which these orthodox principles were achieved, the forms used to pursue the objectives were unnecessarily “one size fits all.”

For instance, the notion that for individuals to invest (in the broadest sense, including innovating) they need to have reliable claims on the future fruits of their efforts is sound—and fits a range of country experiences. However, the notion that in order to create secure claims one needs “property rights” conceived of in a certain way and that this conception of “property rights” must be implemented in classic modern Anglo-American fashion with ownership defined in a certain way, enforced by a judiciary capable of defending against both predation of the state and claims of others, immediately sets reform on a certain path.

The notion that one needs a certain implementation of fundamental principles is belied by the variety of country experiences, both by the successes don’t do it in the orthodox and failures try in the orthodox way. There is no question that investors in China feel they have secure claims. There is no question that during the period of Soeharto many people in Indonesia (but not all) felt they had secure claims. By the same token, countries that undertook reforms to establish property rights actually had the
impact of displacing one mode of creating secure claims but without necessarily replacing it with another.

2.B.ii) Clarity about what the “policy” in “policy reform” means

There is an argument that the entire approach of attention to de jure reforms of policy missed the point, in some instances much more than others. I believe that clarity on the difference between de jure and de facto policy is one key to understanding growth accelerations and key parts of growth analytics and hence, while there is some cost to the detour it is worth the trip through several key definitions. As I will argue a great deal of the discourse on “policy” has been, at best, ambiguous and confusing, due to fundamental lack of agreement on what key terms actually mean. (A more elaborate and empirically illustrated description of the points made in this section is in Appendix 3).

A policy is a mapping between states of the world and actions by an agent of an organization. This is true of a government policy or the policy of a retail store (“refunds only with a receipt”) or a fire insurance policy (an agreement on payments conditional on realization of states of the world).

A notional policy is a statement of the desired mapping from the states of the world without a complete specification of the way in which the policy will be implemented.

A de facto or realized policy is either a description of what will happen across states of the world. The notional policy is one element of realized policy but realized policy can either be very close to notional policy or realized policy may in fact have very little to do with notional policy.

A policy action is just one outcome of the implementation of a realized policy.

A complete policy specification includes not only a description of the notional policy (the mapping from states of the world to actions) but also a coherent behavioral model of the actions of the agents responsible for policy implementation and a specification of the mechanisms influencing the incentives facing the agents.

The mechanisms of policy implementation include a specification of the operation of the direct organizations of implementation, in particular the actual processes whereby states of the world are determined organizationally (e.g. who has authority to determine the state of the world, the processes and procedures to be used, how state of the world declarations can be contested internally or externally) and the background institutions that constrain the organizations in mechanism design (and the specification of background institutions with respect to one policy may include direct organizations of implementation). For instance, an organization may desire to have a policy in which its agents caught stealing are fired, a relevant background institution might be organizations
which provide worker protection from dismissal which make this difficult or impossible.

**Figure 4: Cannot diagnose policy failure without a definition of “policy”**

### Realized States of the World
- Direct organizations of implementation (e.g. agencies, Ministries)
- Front-line Providers (e.g. policemen, Teachers)
- Background institutions (e.g. judiciary, legislative oversight, professional associations, civil society)

### Definition of “policy”
- Notional policy (de jure)
- Actual policy (de facto)

**Capability** (of the state broadly or a specific organization) can be defined as the ability to consistently produce actions by the agents of the organization across a variety of situations (states of the world) that comply with organizational policies and procedures and further the goals of the organization. This is as true of private firms as not-for profit organizations (from religions to universities to hospitals) as for government agencies. This needn’t involve mimicking the organizational practices of private firms—it can be accomplished in a variety of ways from high powered incentives to fear and intimidation to rigorous selectivity to sustained inculcation of the organization’s values (and likely some combination of all of the above).

Why are these definitions central to growth analytics? Investor behavior (with “investor” taken in its broadest sense as undertaking new activities, investing more, innovating, hiring) is based on expectations of profitability across states of the world and firm’s expectations are formed on the basis of the firm/agent’s own beliefs of policy implementation. What matters to the actions of a particular firm is not notional policy but the specific policy actions taken by agents of the government that affect their profitability in various states of the world.

This set of conceptual distinctions is crucial to understanding the heterogeneity of the responses to the “policy reforms” undertaken. As often large gains were thought to be brought about by simple changes in policy actions even without change in policy or in policy implementation.

2.B.iii) Across the board?
Finally, the experience to date calls into question either the necessity or desirability of any kind of uniform “across the board” reformism. The view that the gains to pushing ahead on reforms on a number of fronts simultaneously was a natural result of several processes (in particular interactions with donors—see next section). This approach however, had three major risks.

- This often overtaxed extremely limited implementation capability. Even countries in rich industrial countries pursue a relatively few major reforms at any point in time. Yet many poor countries with weak policy making capacity and low implementation capability would promise to undertake major reforms in several sectors simultaneously. This has the danger of creating unduly optimistic goals and targets, which, when these are not reached can create the impression the government is not sufficiently “committed” to reform.

- Across the board approaches ran risks of failed reforms in one sector that spilled over into making others more difficult. Particularly reforms that entailed politically unpopular transition costs, when failed, could create a negative dynamic in deflating expectations about “reform” across the board.

- An “across the board” approach tied up political capital in long drawn out contests for reforms whose gains were far from certain.

2. C) End of the beginning

The upshot is that from the perspective of neo-classical economists the “Washington Consensus” approach is easy to defend as a strategy for stabilization, if the main problem were persistent macroeconomic disequilibria and its attendant ills, and reasonably easy to defend as a set of sensible reforms. But even for committed neo-classical economists it is very difficult to defend as a comprehensive guide to development or even promoting economic growth.

Organizations like the World Bank launched reports engaging in a wholesale reassessment of the experience of economic in the 1990s (Economic Growth in the 1990s: Learning from a Decade of Reform, 2005) and hence of the intellectual underpinnings of the endeavor (see Dani Rodrik’s review “Good bye Washington Consensus, Hello Washington Confusion).

It might seem odd that this entire, long, section comes before any description of what growth analytics or growth diagnostics might be. However, I believe it is crucial to understand the historical evolution of thinking to avoid simply recreating a new set of mistakes that are just the mirror opposite of the previous ones. Before getting into the details of growth analytics in the next section, I wish to conclude with a characterization of the shift in mind set from the previous approach, taken from Dani Rodrik’s (2008) paper “The New Development Economics”—I quote at length since he said it so well:

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4 I was one of the authors of this report.
While it would be an exaggeration to say that the previous consensus has totally dissipated, macro-development economists operate today in a very different intellectual environment. Gone is the confidence that we have the correct recipe, or that privatization, stabilization, and liberalization can be implemented in similar ways in different parts of the world (see World Bank 2005 and Rodrik 2006). Reform discussions focus on the need to get away from “one-size-fits-all” strategies and on context-specific solutions. The emphasis is on the need for humility, for policy diversity, for selective and modest reforms, and for experimentation. Gobind Nankani, the then vice-president of the World Bank who oversaw the effort behind the Bank’s Economic Growth in the 1990s: Learning from a Decade of Reform (World Bank 2005) writes in the preface of the book: “The central message of this volume is that there is no unique universal set of rules…. [W]e need to get away from formulae and the search for elusive ‘best practices’…. “ (World Bank 2005, xiii).

Rodrik characterizes the new approach as “experimentalist” (which can apply to both micro and macroeconomic concerns) and contrasts this with the “presumptive” framework:

Perhaps the best way to bring this micro-macro convergence into sharper relief is to describe how it differs from other ways of thinking about reform. Here is a stylized, but (hopefully) not overly misleading representation of the traditional policy frame which the new approach supplants:

• The traditional approach is presumptive, rather than diagnostic. That is, it starts with strong priors about the nature of the problem and the appropriate fixes. On the macro front, both import substituting industrialization and the Washington Consensus, despite their huge differences, are examples of this frame. On the social policy front, the U.N. 27Millennium Project is a good example insofar as it comes with ready-made solutions—mainly an across-the-board ramping up of expenditures on public infrastructure and human capital—even though Jeffrey Sachs would presumably argue that the Project’s recommendations are based on highly context-specific diagnostic work.

• It is typically operationalized in the form of a long list of reforms (the proverbial “laundry list”). This is true of all the strategies mentioned in the previous item. When reforms disappoint, the typical response is to increase the items on the list, rather than question whether the problem may have been with the initial list.

• It emphasizes the complementarity among reforms rather than their sequencing and prioritization. So trade liberalization, for example, needs to be pursued alongside tax reform, product-market deregulation,
and labor-market flexibility. Investment in education has to be supported by investments in health and public infrastructure.

- It exhibits a bias towards universal recipes, “best-practices,” and rules of thumb. The tendency is to look for general recommendations and “model” institutional arrangements. Recommendations tend to be poorly contextualized.

The new policy mindset by contrast has the following characteristics:

- It starts with relative agnosticism on what works and what doesn’t. It is explicitly diagnostic in its strategy to identify bottlenecks and constraints.

- It emphasizes experimentation as a strategy for discovery of what works. Monitoring and evaluation are essential in order to learn which experiments work and which fail.

- It tends to look for selective, relatively narrowly targeted reforms. Its maintained hypothesis is there exists lots of “slack” in poor countries. Simple changes can make a big difference. In other words, there are lots of $100 bills on the sidewalk.

- It is suspicious of “best-practices” or universal remedies. It searches instead for policy innovations that provide a shortcut around local second-best or political complications.

3) Technical issues of the implementation of growth analytics

It has taken some time to get to meat of the issue, which is “what is a growth diagnostic and how do I do one?” But I hope the background has been useful, as if one wants to get to the right answer one has to start with a properly posed question and if growth analytics (including the variant of an approach to growth analytics called “growth diagnostics” I will discuss in detail) is to arrive at different answers, it has to start from different, or at least differently posed questions.

I propose that the key question for a growth diagnostic is:

What are the feasible actions in the country’s current circumstances that would initiate (or sustain) an episode of sustained, broad based, rapid growth?

This formulation of the question has four elements that differ from the usual approach.
“initiate an episode”—stresses the often episodic nature of economic. Economic growth rates over time have definite, identifiable, starts (and stops). The previous policy discourse treated economic growth as a linear process moved gradually up or down. In growth diagnostics one is looking for “phase shifts”—like ice melting into water—that change the underlying nature of the growth dynamics.

“country’s current circumstances”—emphasizes that one does not expect to find “magic bullets” that will apply to all countries but rather than each country begins from a set of circumstances—their current economic performance, capabilities, economic structures, existing relationships, etc.

“feasible actions”—this is deliberately phrased so as to not pre-judge whether it is “policy reform” in the conventional sense that is the key. The “action” might be a policy shift, but might also be an announcement, or might be a clear policy implementation action that credibly signals a clear shift in direction. This formulation also emphasizes the “feasible” aspect of country capacity for effective, credible action is itself part of the process.

“rapid growth”—the focus, and viewpoint, begins from a search for ways to produce expectations of much greater achievable prosperity—not just smallish efficiency gains—and hence large accelerations in growth rates over the medium run.

Before launching into the mechanics of the implementation of a growth diagnostic, one last clarification. “Growth analytics” I believe refers to any of a number of approaches to the acceleration of economic growth that move beyond the existing framework (e.g. growth theory vs. stabilization vs. microeconomics) and identify the available levers to initiate more rapid growth. “Growth diagnostics” has come to be associated with a particular approach, articulated in a paper by Hausmann, Rodrik and Velasco (2005) and implemented (as we will see more) by these authors and others in a variety of contexts. I will mostly describe the “growth diagnostics” approach as one possibility of a “growth analytic.”

A growth diagnostic can be thought of in four stages:

- Identification of the country’s current growth “state” based on its past and recent performance (section 3.A)
- A diagnostic tool to identify the binding constraints to moving the country into a more favorable growth state, that differentiates among possible “nodes” on a analytic decision tree based on empirical analysis. (section 3.B, with sub-sections for each node).
- Identification of possible “syndromes” (collections of associated symptoms) based on the diagnostic analysis (section 3.C)
- An implementation diagnostic that assesses state capability (section 4)

This process should lead to a set of recommendations for a limited number of concrete actions that are country specific and feasible (administratively and politically)
which are likely to promote more favorable growth outcomes (a transition to a more favorable growth state or acceleration within a state).

3.A) Growth Diagnostic I: Identifying the current growth “state”

Suppose you have a bucket of water and you turn the bucket over onto its side. What will happen? The easy and obvious answer is that the water will flow out in a very different way that when the bucket was upright.

But, with further thought (and realization a question so dumb must be a trick question) one realizes that the answer depends on the “state” that the water is in. If the water is in its solid state, ice, then tipping the bucket over will likely make no difference at all. The ice will remain in the bucket (or at best fall out as a single chunk). If the water was already in its gaseous state, steam, then the steam was already escaping from the bucket when it was upright and will continue to escape when it is on its side.

The point is that the equations of motion of water (how it responds to various actions) depend on its state and there two fundamentally different dynamics: within a phase (acting on ice, water, steam) and phase transitions (melting, boiling).

The essence of nearly all growth models or theories (and, by definition, all of the “growth regression” empirical work that imposes a single equation) so far is that they ignore this distinction and produce a single set of equations of motion (e.g. the typical differential equations of motion that describe the evolution of the equilibrium (or steady state) as being conditioned on a small set of variables and convergence to that equilibrium (or steady state).

Tables 2 and 3 identify the first task of a growth diagnostic as to identify the country’s current “state” and the objective for the desired growth state. Pritchett (2003) identified at least six possible “growth states” (and showed that these states and transition probabilities across states were able to replicate all of the stylized facts about the economic growth). The phase transition probabilities are themselves functions which map actions in existing states into probabilities of transitions into other states.

For instance, a major issue with many countries is that they have appeared to be trapped for a many years (up to several decades) in “stagnation” (near zero growth rates) while not at poverty trap levels of income (e.g. many Latin American countries in the 1990s). The question is how to move out of stagnation into preferably the state of “rapid growth” (or at least “modest growth”).
Table 2: Possible “growth states” and the transition probabilities across states (which are functions of underlying conditions and actions)

<table>
<thead>
<tr>
<th>Poverty Trap</th>
<th>Economic decline/Collapse</th>
<th>Stagnation (non-converging growth)</th>
<th>Modest converging Growth</th>
<th>Rapid converging growth</th>
<th>Global leaders (steady growth)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Poverty Trap</strong></td>
<td>( \Pi_{PT, PT}(.) )</td>
<td>( \Pi_{PT, ED}(.) )</td>
<td>( \Pi_{PT, ST}(.) )</td>
<td>( \Pi_{PT, MG}(.) )</td>
<td>( \Pi_{PT, RG}(.) )</td>
</tr>
<tr>
<td><strong>Economic decline/Collapse</strong></td>
<td>( \Pi_{ED, PT}(.) )</td>
<td>( \Pi_{ED, ED}(.) )</td>
<td>( \Pi_{ED, ST}(.) )</td>
<td>( \Pi_{ED, MG}(.) )</td>
<td>( \Pi_{ED, EG}(.) )</td>
</tr>
<tr>
<td><strong>Stagnation</strong></td>
<td>( \Pi_{ST, PT}(.) )</td>
<td>( \Pi_{ST, ED}(.) )</td>
<td>( \Pi_{ST, ST}(.) )</td>
<td>( \Pi_{ST, MG}(.) )</td>
<td>( \Pi_{ST, RG}(.) )</td>
</tr>
<tr>
<td><strong>Modest growth</strong></td>
<td>( \Pi_{MG, PT}(.) )</td>
<td>( \Pi_{MG, ED}(.) )</td>
<td>( \Pi_{MG, ST}(.) )</td>
<td>( \Pi_{MG, MG}(.) )</td>
<td>( \Pi_{MG, RG}(.) )</td>
</tr>
<tr>
<td><strong>Rapid Converging growth</strong></td>
<td>( \Pi_{RG, PT}(.) )</td>
<td>( \Pi_{RG, ED}(.) )</td>
<td>( \Pi_{RG, ST}(.) )</td>
<td>( \Pi_{RG, MG}(.) )</td>
<td>( \Pi_{RG, RG}(.) )</td>
</tr>
<tr>
<td><strong>Steady growth (near the leaders)</strong></td>
<td>( \Pi_{GL, PT}(.) )</td>
<td>( \Pi_{GL, PT}(.) )</td>
<td>( \Pi_{GL, PT}(.) )</td>
<td>( \Pi_{GL, PT}(.) )</td>
<td>( \Pi_{GL, PT}(.) )</td>
</tr>
</tbody>
</table>

Source: Adapted from Pritchett (2003).

The first step in a growth diagnostic is to identify the countries present state, which depends on several key questions, all of which can be answered with very basic data about the evolution of GDP.

While it would seem to go without saying, reviewing not just recent, but a simple long period growth of the level of economic growth can be enormously useful. As memories are often short, one can focus on recent bursts of growth over the last 3 years or 5 years. But if can make a big difference to who one interprets that growth if it was preceded by a sharp fall and the recent growth is a recovery to previously attained levels (which can be indicative of recovery with no “structural transformation”—shift in productivity or composition of capabilities) or if it actually pushes past previous levels.
Figure 4a: Short period graph…

Peru: a growth star?

Figure 4b…can have a potentially different interpretation than long-period graph…

... or just recovering from a growth collapse?

Source: Hausmann, 2008 (Presentation)
The identification of a country’s current growth state (and its most recent transition) is essential even before one begins a growth diagnostic proper, to distinguish among several possibilities.

**Economic decline/growth collapse.** If a country is currently in a period of negative growth or major macroeconomic crisis (e.g. runaway inflation) then the pressing issue is how to transit out of the crisis state into a better position—even if it is only stagnation or modest growth. To some extent, much of the “stabilization” component of adjustment efforts of the 1980s or 1990s (which were treated as if they were “growth” exercises) was about addressing these issues, in which a country had “overheated” or allowed structural disequilibria (e.g. exchange rate over-valuation) during a period of rapid or modest growth so that they had a sudden shift into decline or crisis. As discussed above, many countries were successful at the “stabilization” without restoring growth.

It remains an open question on the sequencing of the “stabilization” and “growth promoting” components of reform, as the measures undertaken in the two situations may often work at cross purposes. Nevertheless, one may want to do a phased growth diagnostic in these situations that recognizes explicitly the “stabilization” and “resumption of rapid growth” phases in order to prevent the unnecessary prolongation of the “stabilization” stage.

**Rapid Growth.** Treating growth as episodic emphasizes that “rapid growth” as a tendency to end. Countries currently in an episode of rapid growth (that is not driven by a resource boom) are primarily concerned with how to maintain that growth, which tends to focus on several features: (i) avoiding the typical boom-bust cycle in asset prices which build to a bubble ending growth spurts in more or less massive financial crises (e.g. Japan in the 1980s, East Asia, the USA currently(?)), (ii) maintaining adequate investment to keep infrastructure from becoming a bottle-neck, and (iii) looking ahead to the next stage in their productive transformation.

Countries in a resource boom driven episode of rapid growth (and quite recently there are many countries that have initiated rapid growth on the basis of the boom in oil and mineral prices (e.g. copper) face an entirely different set of issues. The real question is how to translate the gains of the boom into self-sustaining growth (a feat that, tragically, has been too infrequently accomplished).

**Poverty Trap.** While the very notion of a “poverty trap” remains in many ways (and rightly) contested, I would argue that although “stagnation” countries and “poverty trap” countries are both characterized by very low or zero recent growth, it is useful to distinguish between the two cases, for several reasons.

First, the economic structure of the economies at different levels of income will be very different, usually in at least three senses. One, agriculture will be more important and since among low income countries over half the population relies on agriculture for their primary employment, agriculture and more generally the rural sector have to be a primary focus in poverty trap situations in ways not necessarily the case for stagnation.
The earlier history of the growth booms in Asia often relied on significant progress in the agricultural sector, either productivity (e.g. Green Revolution) or liberalization (e.g. China, Vietnam) or both. Second, the export composition is likely to be very different, still focused on primary products at low levels of processing, and hence the set of available opportunities quite distinct. Third, the industrial structure is likely still very rudimentary.

Second, in general in poverty trap situations the extended periods of poverty (or decline) will have produced weaknesses in all major institutions (and perhaps many elements of a “modern” economy barely exist. In these situations the “implementation diagnostic” related to fundamental capacity is likely to be very different than in countries with much more sophisticated and modern economies in a period of stagnation.

The basic idea is that even the way the growth diagnostic is to be framed (e.g. the types of issues that will be analyzed, the sectors examined, the range of possibilities explored) is likely to be different in a “poverty trap” state (e.g. Chad, Nepal, Laos, Mozambique) than in a “stagnation” state in a more middle income setting in which the pre-stagnation state may have been a period of extended rapid growth (e.g. Brazil, El Salvador, South Africa, Indonesia (post 1998)). This is not to say the “growth diagnostic” approach in general cannot be applied, but one can expect different questions of interest to emerge.

**Stagnation (or Modest Growth).** Given the massive slow-down in economic growth in the 1980s and 1990s there are many countries who existed a state of modest or rapid growth into a state or slower growth (e.g. many countries in Latin America, the Middle East, the Philippines, South Africa) as well as the countries emerging from varieties of socialism who have stopped the decline but have yet to initiate rapid growth (e.g. countries of the FSU and many non-EU accession Eastern bloc countries). This also includes countries who are in the stage of attempting to recover from a recent negative shock or collapse of a previous boom (e.g. Indonesia post 1998).

Of the various growth states, the distinction in the set of issues facing “stagnation” and “modest” growth are the least clear, as there are few qualitative differences between countries growing at say .5 to 1 percent versus 2 to 2.5 percent.
### Table 3: Identification of current “state” based on recent growth performance, level of income, and previous transition state

<table>
<thead>
<tr>
<th>Poverty Trap</th>
<th>Economic decline/ Collapse</th>
<th>Stagnation (non-converging growth)</th>
<th>Modest growth</th>
<th>Rapid (converging) growth</th>
<th>Steady growth (near the leaders)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recent (3, 5, 10 year) growth rates in per capita GDP</td>
<td>Current level of per capita GDP</td>
<td>Latest structural break in growth, from which previous state</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Near zero</td>
<td>Very low Using PWT6.2 in 2000 IS1,000 (21), (nearby: Rwanda, Uganda) IS1500 (38), (nearby Nepal, Mongolia, Senegal) IS2000 (45), nearby Bangladesh, Cote D’Ivoire, Haiti)</td>
<td>Must come from either poverty trap or from Economic Decline/Collapse (re-entering poverty trap from above)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Negative (more than negative 1 ppa)</td>
<td>Any</td>
<td>Any (except historically none from global leaders)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Near zero (from small negative to small positive, but less than OECD)</td>
<td>Above level of income that would be consistent with “poverty trap”</td>
<td>Can be from Decline (result of stabilization) or from Modest or Rapid growth (growth deceleration)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Above OECD level (≈1.8 ppa) but below “rapid” (around 3.5-4)</td>
<td>Any</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sustained growth (5 or more years) above 4 ppa (to distinguish from strong cyclical recovery)</td>
<td>Any</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Around 2 percent per capita</td>
<td>OECD levels</td>
<td>Few breaks, an absorbing state, so from RG or MG</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**Distinguishing growth states.** As one of the major ideas behind growth diagnostics is the prevention of the excessive extrapolation of lessons from one situation to another, distinguishing among growth states is the first means of doing this. For instance, a common reaction to a growth diagnostic produced for a middle income “stagnation” stage country may well be “But that is not the problem my country faces” to which the right response is “Precisely.” South Africa’s problems almost certainly are not India’s current problems or Mozambique’s current problems. Nevertheless, one does want to be able to create a body of knowledge around doing growth diagnostics in which one would expect the set of diagnostics and therapeutics recommended are likely to be more similar across countries in starting from similar “states” than generalizing the technique.

3.B) Growth Diagnostic II: Identifying the binding constraint to a transition to a more favorable growth state (acceleration of growth)

This note will treat over very schematically the details of the growth diagnostic for a specific country. This is because this is expounded at some length in an available “mindbook” guide to growth diagnostics as well as existing training materials by Ricardo Hausmann) that he will be presenting at the training (and which is now available as a working paper, Hausmann, Klinger, Wagner 2008). I will mainly draw on these materials to illustrate the approach, the possible “nodes” and “syndromes” and the types of evidence used to differentiate among these nodes.

**Conditions for greater investment.** A growth diagnostic begins from a fundamental first order condition. The first order condition is the decision whether a firm would choose to “invest.” (This approach was first proposed and described in “Growth Diagnostics” Hausmann, Rodrik and Velasco 2005).

This notion is of “investment” in the broadest sense, from investments to expand physical facilities to innovations in process, introducing new products, or more generally any initiative that expands production. I stress this because one does want to fall back into some notion that this is an old “two-gap” approach with the notion there is a necessary “investment” to achieve a target growth rate. Empirically many growth episodes begin and are sustained for some time without necessarily there being large increases in typically measured investment or “capital.”

If investment is low then the marginal benefit must be low relative to the marginal cost. This then provides a nice analytical structure to examine the two sides of the question—either the perceived returns to the firm are low or the cost of financing is high.
A simple specification of a firm’s production function (and how that maps into profitability) lays out three prototypical causes of low returns to investment, many of which have distinct possibilities, which lead to “nodes” or final branches of a diagnostic.

**Source:** HKW 2008
Lack of complementary factors available in the economy might make productivity low—obvious candidates being physical infrastructure (that is, publicly provided services that complement the firm’s own productivity) or human capital and/or skills.

Lack of the firm’s ability to reliably capture for itself the benefits in the future of its own investments and initiatives today—which is referred to “appropriability.” This appropriability can come in two major forms:

- More “macroeconomic” or systemic risks of inter-temporal policy shifts that lead to large and unpredictable shifts in relative returns.
- More “microeconomic” or risks faced by individual sectors or even firm specific risks, mostly as a result of a weak institutional and organizational environment such that firms face only weak claims on their future profit streams. These “micro” appropriability risks run the gamut from poor protection of property rights (lack of constraints on the executive) to corruption in implementation of regulations in a weak institutional and organizational environment and hence low state capability (disorganized corruption). Appropriability is not just an issue of state predation, a weak set of market supporting institutions (e.g. for contracting) and missing markets can also inhibit firms from investing.

Coordination is necessary when firm’s profitability depends on the activities of other firms. This particularly affects the process of innovation and the structural transformation of economies. This implies that, with given economic structures and the space of available “capabilities” in a country there is low profits on existing activities and yet new activities will not spontaneously emerge. This has been a new area of work emphasizing the process of “self-discovery” (Hausmann and Rodrik) and how the structures of exports and production limit the ability to move into new activities in the productive space as each individual firm’s returns are low.

On the cost side, there are two possibilities that identify finance a constraint to growth.

- Inadequate magnitude of financing, such as deficient savings to finance investments firms wish to undertake driving up the cost of finance.
- Inadequate distribution of the available financing, such that even if the total aggregate magnitude of finance might be adequate the financial institutions for intermediating finance are incapable of identifying and financing new productive investments so that high return activities cannot attract finance.
The goal of a growth diagnostic is to identify which of these nodes are the likely “binding constraint” to accelerated economic growth.

The intuition of “binding constraint” is from dynamic optimization with multiple constraints in which at any point in time some constraints are highly binding such that a relaxation of those constraints could lead to a large increase in output. At the same time other constraints might not be binding in the current situation.

Identifying the “binding constraint” is the same as the question for those actions with the large growth impulse response function—what activity or set of activities are likely to be sufficient to initiate a sustained economic boom.

Of course this is not to say that there is at any time only one binding constraint while the other are slack. In nearly any environment, but particularly in environments of poverty traps or stagnation, there are many problems and it is possible that improvements in many directions might make things better (it is not as if there is a zero return to all actions but the binding constraint) but the notion is to move away from the long laundry list of what “must” be done to secure growth to a narrowly targeted set of actions.

Empirical methods for differential diagnosis. The challenge of a growth diagnostic is to use the available evidence to piece together an encompassing narrative of the problem. Before getting into the specifics (of which are the indicators etc.) there are seven ideas that help guide this exercise.

- The (shadow) price of the binding constraint should be high. This helps to think about combining quantity and “price” information in a coherent way. In many instances the prices are “shadow” prices as there are not organized markets (e.g. for public goods like roads) but one should search for both analogues of “price” data. Binding constraints should have high (and rising) shadow prices.

- Movements in the constraint should produce significant movements in growth, which might be manifest inter-temporally, regionally, in some industries. That is, if a constraint is really tightly binding then relaxations should produce demonstrable output effects—so for instance regions where the constraint is less binding should be growing faster than those where it is more binding. Also, there ought to be some coherent inter-temporal narrative—movements in the “bindingness” of the constraint should coincide in plausible ways with patterns of growth (this often rules out, or at least make puzzles out of, many of the common “explanations” of growth as things that have not varied at all are invoked to explain variations in growth or vice versa—without a corresponding story as to why the constraint become binding or slack).

- Agents in the economy must be engaging in efforts to overcome or by-pass the constraint. If for instance, financing is proposed as a binding constraint then firms should be actively seeking finance and attempting to circumvent their existing financing constraints.
Camels and not hippos should be in deserts. Agents/firms/sectors less intensive in the constraining factors should be more likely to grow / survive. The constraint should have demonstrable affects on the industrial structure. For instance, if appropriability is a constraint due to fears of expropriation then one should observe less intensity in “expropriation risky” investments (e.g. fixed capital) and more in industries that are less expropriation prone (e.g. small scale, informal firms, trading activities). If it is proposed that a country is short on infrastructure then one should see “infrastructure camels”—industries that can cocoon themselves from the consequences from low availability of infrastructure and not infrastructure hippos (like assembly activities that require large ratios of input and output movement to value added).

Ex ante risks imply high current profits, but low price earnings ratios as static rents should be compensation for expected dynamic losses. In these instances high rents/operating margins should not induce entry.

Fan belt effect: an initial binding constraint may have affected the rest of the economy causing now other constraints to become binding

It is hard to learn much from looking at international rankings alone as it is not clear whether the cause is supply or demand? Is the constraint binding or irrelevant?

Table 4 is a grand summary table of the various indicators one ought to observe or not observe at particular nodes of the growth diagnostic. This is dealt with in considerable detail in the materials from Hausmann.
<table>
<thead>
<tr>
<th>Growth Diagnostics: What signals are likely if X is binding?</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Binding Finance</strong></td>
</tr>
<tr>
<td><strong>Low aggregate Savings</strong></td>
</tr>
<tr>
<td><strong>Bad finance</strong></td>
</tr>
<tr>
<td><strong>Human Capital</strong></td>
</tr>
<tr>
<td><strong>Infrastructure &amp; public goods</strong></td>
</tr>
<tr>
<td><strong>Low static markups &amp; low entry; in industries with entry costs</strong></td>
</tr>
<tr>
<td><strong>Monopoly power, high markups. Regulated entry</strong></td>
</tr>
<tr>
<td><strong>Expropriation</strong></td>
</tr>
<tr>
<td><strong>High deposit interest rate</strong></td>
</tr>
<tr>
<td><strong>High spread</strong></td>
</tr>
<tr>
<td><strong>High returns to education</strong></td>
</tr>
<tr>
<td><strong>Short loan duration, credit rationing</strong></td>
</tr>
<tr>
<td><strong>High deposit interest rate</strong></td>
</tr>
<tr>
<td><strong>If it’s high risk, then low profits</strong></td>
</tr>
<tr>
<td><strong>High operating expenses /assets</strong></td>
</tr>
<tr>
<td><strong>High operating expenses /assets</strong></td>
</tr>
<tr>
<td><strong>High energy for level of development</strong></td>
</tr>
<tr>
<td><strong>Monopoly powers: high (P/E) ratio of banks</strong></td>
</tr>
<tr>
<td><strong>Returns decrease as education grows</strong></td>
</tr>
<tr>
<td><strong>Port quality. High losses in transport (ICA)</strong></td>
</tr>
<tr>
<td><strong>High expectation of loosing future profits</strong></td>
</tr>
<tr>
<td><strong>Cost of doing business</strong></td>
</tr>
<tr>
<td><strong>High returns to coordination activities</strong></td>
</tr>
</tbody>
</table>

| **Low appropriability**                                  | **Coordination** |
| **Ex ante**                                              | **Government failure** |
| **Ex post**                                              | **Market failure** |

**Ex ante**
- Low appropriability
- Coordination

**Ex post**
- Low growth and investment
- Technology & public goods (geography?)
- Ex ante risks
- Tax
- Low property rights, crime & corruption
- Low R&D
- Low Self discovery

**Low growth and investment**
- Access to external finance (EMBI, Default risk, CAD, Unsustainable debt)
- High deposit interest rate
- High spread
- If it’s high risk, then low profits
- High operating expenses /assets
- Monopoly powers: high (P/E) ratio of banks

**Technology & public goods (geography?)**
- Human Capital
- Infrastructure & public goods (geography?)
- Ex ante risks

**Ex ante risks**
- Low infrastructure wrt comparable countries
- Inward migration
- High skills
- Procylical mincerian returns
- Low tertiary for level of development

**Tax**
- High static markups & low entry; in industries with entry costs
- Political risk, social risk
- Tax policy risk
- High taxes: Top marginal tax rate, corporate tax, VAT
- History of expropriation
- Inflation tax

**Low property rights, crime & corruption**
- Monopoly power, high markups. Regulated entry
- Social unrest
- High taxes: Top marginal tax rate, corporate tax, VAT
- Corrupton (illegal tax rate) (Kaufman)
- Inflation tax

**Low R&D Low Self discovery**
- High deposit interest rate
- High spread
- If it’s high risk, then low profits
- High operating expenses /assets
- Monopoly powers: high (P/E) ratio of banks

**Low sophistication (EXPY) and few new industries**
- Inward migration
- High skills
- Shock to infrastructure (hurricane, war)
- Political risk, social risk
- Tax policy risk
- High taxes: Top marginal tax rate, corporate tax, VAT
- History of expropriation
- Inflation tax
- High protection costs (ICA)

**Low sophistication (EXPY) and few new industries**
- Access to external finance (EMBI, Default risk, CAD, Unsustainable debt)
- High deposit interest rate
- High spread
- If it’s high risk, then low profits
- High operating expenses /assets
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3.C) **Identification of “syndromes”**

The work of a growth diagnostic should precede from an identification of the symptoms associated with various “nodes” or indications of what is the binding constraint(s) to greater private section economic investment and innovation and move on to show how various symptoms fit together into “syndromes”—so that addressing any one of the symptoms may not be possible without tackling the large syndrome.

For instance, the “over-borrowing state” syndrome in which a country chronically absorbs high levels of available savings and leads to macroeconomic risks (e.g. inflation) can cause several symptoms, such as high interest rates and high inflation, simultaneously. Merely attempting to tackling the manifestation might not sufficiently strongly signal the regime shift to induce a large positive economic response to individual actions.
### What constraints are likely in some growth syndromes?

<table>
<thead>
<tr>
<th>Syndrome</th>
<th>Low growth and investment</th>
<th>Binding social returns</th>
<th>Coordination</th>
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<td>Low aggregate Savings</td>
<td>Bad finance</td>
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<td></td>
<td>Ex ante</td>
<td>Ex post</td>
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<td></td>
<td>Lack of complementary</td>
<td>Low appropriability</td>
<td>Low R&amp;D</td>
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<td>factors</td>
<td>Government failure</td>
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<td>Low Self</td>
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<td>Low finance</td>
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<td>• The under-investing state</td>
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<td>• The under-protecting state</td>
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<td>• Growth collapse</td>
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<tr>
<td>• The under-educated country</td>
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</table>
For instance, one of the syndromes identified in table 5 is the over-borrowing state, of which an example is Brazil, which also shows how the evidence can be piece together to form a coherent narrative. This syndrome would be associated with chronic large government deficits (evidence on the quantity side), which lead to high interest rates (shadow price, in this case a market price, of the relaxation of the constraint), these high interest rates crowd out private investments (agents respond to the constraint) and capital intensive investments with long-horizons are avoided (finance camels survive better in the environment), external finance of the deficit is at its maximum level which makes growth very inter-temporally sensitive to the availability of external savings (changes in bindingness of the constraint affect growth).

This is just one possible syndrome, as there is also the opposite—the “under-investing state” that is unable to provide key complementary infrastructures to allow growth to continue (which some have argued is true (or going to be true) of India).

4) Implementation diagnostic: From Diagnostic to Therapeutic

The diagnostic approach outlined in the previous section is addressed at the question:

**What are the feasible actions in the country’s current circumstances that would initiate (or sustain) an episode of sustained, broad based, rapid growth?**
The growth diagnostic attempts to identify the "binding constraint(s)" to initiating a acceleration of growth through a differential diagnosis of the potential obstacles to increased levels of private investment, innovation and initiative.

However, even once the binding constraint is identified there is a second stage of moving to recommendations, or “therapeutics”, which is a diagnostic of the capability for implementation. I wish to make three points.

First, expectations are crucial and hence framing the implementation of recommendations is crucial, in which case the sequencing of policy reform, policy implementation reform, and policy action needs to be an integral part of the discussion—particularly of course when “apropriability” is considered a major obstacle.

Second, policy implementation intensity has to be considered in making recommendations and distinguishing between “at a stroke” and “transaction intensive” reforms is crucial.

Third, one of the common criticisms of the “growth diagnostic” approach has been that it recommends “active” intervention by the government of the type criticized as “picking winners”—but because something has failed in some modes of implementation in the past does not mean it is not integral to promoting growth.

4.A) Policy reform, policy implementation, and policy actions

In generating a growth acceleration expectations are crucial as firms invest and innovate not based on just current conditions but based on their expectations of profitability. But firm specific expectations of profitability are dependent on two different aspects of uncertainty.

*Inter-temporal* uncertainty of how the policy actions related to firm profitability announced today signal (or not) future policy or policy actions.

*Uncertainty about implementation* a second type of “policy uncertainty” is not about the inter-temporal volatility of inflation or the exchange rate or other macro policies but about how the underlying notional policies (of taxation, land-use, regulation, ownership) and the overall “climate for investment” (legal predictability, availability of financing) will affect their particular firm. This is particularly when this depends not just on the credibility of maintaining a notional policy inter-temporally but on the implementation of “transaction intensive” policies and hence the capability and capacity of the state.

But if there is a massive divergence between notional policy and existing behavior (say of the type induced by corruption) then expectations can be altered without “policy reform” and “policy reform” may not alter expectations. There has been substantial attention paid to the importance of the *inter-temporal* uncertainty about the persistence of reforms in shaping the supply response to policy reform. It has been highlighted that
reforms that are perceived as temporary or not politically sustainable can often create self-fulfilling predictions of failure as the policy viability hinges on supply response which hinges on policy credibility of persistence.

However, particularly in weak environments of state capability or in new environments there can also be enormous uncertainty about realized policy across states of the world. That is, under this new policy if firm X undertakes action Z what will be the actual response of the agents of the state? This policy implementation uncertainty (that can be, in many ways, firm specific) can be much larger than inter-temporal uncertainty about notional policy.

I believe that this distinction can help us at least in part to understand the huge heterogeneity in response to policy reform. With weak organizations and institutions and high levels of political uncertainty almost no policy reform can create firm expectations about future actions so even quite radical “market oriented” policy reform or initiatives in “public private partnerships” can elicit little growth response. On the other hand with strong state capability (which can be defined relative to the desired actions of the state, whether good or ill) then even small changes in current policy that signal an improved environment for policy and policy implementation can have enormous supply response effects.

“Policy reform” can absorb tons of time and attention and not have any impact. Imagine you were thinking about the optimal length and content of the driving examination as part of the licensing requirements. One could debate whether the exam should last 10 or 20 or 30 or include a specified list of actions (e.g. merging in to traffic, left turns) or whatever. Years of time and effort of experts could get churned up in studies on this issue. Yet, if as in many countries the entire process has been institutionally corrupted (see the Appendix on India below) then without a simultaneous change in implementation it is plausible the impact of any change in notional policy will have zero impact: if you buy your way out of a 10 minute exam you can buy your way out of a 20 minute exam.

For an array of economic policies firms interact with the public sector in multiple, overlapping ways, even with specific regulatory agencies. So imagine a potential entrant into a concession for public water supply. Now matter what the de jure contract there are a huge variety of ways the government can act that either increase or decrease profitability of the firm. Even fully private firms interact with the government through taxation, varieties of regulation that are generic (health, safety), sector specific, and rely on publicly provided infrastructure (power, water). If these current relationships are embedded in a systemic set of deviations from existing de jure policy then it is impossible to predict exactly how a “policy reform” will actually affect the behavior of the relevant public sector agents and hence how it will affect firm expectations and subsequent firm behavior.

This implies that firm’s perceive changes in the overall context of policy implementation may be more important that changes in the notional policy. An anecdote
from the recent growth acceleration in Egypt (as recounted by one of the officials involved) illustrates the point. The government announced a change in taxation, and not so much a change in taxation rates, but a change in the way taxes were assessed that dramatically reduce the role of the existing collection officials and hence their ability to engage in corruption. Officials of the government even admitted that corruption had been a big issue in tax collection. This announcement was followed by a substantial acceleration in growth. Interestingly, since the tax changes were announced to take effect in the coming fiscal year, one could clearly see the growth acceleration happened well before the tax changes actually had any direct effect.

There are two important points about the gap between notional and realized policy.

First, corruption—a deviation of the actions of the agents of the state from their actions as prescribed by the notional policy if states of the world were correctly assessed due to pecuniary self-interest of the agents themselves—or absenteeism was completely incorporated into the routine operations of the organizations. Almost no one reported paying bribes directly to the public sector employees, rather they paid fees to agents. This suggests that the corruption is highly organized, with the take from the corruption divided amongst the various actors and is not the behavior of a few “rogue” instructors who elicit payments retail.

Second, the *de facto* behavior of the agents of the state in granting licenses deliberately subverts not just trivial aspects, but the very purpose of the policy. That is, if the paying of agents subverted some element of the regulation of driver’s licenses that seemed trivial or pointless with regard to traffic safety (say, verifying residence) one might think this deviation was harmless, part of the normal adaptation of by-the-book regulation to reality in any “street level bureaucracy.” But many times the step that is subverted is precisely assessing driver competence (as it is the most important but most subjective and hence corruptible). Assessments of driver competence as part of licensing may or may not be truly effective in increasing traffic safety, but this is surely its intent and it is this that is avoided by paying agents.

An assessment of state capability, or of a particular ministry, regulatory agency, parastatal firm, depends not just on its stated or notional objectives and policies but also on a complete articulation of the *mechanism design* and the incentives that creates for all of the participating actors. This includes not just what actions which are to be taken in which states of the world, but also how those states of the world will be determined (processes), how those can be adjudicated if challenged. They also include the outcomes or payoffs to the agents of the government across states of the world—what are their viable rewards and punishments—not just available internally to the organization (e.g. promotions, assignments, disciplinary actions) but also externally (e.g. sanctions by audit bodies, parliamentary investigations, judicial inquiries, etc.).

Accompanying the mechanism design is a behavioral theory of how agents will respond under various mechanism designs. This isn’t to say that “economics” is the only
available behavioral theory of how agents act, there are many other relevant notions, it is just that in order to predict what actions by agents of the state across states of the world will be a coherent state of expected realized policy with notional policy, full mechanism design (organizations and institutions), and behavioral theory of agents is needed.

This is included as a vaccination against too much discussion of “capacity” which has been a donor perennial favorite. While organizational capability might possibly be low because of low individual capacity, such as the inability of the agents to correctly assess the situation and the appropriate response (e.g. doctors with too little training, under-educated engineers), low organizational capability can also be the result of weak organizations and a weak institutional environment in which the organizations operate. That is, the inability of organizations to hold its agents accountable, often due to institutional constraints beyond the control of the management of the organization (e.g. the high costs or impossibility of sanctioning any employee of the public sector, patronage linkages of employees with politicians, lack of coherence on organizational goals, etc.) can make accountability impossible.


One of the key notions of much of the policy reform of the 1980s and 1990s was that discretion of the government was the problem and either politics (e.g. populism) or policy implementation (e.g. corruption) led that discretion to be abused. (In large part this may have resulted from framing the key problem of a transition from a crisis).

This view had several variants. On the macro side it implied that rules should replace discretion in the making of key macro-economic policies—leading to limiting Central Bank discretion (and encouraging Central Bank independence) like inflation targeting, the adoption of rules about fiscal balance.

In sectoral/micro areas it often sought to reduce discretion by simply getting the government out of the particular business or by reducing regulations.

However, both this diagnosis, and the scope to which this diagnosis led to viable therapeutics, was perhaps overstated. This has led to the distinction between “first generation” and “second generation” reform efforts or the distinction between “state capability economizing” or “state capability utilizing” policy reforms (and strongly affects the discussion of “third generation” reforms of the type discussed below).

The prototypical “first generation” reform was an at a stroke choice that required no subsequent policy implementation and, in fact, may have greatly reduced the need for governmental decision making and hence economized on state capability (and hence on the potential for the abuse of such discretion). The canonical example is a maxi-devaluation of an over-valued exchange rate. Often overvalued exchange rates had led to the sequelae of foreign exchange rationing, black market exchange rates, export smuggling, import under-invoicing. In these cases a once-off maxi-devaluation seemed
particularly attractive as it required no additional implementation and reduced the need for implementation capacity in rationing and reduced the returns to corruption in Customs.

Many of the items of the typical macro-stabilization efforts aimed at bringing an economy out of a “crisis” state have the character of “first generation” reforms—devaluation, monetary reform, public sector deficit reduction (as an anti-inflation device).

Prototypical “second generation” reforms were financial sector liberalization or allowing private entry into infrastructure. In these cases one could not simply wash one hands of the industry and claim that no agent of the government would take any actions that affect the profitability of the firm. In contrast, with infrastructure when governments moved from “make” to “buy” they encountered that these did not necessarily reduce the scope of decision about which agents of the state had to make choices about policy actions, it just changed the context and sets of actors. The history with negotiating “public-private partnerships” in infrastructure is particularly instructive, as, while there were major successes, everything that could go wrong did go wrong at least somewhere—investor uncertainty about government credibility about policy implementation often led to lack of interested bidders in concessions or lack of entrants, private bidders would underbid at the supplier selection state and then renegotiate later based, lack of regulation could hamper credibility of the whole endeavor of private participation, etc.

As it turns out, “rules” versus “discretion” or even “simple rules” versus “complex rules” has not turned out to be a very useful framework for discussion, outside of a few key macroeconomic policies for two reasons. The “rules” versus “discretion” framework depends on a particular background understanding of the environment for policy implementation. For instance, driver’s licenses may appear to be a simple rule, a mapping from simple states of the world to simple actions. But in a weak implementation environment there is de facto complete discretion.

For instance, take an income tax. One might have a very complex tax schedule for imports with a variety of rates depending on the particular item. In contrast, one might have a simple income tax rule—X percent of all income. But the simplicity of the rule disappears if one considers the definition of “income” and how easily adjudicated that is. It is possible that a very complex tariff schedule is massively simpler in implementation than the simplest income tax.

A policy that is portrayed as a strict “rule”—if condition X applies then the action of the policy implementing agent must be Y—can be the exact equivalent of discretion if the mechanism design leaves the determination of whether condition X in the hands of the implementing agent who then could easily pursue the strategy of first determining which of available action Y is the one that maximizes their own private well-being and then using the mapping in reverse to declare that the condition in which that action is appropriate is in fact the state of the world.
In a weak capability environment the only valid distinction is between a 
unconditional rule—always do Y—and either conditional rules or discretion. However, 
beyond a few macroeconomic policies, unconditional policy rules make no sense at all 
and most economic policies exist precisely to promote some desired outcome.

In most of the currently low growth countries (and many poor countries that are 
rapidly growing) the gap between de jure and de facto is pervasive in all areas of 
economic policy implementation—regulation (health, environmental, land-use), taxation, 
police/security, judiciary, land use, infrastructure.

The upshot is that in considering the range of policy options one has to consider 
which are implementation capability light (such as some first generation reforms), which 
are implementation capacity reducing (such as complete elimination of some functions as 
an integral part of a reform (e.g. eliminating rationing of foreign exchange)) and which 
are intrinsically implementation capacity intensive (such as public-private partnerships).

4.C) Third generation growth promotion and institutional design

Often the recommendations of growth diagnostics, particularly those that find that 
“structural transformation” is necessary require that governments make choices to 
encourage the development of industries or sectors that, for a variety of reasons, may not 
emerge with an entirely “hands off” approach of government. This of course raises the 
objections that governments do not have the competence (capability or capacity) to “pick 
winners” and the risks that introducing scope for any sorts of industrial policy will 
inevitably lead to either failure, politically motivated decision-making or outright 
corruption and rent seeking.

Various papers by Hausmann and Rodrik (in various combinations) address these 
objections, in three ways.

First, they make the point that the idea of a government being “neutral” is mostly 
a fiction as any choice government makes—from infrastructure to education to taxation-- 
is bound to affect industries differentially. They emphasize the governments are 
“doomed to choose” and that simply making the consequences of various choices across 
industries explicit.

Second, more detailed attention to the kinds of organizations and institutions that 
have worked, even in difficult settings, to produce positive results reveal that much of the 
“conventional wisdom” about these matters is far from settled. While it is the case that 
there were many failures in industrial policy and there is not question in many countries 
the notional objectives and instruments of the policies were subverted in implementation, 
there were also success cases and that these successes did not conform to strictly “market 
orientation.”

Third, as Hausmann has recently argued, structural transformation requires what 
he refers to as “high bandwidth” mechanisms for feedback.
But, if one does reach the conclusion from the growth diagnostic that more active
government policies are key to accelerating growth the question of the implementation
diagnostic becomes crucial, as one needs instruments that can avoid the mechanism
design issues that plagued previous instruments, from differential tax treatment to
development banks.

5) Organizational Issues in the implementation of growth analytics

The last topic to address is how DFID would go about organizing itself to produce
growth analytics of the type that would further the objective of influencing country policy
in a way that increases the probability of successful growth accelerations. This topic has
two elements: (i) how can DFID organize itself and (ii) once DFID has organized itself
and produced a growth diagnostic how can that be made relevant and useful. On each of
those topics I will not say anything about DFID (about which I know too little and would
not want to presume to speculate) but about the experiences of other organizations.

Annex 1 (written together with Preya Sharma) reviews three different experiences
with implementation growth diagnostics, from quick, cheap, and dirty to the polar
opposite.

5.A) Organizational issues in producing an (excellent) growth diagnostic

The main difficulty is organizing sufficient expertise to do an adequate job of
covering cross-sectoral issues without becoming too broad and losing the ability to
prioritize.

On one level, the experience has shown that the growth diagnostic is a useful
framework for organizing discussions and bringing data to bear in an evidence grounded
differential diagnostic. But at the same time the “method” is far from self-implementing.
The risks of people “finding” what they are pre-disposed to find, or only feeling they are
able (organizationally authorized) to “find” what there is data to prove.

This is particularly true in “poverty trap” like environments. In very poor countries it
is easy to do a diagnostic of what is wrong—everything is “wrong” compared to a “world
class” or “globally competitive” standard. The widespread availability of certain kinds
of data tends to produce attention to this (is, in fact, intended to produce this effect). The
question is what is the thing that is wrong such that, if it were changed would have the
greatest impact. This requires actually considering and weighing alternatives across
sectors—even when data is far from perfect. This requires high levels of expertise.

A good example is the attention to corruption. In countries with poor growth and
weak governance it is easy to look around and conclude that corruption is inhibiting
growth. But even a simple examination of the data will reveal that many countries with
very rapid growth (China, India, Vietnam) in fact have corruption indicators that are quite
high. So, at least in those countries corruption has not been an obstacle to rapid growth.
A second problem is that donor organizations, like the World Bank, have organized themselves internally into groups with different specializations with the experts in each area grouped together—e.g. trade, financial sector, macroeconomic, infrastructure, education. In this organizational environment the easiest way to put together an overall agenda for policy reform was to create a list of the recommended policy reforms recommended by each group. Here is what should be done on trade, here is what should be done on financial sector reform, here is what should be done in taxation, here is what should be done on fiscal, etc.

The difficulty is in making the cross-sector prioritizations—at this stage, in this country, is it more important to reduce import barriers or reform the financial sector? To improve education or relax labor market restrictions? To invest in power or liberalize entry into the financial sector? These cross-sector prioritization questions are very difficult, both substantively and organizationally.

Substantively since each expert is an expert in what they are expert in—the true financial sector expert is hesitant to hazard a guess about the impact of trade reform and vice versa.

Organizationally this is difficult as either the “growth diagnostic” is seen as high priority for the organization’s mission and mandate or not. If it is seen as high priority then it is in the bureaucratic interest of all units to be “at the table” in the policy discussions. Very few managers are anxious to admit their area of expertise and staff are not in fact the key priority for the country they are working on. If it is not seen as high priority then the high quality staff are not made available and more junior staff are reluctant to take firm positions.

As suggested above, this leads to the donor organization to effectively punt on prioritization. The World Bank usually punts on prioritization and includes nearly everything as a priority in its over-arching documents. Reforms are then determined by government prioritization or happenstance.

While this problem of internal capacity could be addressed at least in part by “contracting out” the growth diagnostic, this leads to another potential set of well-known problems. With low country team commitment there may be a low-quality contractor chosen, the exercise may have no traction (and hence attract little interest of potentially effective contractors) and the knowledge generated from the growth diagnostic not actually be internalized.

5.B) Instruments to promote growth diagnostics

What are the instruments available to donors to promote the actions that they believe will lead to economic growth. The main point of this section is to highlight the many difficulties that the use of “structural adjustment” programs—including all of their variations down to the present day as the rhetoric and acronyms in the multi-lateral
agencies have evolved (with perhaps some accompanying change in practice). This section does not focus on whether the policies promoting by donors (particularly World Bank and IMF) were “right” or “wrong” (which was the topic of the above sections) but rather the question of the how donors have promoted the policies and the dangers that, almost inevitably given the nature of the organizations involved, led to.

The fundamental mode of engagement of linking a donor’s lending (or granting) activities to a policy reform agenda led to several problems.

First, the very fact that reforms were perceived as “imposed” from the outside could easily lead to a self-fulfilling prophecy of failure, as firms do not respond as the reforms are not credible, leading to lack of supply response which leads to reversal of the reforms.

Second, particularly in a country-team organized institution, World Bank staff had to get loans approved for countries by often, and increasingly, skeptical Boards. This led to the appearance and practice of excessive certainty about the benefits of the policies recommended and lack of flexibility with the countries over design. The very nature of the process by which loans were approved encouraged staff to simply recommend a standard package implemented in the standard way (“best practice”) as staff were under pressure to deliver on approvable lending programs and these were much easier to justify to management and the Board than were heterodox programs.

Moreover, the structure of linking lending programs to reforms, as if the “reforms” were an “investment” (which was in some deep sense forced by the World Bank’s legal structure) discouraged a more honest, experimental approach. When one is lending hundreds of millions of dollars to support “reform” there is enormous organizational resistance to the words: “not sure” or “let’s try this and see” or “experimental.” Even when staff were well informed about country conditions and specificities (which they often, though not invariably, are) their organizational incentives were to structure both their relationship with their counter-parts in government and with the Board as based on more certainty that was in fact available.

As with the issue of how to organize internally the issue of translating the growth analytics in operational work is complicated. Too diffuse a link between what DFID does and the growth work and it reduces the internal organization buy-in. Too tight a link runs the internal and external risks of all other efforts of donors to induce policy reform.

**Conclusion**

My conclusion is a summary of the major points of each of the sections.

- It is great that promoting economic growth is back at the center of the development agenda (in a way compatible with other emphasis)
➢ The previous approaches to promoting growth were generally poorly suited to the time scale and fine-graininess of the actual issues facing economic policy makers.

➢ A growth diagnostic is a tool for answering the question:

What are the feasible actions in the country’s current circumstances that would initiate (or sustain) an episode of sustained, broad based, rapid growth?

By the application of a simple framework of (a) identifying a country’s existing growth state, then (b) an diagnostic tree with alternative (but not mutually exclusive) nodes to which one applies the available empirical evidence about the nodes and possible anti-growth “syndromes” affecting countries.

➢ The growth diagnostic is accompanied (explicitly or implicitly) an implementation diagnostic that matches therapeutic needs to existing (or potentially created) institutional capability.

➢ Implementing growth analytics in a large public sector organization like DFID is not going to be at all easy.
Annex 1: Applying Growth Diagnostics in Practice: Experience to Date

There are three groups which have produced “growth diagnostics” to date. These have varied enormously in terms of time taken, cost and quality.

The most comprehensive growth diagnostics are those led directly by the Centre of International Development (CID) with teams comprised mostly of faculty from the Kennedy School of Government.

Second, the World Bank has completed a set of twelve country growth diagnostics with some high level guidance from CID.

Third, students at Harvard Kennedy School complete a growth diagnostic in class taught by Ricardo Hausmann on Development Policy Strategy.

This appendix will review the three sets of growth diagnostics which have been carried out to date setting out:

- the context in which they were conducted,
- key lessons from the current methodology,
- guidance towards developing the organizational structure in which growth diagnostics will be best carried out.

The appendix assumes knowledge of the growth diagnostics framework and details of the decision tree presented above schematically and in more detail by the power-point and “mindbook” of Hausmann (with others).


The set of growth diagnostics which can be considered to be the lowest cost are those completed by students at the Harvard Kennedy School. Ricardo Hausmann teaches a course which develops the tools to conduct a growth diagnostic. The students have a background in graduate level macroeconomics, microeconomics, econometrics and development economics. The three and a half month course requires the completion of one growth diagnostic by a group of up to five students in the form of a presentation.

These growth diagnostics are limited in a number of important ways. Students must rely on publicly available data and there is limited scope to visit the country to engage directly with policy makers, academics and business. This constrains the qualitative aspect of the diagnostics resulting in a greater emphasis on the data available. There is also only a limited peer review process which takes place once the diagnostic has been completed. Nevertheless, they provide a useful guide to the practical challenges faced by an economist implementing a growth diagnostic remotely, and under the
guidance of one of the founders of the approach. In addition, these students have received the most comprehensive course in the method of growth diagnostics currently available.

Each growth diagnosis consists of:

- an initial description of the country’s growth experience, institutional and political background, and thus the growth challenge to be addressed,

- analysis of the data at each node of the decision tree to determine the binding constraint, and,

- a conclusion as to the most binding constraint and policy recommendations.

Key lessons

1- Setting the appropriate benchmark

The judgment of whether there is a binding constraint crucially depends upon benchmarking economic performance or other variables at each node. For an economist with limited country-specific knowledge determining whether the observed outcome is relatively better or worse depends on:

- whether the comparison is in level terms or growth rates: if a variable, such as education, is at a low level but moving in the right direction it is not always clear what the relevant measure for determining a binding constraint is.

- the relative position of the country with respect to its regional or income group average: if the region as a whole performs poorly on this measure, the relative position of a country provides limited information.

Key to realizing a differential diagnosis requires using a well-founded benchmark in terms of comparison group and measure.

2- Multiple symptoms and determining the primary cause

Country analytics often shows poor performance at multiple nodes. After all, in badly performing countries there are nearly always many problems. A key challenge is in determining relationships, if any, between nodes and therefore which factor is the key binding constraint and driving outcomes. For example, both high corruption and low self-discovery may be constraining growth. It may also be the case that high corruption is leading to low self-discovery. In such situations, the diagnostic framework provides insufficient guidance in differentiating between cause and effect. Further judgment is then required to relate symptoms to each other and to arrive at a conclusive final constraint to be addressed.

3- A bold leap from determining the binding constraint to policy proposals
Growth diagnostics isolate the constraint to growth through differential diagnostics, however this does not directly translate into a policy proposal. More consideration needs to be given to determining a policy response which can be implemented given the institutional specificities and acts to loosen the constraint. Not surprisingly, given the time and access students have there is an almost complete lack of an “implementation diagnostic.”

**A-2: World Bank Pilot Project**

**Description**

Despite significant policy reform driven by the Washington Consensus, the poor growth performance in the 1990s in much of the developing world has moved the World Bank towards a more country specific approach. Growth diagnostics provides a framework to move the analytical country work of the World Bank towards a more holistic approach. Given that the framework is new, the World Bank completed a set of twelve pilot growth diagnostics to experiment with how to best integrate growth diagnostics into their country analysis.

As the project progressed it became apparent that further refinement of the growth diagnostics method itself was required. A key conclusion was that to develop the method growth diagnostics it needs to be applied, reviewed and practiced. This section draws heavily from an unpublished World Bank paper reviewing their experience once the pilot concluded.

The twelve countries chosen comprise of two from each region and are a diverse group in terms of their history and experience. Importantly, there were no tangible results produced for five of the countries as outlined in the lessons below. Each diagnostic was accompanied with review and consultation from economists outside each country team.

These growth diagnostics provide the closest guide to the experience of implementing the method and provide valuable source of the issues faced by practitioners. The scope and cost of the analysis is similar to that which could be replicated among a broad set of countries.

**Key lessons from the World Bank experience**

**1- Importance of good data**

Availability of quality and comprehensive data will always be highly desirable in the development context. In particular to growth diagnostics the lack of rates of return information, as well as other price data, was both a significant limitation of the growth diagnostic framework and a particular fruitful area for a future research.
The lack of data was most constraining when estimating social returns as there was virtually no data collected on investment return in different sectors of the economy. This returns data was deemed to be essential in discriminating between two fundamental hypothesis; the insufficient finance branch of the decision tree and low returns. The subsequent use of indirect data meant that the analysis was contradictory and inconclusive. For example, the case of Egypt was not successful and became an example of how not to apply the framework. The analysis concluded that the constraint was the constraint for which data was available and failed to consider alternative hypothesis.

In addition, the lack of data on returns meant that teams found the hypothesis of self-discovery, practically non-falsifiable. Teams were also not comfortable rejecting some other hypothesis in favor of self-discovery such as appropriability. It was unclear to many teams the extent to which high shadow prices and the direct evidence should be to accept a competing hypothesis in lieu of self-discovery one.

2- Exploiting all the variation in the data

The lack of data is noted above as being a key constraint in the analysis. It is therefore essential to extract the most variation from the data which is available. To differentiate between nodes the framework relies upon the systematic use of price and quantity signals as well as supporting indirect evidence. When implementing the diagnostics the World Bank economists outlined a useful method of organizing the data:

a- Direct price and quantity data if available: For example, in India the government was running large budget deficits and accumulating debt for over two decades (quantity signal). However, the price signal, real interest rates, was not very high suggesting that the loose fiscal stance was not constraining growth through fiscal crowding out.

b- Indirect information to infer price signals from behavior: Indirect evidence takes the form of empirical observations on the nature of growth and its variability, focusing on the behavior of agents that either observe or calculate the price signal themselves. Analysis of growth across sectors, regions and time provides valuable behavioral information on the nature of growth in the presence of constraint and the results when certain constraints are loosened. For example, in Brazil, temporal variation in the external financing constraint causes a large variability in output.

c- Benchmarking against a country’s natural comparator: For instance, comparing Moroccan economy to the one of Tunisia turned out to be informative in the Moroccan growth diagnostics.

3- Creating and testing competing hypothesis

Implementing a growth diagnostic requires creative analysis of a variety of direct and indirect information to arrive at a well informed judgment. There are no preset empirical tests which decipher the binding constraint and any price signal can be compatible with
many potential scenarios. An important part of the method is therefore formulating a set of empirically testable hypothesis. The analysis would proceed as follows: suppose we have two hypotheses A and B. If hypothesis A is true then one would observe signals X, Y, Z and indirect evidence W, U, V; if B then such and such signals and such and such indirect evidence. For instance, in case of Brazil real interest rates are exceptionally high, but what is the cause of these high interest rates as there are potentially many models that would produce high interest rates, but each with different policy implications. For instance, are high interest rates the result of debt sustainability problem, or is it simple fiscal crowding out, or is it an indication of an exceptionally high shadow price for investable funds? Each of those hypotheses should come with a set of clear testable implications.

This is one of the reasons the Egypt diagnostic failed. The team did not evaluate hypotheses relative to each other at the top node of the decision tree and largely ignored the evidence contradicting their view. Failure to start at the top of the tree and compare hypothesis can degenerate into a check-list approach by reading the bottom of the tree and checking for shadow prices that confirm the ex ante narrative.

4- Importance of a consistent growth story and back-casting

It was key to understand the specific country growth experience to date in order to decipher how previous growth accelerations were initiated. Presenting the growth story, verifying various implications and laying out the direct causal chain was a challenge for all country teams. Once established, understanding the drivers of growth proved to be of tremendous help in the diagnostic analysis. This has been particularly true in the case studies where lack of data on rates of return in the economy was a major obstacles, i.e. Egypt, Tunisia, Armenia.

For example, in Tanzania the team was not able to determine if growth was being driven by aid, gold discoveries or a take-off in horticulture and fishing. The inability to form a coherent growth story resulted in a failure to reach any sensible results as the subsequent analysis assumed the most binding constraint to growth had been lifted and what was needed was a wide set of capacity-building policies to sustain growth. This case showed that formulating an appropriate growth story could well prompt a revision and rethinking of the whole growth strategy.

4- Adapting the framework to sustaining economic growth

Growth diagnostics has its roots in the analysis of growth accelerations, so the core of its method: decision tree and reliance on the shadow prices is much more suited to uncovering the binding constraint to a growth acceleration than to the risks of a growth deceleration. In a growing economy the binding constraint has been relaxed and the corresponding shadow price is low. Meanwhile, a constraint which may bind in the future may not necessarily have a high shadow price observable today. The economists argued that while framework can still be employed for the analysis of a growing economy its value and use is limited.
For example, the difficulties with evaluating the fiscal deficits and human capital constraint in India was a clear demonstration of this. The majority of the analysis therefore relied on indirect evidence such as the nature of economic growth and its regional variation and the diagnostic was assessed to be one of the more successful ones.

5- Deciphering cause from effect

As noted in the original growth diagnostics paper, distortions in the economy are likely to be rampant. There are a multitude of correlations between variables, complicating the ability to determine the underlying cause of a constraint from its effect.

For example in the case of Bolivia the hypothesis was that low private returns were due to poor appropriability (insecure property rights in an unstable macro environment). Yet, the team was not able to identify and verify the exogenous component of the constraint. It could be argued that if the Bolivian economy was suffering information and coordination failures, as the economy began to stagnate, fiscal instability appeared resulting poor appropriability. If the causality runs from growth to appropriability, then it cannot be a constraint, it is purely a result. Low levels of domestic private investment and capital flight during relatively successful and orderly mid-1990s was consistent with either direction of the hypothesis. The lack of data prevented any firm conclusions. The key lessons learned from the Bolivian case was that testing a hypothesis that can actually be endogenous required extreme care, good data and a lot of creativity; and, ultimately proved to be inconclusive.

6- Provide due attention to non-economic influences

The studies were very focused on deciphering the binding constraint using price and quantity signals where available and remaining close to the decision tree framework. This risks paying too little attention to wider political or policy shifts which may have significant effects.

A-3: CID led original growth diagnostics

Description

The most extensive (and costly) growth diagnostics are those completed led by the CID. The originators of framework have completed two comprehensive analyses for El Salvador and South Africa. These diagnostics provide the highest quality diagnostics completed to date in terms of time, depth, breath and level of expertise available. For example, the South Africa diagnostic included a core team of Philippe Aghion, Jeffrey Frankel, Bailey Klinger, Robert Lawrence, Jim Levinsohn, James A. Robinson, Dani Rodrik, and Federico Sturzenegger and contributions from a further twenty other highly qualified economists (and non-economists). The final project included twenty papers on topics ranging from HIV/AID and school attendance, the impact of criminal justice on
growth and trade policy. This provides a guide to the applicability of the growth diagnostic technique in its highest quality form.

Key lessons

1- Consider the broader nature of development not just economic growth

The diagnostics provide a much more holistic view of the development process as they were completed upon request of the now governing party in El Salvador and the government of South Africa. Importantly, there is a clear recognition of the political climate and the context within which the development plan is being designed. While growth diagnostics focuses on achieving economic growth, these plans set the analysis amongst a broader set of goals such as equity, participation and security (both of person (e.g. crime) and of income).

2- Understanding history

There is a considerable level of attention given towards understanding previous episodes of growth and determining what constraint was released to initiate the acceleration.

3- Policy recommendations take a broader approach

Since these diagnostics are prepared for government, the policy recommendations seek to address a broader range of areas and consider the political and implementation constraints. Importantly, policy is targeted to some factors which matter for their own rights as well as for accelerating growth such as improving political legitimacy in El Salvador.

4- Expensive and time-consuming

Getting high quality economists and non-economists involved and able to produce work of quality is time consuming (as it takes time to get people up to speed, arrange working relationships) and hence expensive.
Appendix 1: Poverty issues: An upper bound poverty line?

The emphasis on poverty had the beneficial impact of bringing questions of the distribution of income gains to the fore, relative to strict measures of income growth that were indifferent to whether the income gains accrued exclusively to the richest. So “poverty” measures were useful as a rhetorical means of saying “below this level of income (a poverty line) income gains deserve special interest.” A variety of techniques were developed to estimate a poverty line such that there could be broad consensus among development practitioners that the gains to those below that line deserved special emphasis.

However, the difficulty with any of the common income or consumption expenditure based definitions of poverty using poverty lines is that, if they are taken literally (or even close to literally) as expressions of the true and total objective of development (or policy making) they assert that the gain to the development objective function from income gains of individuals above the poverty line is (near) exactly zero. So the adoption of poverty as the development objective did not just imply “more” emphasis to gains to those below the poverty line but no consideration at all to income gains of those above the poverty line.

There might be a poverty line above which zero is a reasonable approximation of the gains to a “development” objective function, but it is obvious that the existing techniques for defining lower bound poverty lines (e.g. below this level of income one is certainly poor) do not lead to reasonable upper bound poverty lines. No one believes that the development benefits of increasing a person’s consumption from $1.05 to $1.10 a day is exactly zero, but that is what a strict interpretation of “poverty as the objective” and “dollar a day” as the poverty line implies. Nor does one believe this for moving someone from income of $2 to $2.05 (which is an income per person of only $730 per year in PPP) or any other lower bound poverty line ever proposed.

Fortunately there is an easy way out of this, which acknowledges various levels of poverty, one at a lower bound (determined nationally say) and one at a global upper bound, say as determined by the poverty lines of the donor countries (which has the benefit of being non-discriminatory by nationality). In one says that the development objective is poverty reduction and the poverty line to define global poverty is, say, the UK poverty line (taken into PPP) then the poverty agenda and the broad based growth agenda become one and the same, as nearly everyone in countries that development agencies like DFID work is poor by a UK poverty line. )
Appendix 2: Recent research on the growth and the case for a new approach

The “growth regression” approach as a guide to policy has proved disappointing, at best as it is fundamentally at odds with the nature of the growth process.

The theories and empirics were about “equilibrium” or “steady state” growth rates while the reality and hence the practice of policy must be about short to medium run episodes of growth. As the period progressed the empirical research into economic growth (which was dominated by growth regressions) moved in two directions, one was to move to long-periods of growth (30 years of more) culminating in a focus on explaining levels of income (as, if everyone started from roughly the same level of income in the far distant past then the current level is an estimate of the long run growth). Research like Hall and Jones (2002) explained the cross-national differences in levels of output. While these are likely roughly correct about the very (very) long-run correlates of prosperity, this is much less predictive about growth rates over a near (10 year) horizon. At the same time there was a branch of growth regressions that went to shorter and shorter periods (see below).

Economic growth rates over five or even ten year periods are enormously volatile (in ways not captured as “cyclical” fluctuations) while most of the “determinants” of growth (including measured policies) used in growth regressions are quite stable. Prosaically, one cannot explain the movements in something that changes substantially over time (growth rates) with something whose time evolution is very smooth (e.g. population growth rates, the growth of human capital, geography). This point is first raised by Easterly et al (1993) and then pointed out at various intervals by Easterly.

One implication of the volatility of growth and the stability of measures of policies or institutions was that policy or policy reform did not turn out to be closely associated with turnarounds in growth. While the data seemed to indicate that growth had definitive points of “take-off” in which growth shifted, often by 3 or 4 percentage points from its previous trend to a new higher level, the ability of episodes of the standard measures of “policy reform” (either macroeconomic stabilization, trade reform, financial sector reform) to predict those take-offs. Hausmann, Pritchett, Rodrik (2005) make this point very clearly.

It is also the case that, without interactive effects of various kinds, it is difficult to make either the levels of the growth determinants or the shocks explain the slow-downs in growth either. As Rodrik’s 1996 paper “Where did all the growth go?” shows, economic shocks were an important part of the slow-down of the 1980s—but raw measures of the magnitude of financing or terms of trade shocks were as large for Korea as for Brazil, say, and yet Korea recovered very quickly from the debt shocks of the early 1980s while Brazil was stuck in stagnation for a very long time.

The difficulties with the timing of growth versus the time evolution and volatility of the standard growth determinants is reflected in the growth regression literature that moved to shorter and shorter time horizons (usually down to five years). While this literature used increasingly sophisticated methods to cope with some econometric issues (leading
to innovations in dynamic panel data using generalized methods of moments estimation), three related points were increasingly realized:

- The coefficients in the growth regressions were unstable, both over time (e.g. in regressions in the 1970s versus 1980s versus 1990s) and across sub-samples. What has been less emphasized is the application of the earlier time-series econometrics (Hendry) and Lucas critique to this empirical result—parameter stability is a specification test. That is, if one were identifying deep structural relationships, exploitable by policy, from regressions then these regressions that say, estimate a relationship between fiscal deficits or trade liberalization or education and growth either (i) must have stable coefficients over time or (ii) the model is faulty in some way or another. The difficulty with this parameter stability test is that it does not identify the precise way in which the specification is faulty.

- In part due to the instability in coefficients, these “short period” growth regressions also failed to be predictive of growth performance out of sample. So, as Easterly (2001, 2005) has shown if one uses the “best” regressions from the 1980s to predict country by country growth rates in the 1990s there are two issues; (i) one needs a decade “dummy” to explain the average levels of growth (indicating something important is omitted from the model) and (ii) the explanatory power across countries is very weak.

- Not only were the short period growth regressions unstable over time but it is also the case that further investigation is revealing more and more “interactive” effects—so that the “impact” of one measure of “policy” is dependent on the level of other indicators. So, in the most widely debated case, the relationship between outward orientation or trade liberalization and growth it has been increasingly shown that the association of these measures of “outward orientation” varies (i) over (historical) time (e.g. Wacziarg and Welch 2003)), (ii) across levels of income, (iii) across other indicators of the country “institutional” capability (Calderon, Loayza, and Kaltani 2005), and (iv) (with less evidence) non-linearly (e.g. Rodriguez 2006).

So, while regressions of the level and growth rates of GDP per capita (over various horizons) have provided some intriguing partial correlations between growth and various factors, there is debate about what academic use these regressions have actually served and moreover, whether given the issues of volatility, parameter heterogeneity (both across countries and over time) and the consequent out of sample instability and the lack of a close link between policy levels and measures in growth regressions (many of which are themselves outcomes, not policy actions) whether these provide much, if any, practical guidance for what is to be done.

The second important point is that the “exogenous” versus “endogenous” distinction in growth theories, while enormously exciting from a theoretical point of view (as it escaped the technical trap of previous growth models) the “endogenous” approach speaks very little to development issues, which is understood best by the application of the generalized Jones critique of the empirics of “levels on growth rates” which implies
that empirically very little of observed cross-national or inter-temporal fluctuations in growth can be attributed the “steady state” differences.
Appendix 3: Clarifying examples of distinctions between policy and policy implementation

The definitions related to policy, policy action, capability, capacity, above are illustrated by two examples of policy implementation from a recent experimental evaluations in India.

A recent study used the method of a controlled experiment in obtaining a driver’s license in Delhi to get more insight into the organization and consequences of corruption of routine administrative tasks. The study solicited individuals who were about to obtain a driver’s license to participate in an experiment. The comparison group was given no treatment at all. The “treatment” consisted of either simply paying a bonus to individuals who obtained a license more rapidly while another group received free driving instruction to improve their performance on the driving exam. The individuals then were left free to go about getting a license. The individuals then had follow up to see (i) whether they had obtained a license, (ii) whether they had hired an agent to assist them in obtaining a license, (iii) whether or not they had complied with all of the stipulated procedures for obtaining a license, and (iv) the study have the driving competence of each person who obtained a license assessed by an independent driving instruction firm.

Some of the most important results of the study come from just examining the comparison group, although these results confirm what any resident of Delhi intuitively knows. First, even in the comparison group that had no bonus for rapid acquisition of a license many hired an agent to facilitate the process. The hiring of the agent did in fact accelerate the process, in particular by almost completely subverting the driving test. Of those in the comparison group that hired an agent only 12 percent took the driving exam compared to 94 percent of those who did not. Many of those who did take the driving examination failed the exam. The primary response of those who failed the exam was not, as you might guess to receive more driving instruction but rather, in the next round of application, hire an agent (the encouragement of which, one suspects, was the true point of inspectors failing them). In administering the independent assessment the driving firm classified as “automatic failures” those who could not answer some very basic questions about the operation of an automobile sufficient to make the driving instructors feel safe in actually administering the exam. Of those in the comparison group who hired an agent (and hence almost universally avoided the driving test) 69 percent were automatic failures in the independent test. The point is that this agent-payment induced informal “waiving” of the driving test is not benign, in that it is merely “speed money” to accelerate a license for those who are competent drivers, but rather the failure to comply with regulations actually subverts the public policy purpose of having a driving license.

The experimental treatment confirmed these results of the comparison group and showed that by increasing incentives to individuals for a rapid license the process was easily subverted. In the treatment group paid for getting a license more rapidly they were (a) more likely to hire an agent and (b) were 18 percentage points more likely to both
obtain a license and fail an independent driving test than the control group. Again, not surprisingly, providing training to improving driving skills had little impact.

This example illustrates well many of the key analytical distinctions made above.

What is the “policy” for driver’s licenses in India? The notional policy is easy to describe, it is a mapping from states of the world (a person’s age, residence, eyesight and driving competence) to actions by specific agents of the state (issuing a driver’s license of a certain type (e.g. personal, commercial). But what is the policy for driver’s licenses in India, really? The realized policy is that for payment of a fee to a facilitator the agent of the government (driving inspector in the transportation ministry) will declare the state of the world (driver’s competence) to be adequate independently of the “true” state of the world.

A second example, also from India, also not an example of “economic” policy, will be instructive. A group of academics have been working with Seva Mandir, a local NGO active in Rajasthan, to define and examine using rigorous controlled experimental methods innovations that would benefit the poorer rural population of Rajasthan. Their initial investigations revealed that health issues were important and a extended careful tracking study of the attendance of the medical staff at local level facilities (sub-centers and PHCs) confirmed what earlier studies had shown (Kremer, Hammer, et al)—that attendance on any given day was only around one-half (Banerjee, Deaton, Duflo 2004). That is, one half of the staff appointed and being paid to run these facilities were present during the facilities stated hours of operation. This of course led most people to seek health care elsewhere, with the richer population mostly using other private providers and with the poor resorting to what are, euphemistically called “less than fully qualified providers” which range from traditional healers (bhopas) to “Bengali doctors” (individuals with some literacy who give injections and dispense drugs).

To address this problem of staff absenteeism the NGO worked with the government to devise a scheme to improve attendance that would be implemented as the government moved to put two ANM (auxiliary nurse midwives) into each clinic. In this program the ANMs had to keep strict track of their time (using a time clock that would date stamp their attendance records), the NGO would double check these official attendance records with spot checks. Any ANM who missed more than one half of the assigned days without a legitimate excuse (such as illness, authorized other duties, off site training, etc.) would have their pay docked. Moreover, in order to reduce complaints that absence was the result of other duties the government declared that one day would be the “monitored” day on which ANMs would have no other duties. It was hoped this intervention would raise attendance and hence raise facility utilization and services. The program was implemented in “treatment” areas and not implemented in “control” areas so that one could rigorously examine the impact.

The reader can get some idea of the results from the title of the resulting study: Band-aid on a corpse: Incentives for Nurses in the Indian Public Health Care System. Figure 1 (figure 3 of the paper this is taken from) shows the key results, which track the
difference between attendance at treatment and control clinics. What appears to have been the case is that the launch of the program initially raised attendance in both treatment and control areas (perhaps as the result of “Hawthorne” effects of being observed), then attendance in the control areas (in which no incentives were given) fell back to presumably baseline levels. More interestingly, in spite of the additional observation, in spite of the incentives, in spite of the monitoring, in spite of the fact these were “additional” ANMs (and so might have been not accustomed to poor performance), in spite of the introduction of “monitored” days attendance in the “treatment” areas fall so that by July of 2007 the presence rates were exactly the same—both around one-third.

Figure 3
Additional ANM present, two ANMs centers, random checks

Source: Banerjee, Duflo and Glennerster, 2007

Again, the health ministry had a variety of policies that the agents of the government, in this case, Auxiliary Nurse Midwives (ANMs) were intended to carry out. Each of these policies required some mapping from relevant states of the world to their actions (e.g. immunization policy is a mapping from the child (age, previous vaccination history) to specific immunization). But the organization was almost completely incapable of mapping from a very simple state of the world—what time and day it was—to a simple action—physical presence.