The Why and How of Growth Diagnostics

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What is Growth Diagnostics good for?

- Identifying policy priorities
  - what should we fix first?
- Exposing assumptions behind different reform strategies
  - If you think we should do this, your model of the economy must be that …
- Allowing the systematic use of economic theory and evidence
  - if this is the relevant model, these are what the evidence must show…
Outline

- A stylized example to illustrate the issues
- Growth diagnostics as an application of the economics of second-best
- Practical issues in the application of GD
A problem of low private investment...
What might account for this problem?

- corruption
- high taxes
- macroeconomic instability
- poor infrastructure
- bad geography
- lack of human resources
- bad institutions
- low domestic saving
- inadequate access to credit/finance
- poor financial intermediation
- ...
Using simple theory: a demand- or supply-side problem?

- Real interest rate
- Investment demand
- Investment supply
- Prototype successful economy
- "us"
Demand-side problem

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- I/GDP

"us"
Are the previously listed causes demand- or supply-side problems?

- **Do they work through investment demand?**
  - corruption, high taxes, macroeconomic instability, poor infrastructure, lack of entrepreneurs, bad geography, lack of human resources, bad institutions

- **Or through investment supply**
  - low domestic saving, inadequate access to credit/finance, poor financial intermediation, macroeconomic instability, bad institutions
How can we tell these stories apart?

- Prices
  - levels of prices as “diagnostic signals”
- “Comparative statics”
  - How do quantities and prices change in response to exogenous shocks to supply and demand, under each story?
    - e.g., exogenous increase in remittances
- In other words, use the predictions of each hypothesis/model to test it against the evidence
What’s the cost of getting the diagnosis wrong?
Treating demand problem with supply remedy

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Treating supply problem with demand remedy

real interest rate

investment demand

investment supply

"us"

prototype successful economy

I/GDP
What’s the cost of getting the diagnosis wrong?

- small response
- unintended adverse consequences
  - When investment is constrained by saving, increasing investment demand (through reforms that improve “business environment,” for example) will raise interest rates even further, harming fiscal sustainability
  - When investment is demand constrained, allowing more foreign savings (foreign finance) will appreciate the currency, harming tradables
- political economy
  - ratio of redistribution to net gains
  - “reform fatigue”
Economic reform in second-best context

- **General idea**
  - Developing countries suffer from multitudes of problems ("distortions" or violations of conditions for social optimality)
  - These distortions interact in potentially complicated ways, resulting in unanticipated consequences
  - We need a reform strategy that is cognizant of the economics of the second-best

- **Application to growth strategy**
  - How does Growth Diagnostics relate to economics of second best?
  - Practical aspects of the GD
Suppose an economy starts out with $n$ distortions, $\tau = \{\tau_1, \tau_2, \ldots, \tau_n\}$, with marginal social valuations of activities diverging from marginal private valuations:

$$\frac{\partial u(X)}{\partial X_j} - \frac{\partial u^p(X)}{\partial X_j} - \tau_j = 0$$

What is interpretation of $\tau_j$?

What is the effect on growth (or welfare) of removing one distortion leaving the other $n-1$ unchanged?

$$\frac{du}{d\tau_i} = \tau_i \frac{\partial X_i}{\partial \tau_i} + \sum_{j \neq i} \tau_j \frac{\partial X_j}{\partial \tau_i}$$

Total effect = direct effect (positive) + sum of all other indirect effects (positive or negative)
Where do indirect effects come from?

- Lowering one distortion can have good or bad effects, depending on which way other distorted quantities move
  - Example from agriculture: export liberalization under weak property rights and over-exploitation of common property resource
  - Example from trade: liberalizing intermediate inputs
  - Example from macro: relaxing borrowing restrictions under moral hazard
  - Example from institutional reform: privatization under monopoly conditions
- Two sort of “budget” constraints
  - Fiscal revenue constraint: reducing one tax requires a rise in another
  - Political budget constraint: may need to compensate for loss of rents
- Key point: Undertaking partial reform while leaving other distortions in place can have large, small or even negative effects on growth and welfare
- We can envisage 5 alternative reform strategies in these circumstances
Strategy 1: Wholesale reform

- Eliminate all distortions at once
- Sure to raise welfare
- Problem: impossible to do
  - Full list not knowable
  - Remember that the $\tau_j$ refer not just to explicit taxes but anything that drives a wedge between private and social optimality
    - Some “invisible” wedges: lack of credibility, externalities, coordination failures, absent markets, institutional failures…
  - Administrative, political, human-resource constraints
Strategy 2: Do as much as you can, as best as you can

Implicitly assumes:
- Any reform is good
- The more areas reformed, the better
- The deeper the reform in any area, the better

Trouble is, none of these assumptions holds under second-best environments
- see earlier examples
Strategy 3: Sophisticated second-best reform

- Start from wherever you can, but take into account all possible indirect effects
- Problem: quite difficult, even if administratively feasible
  - Most of these second-best interactions are very difficult to figure out and quantify *ex ante*
  - Some distortions are not even observable, as noted
    - Many distortions take the form of implicit taxes
      - E.g., imperfect credibility of government
- Besides, no guarantee that payoffs to such reform will be large
  - Especially when the investment in addressing second-best issues is taken into account
Strategy 4: Target the largest distortion(s)

- Find the $k$ with the largest “tax” $\tau_k$
- Under certain assumptions* (unlikely to hold in practice), can be guaranteed to raise welfare
- But:
  - It does require us to have a complete list of distortions
  - It does not guarantee that a big welfare bang is achieved
  - Note that direct effect can also be written
    \[
    \tau_k \frac{\partial X_k}{\partial \tau_k} = \tau_k X_k \frac{\partial X_k/X_k}{\partial \tau_k}
    \]
    - So impact depends on the size of the affected economic activity as well as the response elasticity
      - Think of huge tax on aircraft industry in a poor country

* The (sufficient) condition is that the activity whose tax is being reduced be a net substitute (in general equilibrium) to all the other goods.
Strategy 5: Focus on the “most binding constraints”

- Pursue those reforms where direct beneficial effect is largest
  - Identify $k$ such that $\tau_k \frac{\partial X_k}{\partial \tau_k} = X_k \left( \frac{\partial X_k / X_k}{\partial \tau_k / \tau_k} \right)$ is large(st)

- ... and choose policy instruments in a manner that is cognizant of second-best interactions

**Advantages**
- Economic theory provides some guidance as to which X’s to look at
- More likely to result in big welfare bang

**Disadvantages**
- Need to rely on theory and empirics to guide us
- Still need to check on key likely indirect effects
Applying the framework: growth diagnostics

- What we need is a method for identifying the most binding constraints on economic growth

- A heuristic strategy
  - Start from activities that are the proximate determinants of growth, $X_i$
  - Use theory to identify potential list of constraints
  - Use empirics to narrow the list
  - For each constraint, identify the specific distortion(s) that lie behind it (tau’s)
  - Come up with policies that target these distortions as closely as possible, while bearing in mind potential interactions with distortions in other, related areas
    - If second-best interactions are severe/adverse, look for less direct policies that overcome those interactions
Growth theory and policy diagnostics

From growth theory to policy diagnostics

output/income

physical capital  human capital  employment  productivity


Low private returns and therefore inadequate demand for investment due to:

- government failures
  - High taxes; poor protection of property rights or contracts; corruption; macroeconomic instability and inflation; ...;

- market failures
  - Product market failures (coordination failures, learning externalities and spillovers); ...;

- problems in other markets
  - Inadequate levels of other inputs in the production function: human capital, employment, technology; poor geography; ...;

Diagnostic signals?
Growth Diagnostics

Reasons for low private investment

Low return to economic activity

High cost of finance

Low social returns

Low appropriability

Government failures

Market failures

Information externalities: “self-discovery”

Coordination externalities

Bad international finance

Bad local finance

Poor geography

Bad infrastructure

Low human capital

Micro risks: property rights, corruption, taxes

Macro risks: financial, monetary, fiscal instability

Low domestic saving

Poor intermediation
An empirical diagnostic framework

- Explicit search for “diagnostic signals”:
  - “If story A is correct, signals x, y, z must be present…”

- Direct evidence
  - “shadow” prices: returns to education, real interest rates, cost of transport,…
  - benchmarking potentially helpful

- Indirect evidence
  - if a constraint binds, effects must show up in differential outcomes for activities that differ in their intensiveness in that constraint
    - informality, internalization of finance, self-enforcement of contracts
  - elimination of other plausible constraints

- A constant cannot explain a change
  - high growth episodes of the past cause us to ask what has changed
A policy reform agenda that is consistent with a country’s recent growth history

- Episodes of high or low growth provide evidence on necessary and sufficient conditions for growth in a given setting
- Reforms under consideration must be consistent with this evidence
- What to do:
  - Develop internally consistent “stories” about the causal mechanisms underlying recent growth history
Illustrations

- **El Salvador: low investment demand due to low incentives for “self-discovery”**
  - Need to find new high-return investment opportunities
  - Solution: industrial policy?
  - What will not work: Improving “institutional environment” will not be very effective when constraint is low appropriability due to “cost discovery” and coordination externalities

- **Brazil: low investment due to high cost of capital**
  - Need to increase domestic savings and enhance access to foreign savings
  - Solution: adjust fiscal policy?
  - What will not work: improving “business climate” not very effective when problem does not lie with low investment demand
Step 2: Policy design

- First-best logic sometimes not helpful
  - targeting policy on relevant distortion may not work due to second-best interactions and political-economy or administrative constraints
- Requires instead creative solutions that overcome these complications
  - policies that can *decouple* complementary areas of reform often work best, even if heterodox (e.g. China)
  - Taking advantage of multiplicity of institutional solutions:
    - the *functions* that good institutional arrangements perform (protect property rights, ensure macro stability, internalize externalities, etc.) do not map into unique institutional forms
- local contingencies require local solutions
- Policy solutions may lie in areas that did not appear to be the binding constraint
  - E.g. may recommend saving-augmenting strategy even if an economy is not saving constrained, if that enables a depreciated currency that increases tradables profitability
- Experimentation and learning are necessary components of reform
- Implication for government-business relations
  - government needs to be close enough to business to elicit information, far enough not to be captured
Step 3: Institutionalizing the diagnostic process

- Nature of binding constraints change over time
- Growth will slow down if diagnostic process not ongoing
  - Argentina, Indonesia, Cote d’Ivoire, ...
  - China’s future challenges
- Sustaining growth requires ongoing institutional reform to
  - Maintain productive dynamism
    - “industrial policy” institutions?
  - Increase resilience of economy to external shocks
    - “institutions of conflict management”
      - democracy, rule of law, social pacts, social safety nets
How diagnostic analysis differs: traditional approaches …

- A big idea: development is held back by
  - too little government
  - too much government
  - too little credit
  - absence of property rights
- …

- A big fix
  - ISI/Washington Consensus/Big Push
  - public health/microcredit/property rights
- A bias towards universal recipes, “best-practices,” and rules of thumb
...versus diagnostic strategies

- **Contextual policy analysis**
  - We do not know ex ante what works and what doesn’t
  - Need to look for binding constraints
    - Which tend to be context-specific
  - Experimentation central part of discovery
  - Monitoring and evaluation equally central

- **Focus on selective, narrowly targeted reforms**
  - Based on the idea that there exists lots of slack
    - Well targeted reforms can produce a big bang

- **Suspicious of “best-practice,” universal remedies**
  - Looking for policy innovations that unlock local second-best/political complications
Arguments against GD

- Poor nations suffer from many constraints
  - Of course
  - But this is no argument against the need to prioritize
    - GD is a way of thinking about how to prioritize

- Diagnostic “signals” are model-specific
  - Yes, the GD framework does place a premium on being explicit about the underlying model of the economy one has in mind
  - But that is probably an advantage, not a disadvantage

- Can never be sure you have identified binding constraint(s) correctly
  - Yes
  - But even then, it provides a useful way of framing the debate and conversation over different recommendations
    - “Since you recommend a, you must presume the binding constraint is x; what evidence can you adduce for it?”

- It is hard
  - Yes!
General lessons

- Binding constraints to growth differ across countries and over time
  - clear evidence that growth is unlocked in a large variety of ways
  - different strokes for different folks: CHN was constrained by poor supply incentives in agriculture; BRA is constrained by inadequate supply of credit, SLV by inadequate production incentives in tradables, ZAF by inadequate employment incentives in manufacturing, ZWE by poor governance …

- Relaxing binding constraints requires well-targeted reforms that are cognizant of prevailing second-best and political complications
  - selectivity instead of a laundry list
  - pragmatism in lieu of “best practice” and rules of thumb

- Over time, strengthening institutional underpinnings is critical
  - institutionalizing “diagnostics”
  - building resilience to external shocks
  - institutional reform is key, but to sustain rather than ignite economic growth