Fiscal Policy and Long-Term Growth

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Outline

Motivation

The Channels: How Can Fiscal Policy Affect Medium- to Long-Term Growth?

Empirical Evidence: Results of a Multi-Pronged Analysis

Other Key Lessons: Equity and Reform Design

Conclusions
Output across advanced and emerging market economies remains below expectations

**Advanced Asia 1/**
Index of Real GDP, 2007 = 100

**Emerging Asia 2/**
Index of Real GDP, 2007 = 100

Source: WEO.
1/ Hong Kong, Japan, Korea, Singapore, and Taiwan.
2/ China, India, Indonesia, Malaysia, Philippines, Sri Lanka, and Thailand.
How Can Fiscal Policy Affect Medium- to Long-Term Growth?
At the macro level, fiscal stabilization reduces volatility and promotes growth...

Fiscal Stabilization Coefficient vs Output Volatility

- Significant coefficients
- Insignificant coefficients

Correlation = -0.40

Fiscal Stabilization Coefficient vs RGDP Growth
..and allowing automatic stabilizers to operate in good times can avoid public debt buildup.

**Asymmetric Stabilization: Unpleasant Public Debt Arithmetic**

(Percent of GDP)

- **Revenue windfalls half spent**
- **Symmetric stabilization**
Fiscal stabilization is much more common in advanced economies.
At the micro level, fiscal policy affects growth through four main channels:

- Labor supply
- Human capital
- Physical capital
- Productivity/Innovation
Fiscal Policies to Encourage Labor Supply

• Lowering the labor tax wedge increases after-tax earnings and the supply of labor (succeeded in Ireland, and the Netherlands)

• Use of in-work benefits can strengthen work incentives (used in Germany, the UK, Sweden)

• Targeted measures may be needed to increase LFP:
  → Women: closing the gender gap in education (e.g., in India); or providing better child care and flexible work options (e.g., in Japan)
  → Older workers: financial incentives (e.g., through tax rates); and increasing the retirement age;
  → Low-skilled workers: in-work tax credits; hiring subsidies; targeted reductions social contributions.
Fiscal Policies to Enhance Investment

• In AEs, taxing “excess returns” or rents can reduce distortions from CITs

• Infrastructure investment can boost growth directly and indirectly by raising the productivity of private capital: but efficiency is key:

→ The most efficient countries get *twice the growth dividend* from investment compared with the least efficient countries

• In developing economies, targeted and transparent incentives that reduce the cost of capital can promote investment

• Tax incentives can erode the revenue base without achieving any benefits from higher investment unless they are properly designed and limited
Open-ended and profit-based tax holidays should be avoided.

Regional Prevalence of Tax Incentives
(Percent)

- Tax Holiday/Tax Exemption
- Reduced Tax Rate
- Investment Allowance/Tax Credit
- R&D Tax Incentive
- Super-Deduction

- East Asia and Pacific
- Latin America and the Caribbean
- OECD
- Sub-Saharan Africa
- Eastern Europe and Central Asia
- Middle East and North Africa
- South Asia

Source: James (2013).
Fiscal Policies for Human Capital Development

- Improving access to education and health for disadvantaged groups is a priority, including by:
  - Increasing investment at lower levels of education and increasing cost-recovery in tertiary education (while protecting the poor)
  - Providing a basic health package; expanding services to remote areas; and reducing user charges for poor households
  - Conditioning cash transfers on school attendance and preventive health visits
- In AEs, allowing for the deductibility of education expenses can mitigate the adverse impact of progressive taxation
Fiscal Policies to Promote Productivity and Innovation

R&D Expenditures and Growth, 2001-2012

Average Real GDP Per Capita Growth

Average Real R&D Expenditure Per Capita Growth

Source: WDI.
Note: Excludes countries with fewer than five observations during the
Empirical Evidence: Results of our Multi-Pronged Analysis
The growth dividend from fiscal reforms can be substantial.

**Estimated Growth Gain**
(Percent, GDP per capita, 10-year average 1/ 2/)

- **Advanced Economies**
- **Emerging Markets**
- **Low-Income Countries**

Source: IMF staff calculations; Supplement 1.
1/ 5-year averages for Germany and Poland.
2/ Chile (1) refers to the first reform episode (1974); Chile (2) to the second reform episode (1983); Australia (1) to the first reform episode (1985); and Australia (2) to the second reform episode (1998).
Country Focus: Malaysia

- Malaysia’s reform period from 1986-90 chosen based on quantitative selection criteria;

- A large expenditure-based fiscal adjustment, reduction in the size of the public sector, and economic deregulation were key elements of the reforms;

- Growth picked up markedly in the period following fiscal reforms, increasing by 2 percentage points vis-à-vis the counterfactual;

- Fiscal policy appears to have contributed to boosting Malaysia’s growth by promoting private investment, job creation and gains in TFP.
Malaysia: Growth post-reform exceeded expectations

Annual GDP Growth, 1986-1990
(Percent, 10-year average)

Reform period

1/ Indonesia, Korea, and Philippines.
Fiscal reforms increase the probability of growth accelerations

Type of Reforms and Conditional Probability of Growth Accelerations
(Percent)

Source: IMF staff calculations.
Note: Reported are the ratios of fiscal reforms followed by a growth accelerations within a 5-year period to the total number of fiscal reforms (in percent).
Other Key Lessons
Social dialogue helps deepen and sustain reform efforts

**Cumulative Change in the Public Wage Bill**
(Percent of GDP)

Source: IMF staff calculations.
Equity-efficiency trade-offs can be avoided

Net Inequality 1/
(10-year avg. post-reform minus 10-year avg. pre-reform)

- Decrease in spending/increase in inequality
- Increase in spending/increase in inequality
- Decrease in spending/decrease in inequality
- Increase in spending/decrease in inequality

Source: IMF staff calculations, SWIID 5.0.
1/ Refers to Gini coefficient after taxes and transfers.
Conclusions
Conclusions

• Fiscal policy can be an effective tool for supporting medium- to long-run growth.

• The mix of fiscal policy options should be tailored to country-specific conditions, administrative capacities and preferences.

• The growth dividends of fiscal reforms depend to a large degree on complementary structural reforms and supportive macroeconomic policies.

• Strategies—such as effective communication with stakeholders and compensatory measures for those made worse off—can help foster public support for fiscal reforms.

• Both growth and equity objectives can be achieved when fiscal reform packages are appropriately designed.
Thank you
Annex Slides
Three studies find a positive link

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<td>¾ pp for AEs and even higher for DCs</td>
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<td>Endogenous growth simulations</td>
<td>½ pp from budget neutral tax reforms + ¼ pp for enhancing composition of spending</td>
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<td>Statistical analysis</td>
<td>Increased likelihood of growth following fiscal reform</td>
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Synthetic Control Method
Overview

• Formal data-drive procedure to quantify the effect of fiscal policy on long-run growth.

• Removes discretion in selection of countries.

• The effect of fiscal policy is difference between growth in the country and its synthetic counterpart.

• Results should be treated with caution due to potential biases.
Synthetic Control Method

Intuition

• **Goal**: Evaluate the impact of fiscal reforms on long-run growth in a country of interest

• **Issue**: Difficult to find counterfactual showing what the long-run growth would be if the country did not implement the reform

• How does synthetic control method address this issue?
  o Use a panel data of countries (**synthetic control**) that did not implement fiscal reforms around the same time as the country of interest, but have similar observable characteristics (region, level of development, etc.)

  o Assess the impact of fiscal reforms by taking the difference between the post-reform growth rate in the country of interest and weighted-average growth rate of synthetic control group

  o Countries with more similar observable characteristics with the country of interest in the pre-reform period carry higher weights
Synthetic Control Method
Formal implementation

- **Units**: \( j = 0, 1, 2, \ldots, J \) countries, where \( j=0 \) is the treated or reforming country, and \( j = 1, 2, \ldots, J \) are control countries

- **Time**: \( t = 1, 2, \ldots, T_1 \) periods, where *pre-reform* period is \( t = 1, 2, \ldots, T_0 \); *post-reform* period is \( t = T_0+1, \ldots, T_1 \)

- **Variables of interest**:
  - \( Y^I_{0t} \): GDP growth in treated country \( 0 \) at time \( t \) assuming reforms were implemented at \( T_0 \)
  - \( Y^N_{0t} \): GDP growth in treated country \( 0 \) at time \( t \) assuming reforms were not implemented at \( T_0 \)

- **Effect of fiscal reform**: \( Y^I_{0t} - Y^N_{0t} = \alpha_{0t} \) (for \( t>T_0 \)), where \( Y^N_{0t} \) is not observable and needs to be estimated
Regression model:

\[ Y_{jt} = \delta_t + \theta_t Z_{jt} + \lambda_t \mu_j + \varepsilon_{jt} \]

where:

- \( Z \): observed covariates of growth (GDP per capita, trade openness, inflation rate, terms of trade index, human capital per person)
- \( \delta \): unobserved time effects
- \( \mu \): unobserved country effects
- \( \lambda, \theta \): time-varying coefficients (\( \lambda \) is constant in dif-in-dif regressions)

- Counterfactual growth rate is \( Y_{0t} = \sum_{j=1}^{J} W_j^* Y_{jt} \) where vector of non-negative weights \( W^* \) is chosen to minimize the difference between observable characteristics of treated and control groups.
## Synthetic Control Method
### Advantages and Disadvantages

<table>
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<th>Main advantages</th>
<th>Main limitations</th>
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<tr>
<td>Allows selection of control group based on a transparent and flexible statistical procedure, rather than ad-hoc reasoning</td>
<td>Can lead to over-fitting if initial sample of control group is not selected based on similarity to the reforming country</td>
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<td>Allows for a study of the dynamic impact of reforms.</td>
<td>SCM suffers from reverse causation bias if reforms depend on expected future growth.</td>
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<td>Robust to endogeneity bias due to time-varying omitted variables.</td>
<td>Tests of statistical significance are difficult with SCM</td>
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Synthetic Control Method

Literature


Endogenous Growth Model

Methodology

Key Features:

- Two sectors: final output and human capital
- Government investment in productive public capital
- Endogenous labor supply
- Constant returns to scale in public and private capital
- Accumulation of public and human capital offsets diminishing returns to physical capital accumulation
Endogenous Growth Model
Results

Budget-neutral experiments

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<th>Fiscal Reform</th>
<th>Increase in LT Growth Relative to Benchmark</th>
<th>Offsetting Measures</th>
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<tr>
<td>Δ Capital tax -5%</td>
<td>0.4-0.5 pp</td>
<td>↑ consumption tax</td>
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<tr>
<td>Δ Labor tax -5%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Δ public investment +1% of GDP</td>
<td>0.15-0.2 pp</td>
<td>↓ unproductive spending by 1 pp of GDP</td>
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