



Asia
Research Centre



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Public Finance Underpinnings for Sustainable Infrastructure Financing

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Outline

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- Significant Infrastructure needs, but constrained revenue envelope for sustainable growth
- How to address revenue challenges?
 - Design of instruments
 - ✦ Elimination of implicit subsidies
 - ✦ Choice to tax instruments to avoid distorting incentives or damaging trade (reliance on VAT and CIT to avoid disadvantaging exports)
 - ✦ Providing incentives for more efficient use of natural resources and conservation of the environment (e.g., carbon tax)
 - Sub-national challenges—linked to service delivery, *appropriate investment*, and accountable management of liabilities
- Governance and accountability
 - Incentives and information flows
 - Importance of institutions

Spending and Infrastructure Needs and Revenue Envelopes

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Tradeoffs—health and education and bricks and mortar

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- **Requirements for basic services:**
 - Health and education, not just for MDGs, but also linkages with sustainable development
 - Significant needs in low and middle income countries
 - But also in upper middle income countries, like Chile
 - ✦ Focus on improving access and quality of education
 - ✦ Linkages with sustainable growth and employment
 - ✦ Universal and free education adds 1.5 to 2% of GDP to a tax effort that is already above Latin American average (18%--close to the MDG target)
- Much more difficult for countries, like Pakistan, with a general government tax/GDP ratio of 9%

Significant education needs...magnified by low revenue performance

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	School enrollment primary (net)	Secondary enrollment (gross)	Adult literacy rate	
Pakistan	66.4	33.1	55.5	
India	91.4	60.0	62.7	
Bangladesh	85.3	42.3	55.9	
Sub Saharan African	75.1	36.0	62.3	
Malaysia	95.6	68.7	92.5	
Indonesia	95.3	79.5	92.2	
Iran	99.5	83.7	85.1	

Source: World Bank, World Development Indicators, September 2011

Social spending --health

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Countries	Total expenditure on health as % of Gross domestic product					Public % GDP	Per capita govern
	2005	2006	2007	2008	2009	2010	2009
Nigeria	6.6	5.5	5.3	5.2	5.8	2.1	25
Brazil	8.2	8.5	8.4	8.4	9.0	4.1	335
Mexico	5.9	5.7	5.8	5.9	6.5	3.1	253
Afghanistan	8.8	7.8	7.6	7.4	7.4	1.6	11
Iran (Islamic Republic of)	5.7	5.5	5.5	5.5	5.5	2.2	105
Pakistan	2.8	2.7	2.6	2.6	2.6	0.8	7
Yemen	4.9	5.3	5.3	5.3	5.6	1.6	18
Bangladesh	3.2	3.4	3.5	3.3	3.4	1.1	6
India	4.2	4.0	4.0	4.0	4.2	1.1	13
Indonesia	2.1	2.3	2.5	2.3	2.4	1.2	29
Thailand	3.5	3.7	3.7	4.1	4.3	3.3	127
China	4.7	4.6	4.2	4.3	4.6	2.3	85
Malaysia	4.1	4.3	4.4	4.2	4.8	2.2	151
Philippines	3.6	3.6	3.5	3.6	3.8	1.3	23
Singapore	3.0	2.9	3.0	3.3	3.9	1.6	618

Source: WHO, NHA Database; Note: Pakistan budgetary spending on health in 2008/9 0.6% of GDP. Per capita government spending is in US \$ at the prevailing exchange rate. Public per capita spending 2010, World Bank, 2011.

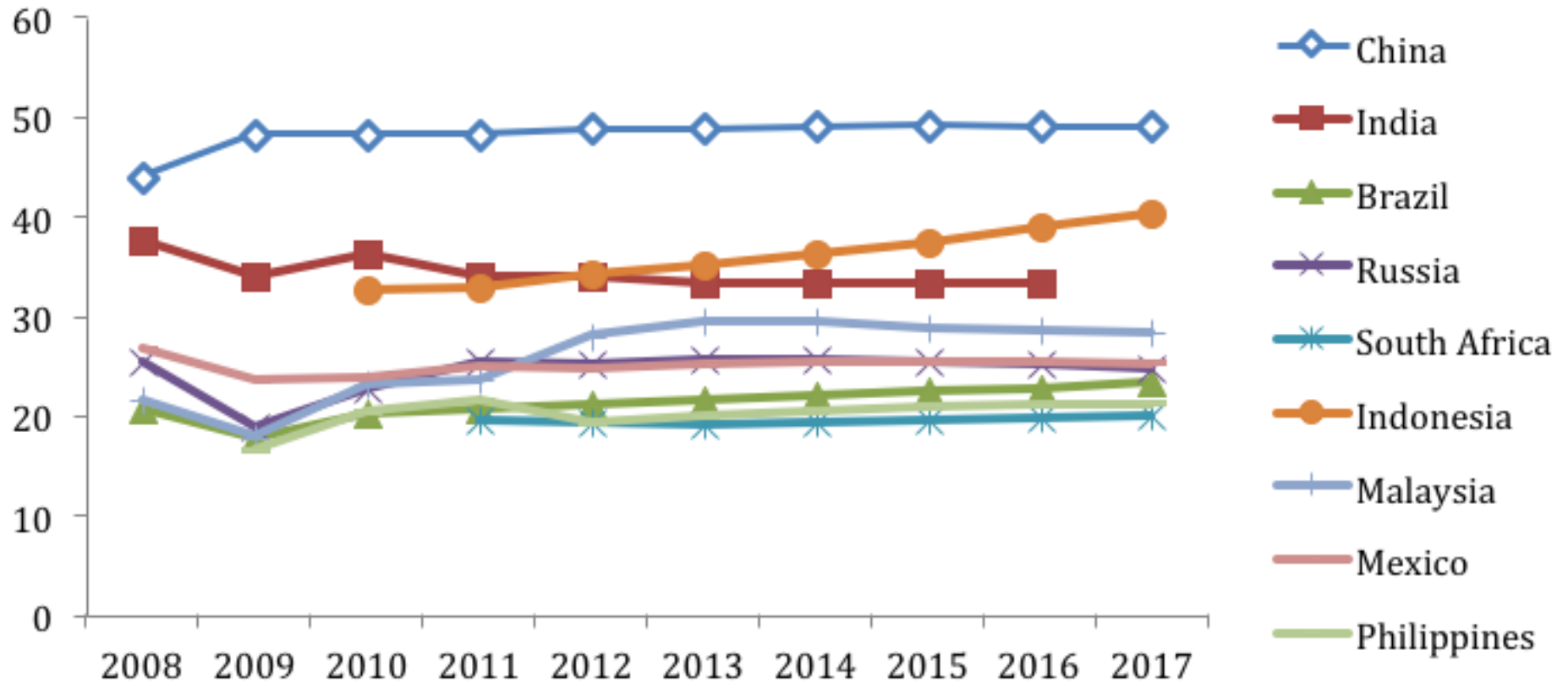
Generating sustainable growth and poverty reduction

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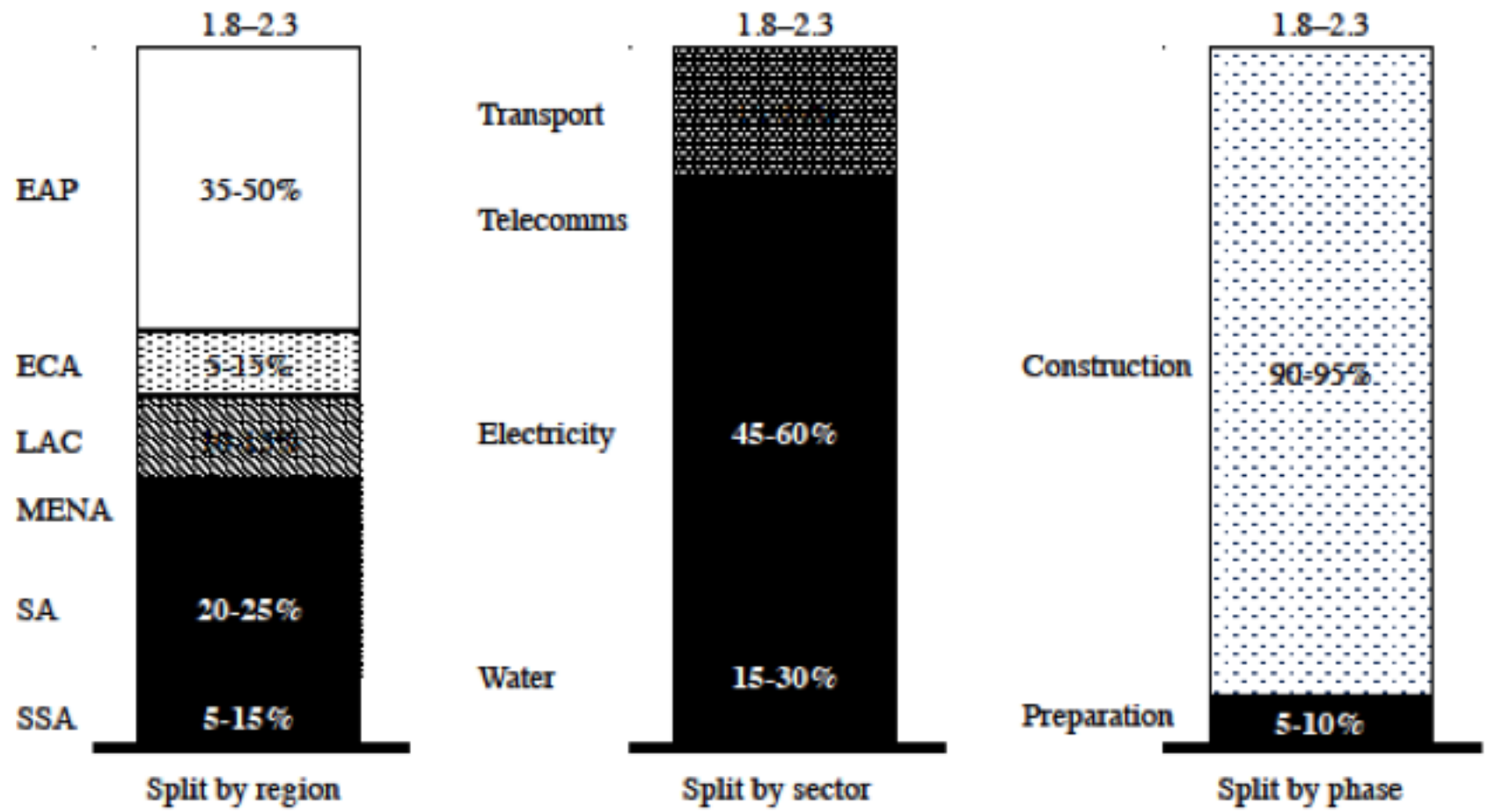
- Huge infrastructure gaps
- Need for long-term financing
 - Heavy reliance on bank financing for cross-border flows is inadequate (G30 report)
 - Incomplete information compounds risks
 - Requirements for physical infrastructure, K, O&M
 - In addition to MDGs
- G30 solution: PPPs—kicking the can down the road?
- Intertemporal gains: is borrowing justified? Sustainable?
- Comes back to the domestic resource mobilization agenda

Projections of Investment needs

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Annual infrastructure spending requirements in the developing world (\$tr, 2008)



NOTES: \$ trillion per year, (2008 real prices), capital investments only (excl. operation and maintenance costs)
 SOURCE: Estimated annual infrastructure spending need for 2020 calculated by taking the Fay et al (2010) estimate of \$1.25-1.5 trillion annually in 2013 and assuming a

Key preconditions

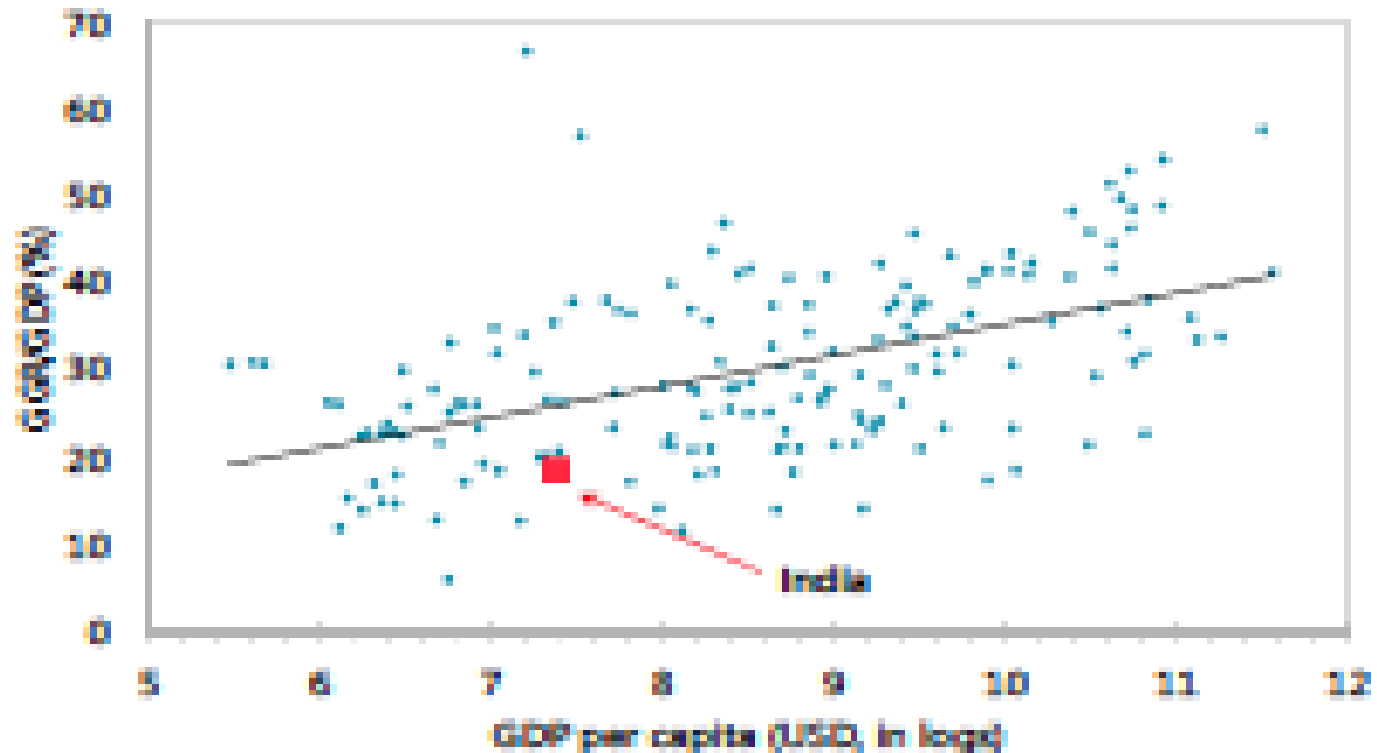
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- Need verified intertemporal information to underpin risks
 - Own-source revenues (at each level of government) to anchor debt with responsibility
 - Governance and information structures
- PPPs and Debt Instruments: Possibility of game play and renegeing on commitments and contracts
 - Both private investors and governments
 - Problems exacerbated at the sub-national level
- Need full information and an insurance mechanism/international agency to act as arbiter

Is 18% tax/GDP enough?

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General Government Revenue and GDP per capita, 2012
(excluding oil exporters and microstates)



Source: IMF, World Economic Outlook

Tax revenue and Expenditure for selected countries/regions (percentage of GDP)

	Germany 2010	Australia 2010	China 2009 ¹	Brazil 2010 ²	OECD average (excl. US) 2010	EU-27 average 2010
Revenue	43.3	32.5	27.6	36.7	41.4 ³	44.1
Tax Revenue	22.2	25.7	18.9	25.4	34.0	25.8
Income Taxes	10.6	14.4	4.6	6.9	11.3	11.5
Goods and services	10.8	7.1	12.1	15.7	11.2	11.2
Property Tax	0.8	2.5	1.7	1.3	1.7	1.3
Social Contributions	16.8	-	3.6	6.6	10.6 ⁴	12.9
Expenditure	47.6	38.0	28.3	39.5	46.6 ⁵	50.6
Social Benefits	25.4	10.6	-	8.2	26.1 ⁵	21.6
Functional Spending						
Health	7.2	6.8	1.3	4.1	6.8 ⁶	7.5
Education	4.3	6.1	3.8	5.5	5.7 ⁶	5.5

Notes:

¹ Data unavailable for 2010; 2009 data used.

² Data unavailable for 2010 for Functional Spending (Health and Education); 2009 data used.

³ Data unavailable for New Zealand and Chile.

⁴ Data unavailable for Australia, New Zealand and Chile.

⁵ Data unavailable for New Zealand.

⁶ Data unavailable for Canada, Chile, Mexico, New Zealand and Switzerland).

Sources: International Monetary Fund (IMF) Government Finance Statistics (December 2012 Edition); ESDS International, University of Manchester; World Bank Indicators; OECD Tax Statistics (database); and Eurostat.

Additional needs for countries at around 18%

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- **Chile:**
 - For universal education to adjust to balanced and greener growth—an additional 2-3% of GDP sought in the medium-term
 - Rebalancing and reducing spatial and interpersonal inequalities
- **China:**
 - For ageing of the population
 - Anchoring subnational borrowing and investment needs
 - Rebalancing and reducing spatial and interpersonal inequalities
 - Climate change and green growth
- **India:**
 - Significant remaining infrastructure needs, social policies
 - Climate change and green growth

How to address the revenue challenges?

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General government revenue targets

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- 18% of GDP, only an indicative target—more may be needed, as seen above
- Countries in trouble below that level:
 - China 1993 (10%), but almost 20% now;
 - Mexico 2013 (10.5% non-oil; although 22% including oil—but vulnerable)
 - ✦ Major reforms in 2013; should lay basis for more sustained growth trajectory
 - ✦ Relatively unaffected by the turbulence in financial markets (Videgaray, March 2014)
 - Pakistan 1985 (14%); 2013 (9%)...remains in considerable difficulty—danger of low level growth trap

Specific policy interventions: good intentions, bad outcomes

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- **Policies in isolation**
 - Food policy, social protection measures
 - Bismarkian social policy financed by payroll taxation
 - Tax exemptions—Multiple rate VATs for distributional purposes or to “encourage sectors”
- **Can make matters worse by enhancing reliance on inefficient financing mechanisms**
 - Potential rent-seeking with tax holidays
 - Loss of revenues and inefficient production (cascading with VAT exemptions)
- **Consideration of full picture could lead to more efficient and equitable policy design—examine gainers and losers**
- **Political economy**
 - China: 1993/4
 - Mexico 2013

China—tax reforms for structural change and sustainable development

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- 1994 reforms transformed the Central Government's fiscal position
 - Needed joint tax reforms and intergovernmental transfers
 - Tax/GDP ratio increased from 10% to 19% in this period
- But need for further tax reforms at the current junction:
 - Ageing and industrial restructuring/ regional imbalances
 - Sustainable environmental development and redistribution
 - Sub-national contingent liabilities

Mexico—weak medium-term fiscal position

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- Weak fiscal position in medium-term, given declining oil production, limited the scope to adjust
- Adjustment has been difficult—e.g.,
 - Difficulty to carry out tax reforms over the past 25 years;
 - Full of holes and special provisions; Swiss Cheese effect
 - Social programs are distorting; reducing growth (Santiago Levy)
- But major reforms carried out during 2013
 - Many innovative features: focusing on blocking incentives to cheat
 - A tax-benefit story at the Federal level
 - Should provide a stronger basis for additional revenue generation, without discouraging investment or generating informality
 - Sub-national agenda remains

Tax options

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- Carbon tax on production/import component would be easy and uniform across the country
 - Based on international prices (eliminate implicit subsidies)
 - Could be linked to compensatory programs by state/province
- VATs rather than taxes that add to cost of doing business:
 - But this constrains sub-national options
 - ✦ Hard to bring in additional differentiation
 - ✦ Cross-state transactions with different rate structures introduce greater complexity and go against the proposed VAT reforms
 - Indian Empowered committee recommendation to collect VAT with independent national body, with unified base
- Income taxes:
 - CIT converging to around 25% (Foreign tax credits)
 - PIT hard to implement in most LDCs, but need local information for efficient management

Political economy case for sub-national own-source revenues

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- **Need own-source revenues for sub-national accountability**
 - At margin, local inhabitants pay for own responsibilities (Ambrosiano and Bordignon, 2006, 2014)
 - Needed to ensure hard budget constraints and accountability (links growing subnational liabilities with ability to pay)
 - Would supplement shared revenues and transfers
- **Does not imply that a local tax administration is needed for each own-source tax**
 - Piggy-backed arrangements for broad based taxes for intermediate levels (including large metropolitan areas)
 - Would generate incentives for sub-national governments to share information with national tax administration
- **Policy agenda is critical and determines the success or not of assigned administrative arrangements**

Typology for local taxation and policy

		1a	1b	2a	2b	3a	3b
Key Factors	Central Tax	Shared taxes		Own-revenue/ Surcharge		Local Tax	
		Central Admin	Joint-Admin	Joint-	Central	Joint-Admin	Local Admin
Rate/ base	CG	CG	CG	LG	LG	LG	LG
Revenue	CG	CG / LG	CG / LG	LG	LG	LG	LG
Administ ration							
Registration	CG	CG	CG	CG	CG	LG	LG
Valuation	CG	CG	CG	CG	CG	LG	LG
Assessment	CG	CG	CG	CG	CG	LG	LG
Bill Delivery	CG	CG	CG/LG	CG/LG	CG	LG	LG
Collection	CG	CG	CG	CG	CG	LG	LG
Enforcement	CG	CG	CG	CG	CG	LG	LG
Services	CG	CG	CG/LG	CG/LG	CG	LG	LG
		Central Control				Local Autonomy	

Local taxes: Property tax option for municipalities

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- **Advanced country model (right column)**
 - Weakened by absence of rate setting authority at local level
 - Proximity of taxpayers leads to political resistance and “rent seeking” (registration and valuation)
- **Design of the property tax**
 - Avoid political resistance by linking to service delivery
 - ✦ Avoid race to the bottom
 - ✦ Minimum and maximum bands
 - Self-assessment principles
 - ✦ Experiences from Latin America (Bogotá, Bangalore)
 - Cadaster and valuation (independent bodies to avoid rent seeking)
 - ✦ Scope for technical assistance—registers for transactions
- **Linkage with service delivery (Marshallian principles) Ahmad, Brosio, Pöschl (2014) to overcome resistance**
- **Own-source revenues needed to anchor access to credit for local infrastructure—interlinkages with budget systems**

Governance and Institutions

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**IMPERFECT INFORMATION LEADS TO GAME
PLAY ACROSS LEVELS OF GOVERNMENT; AND
WITH FIRMS**

Imperfect information, Game-play and Political economy

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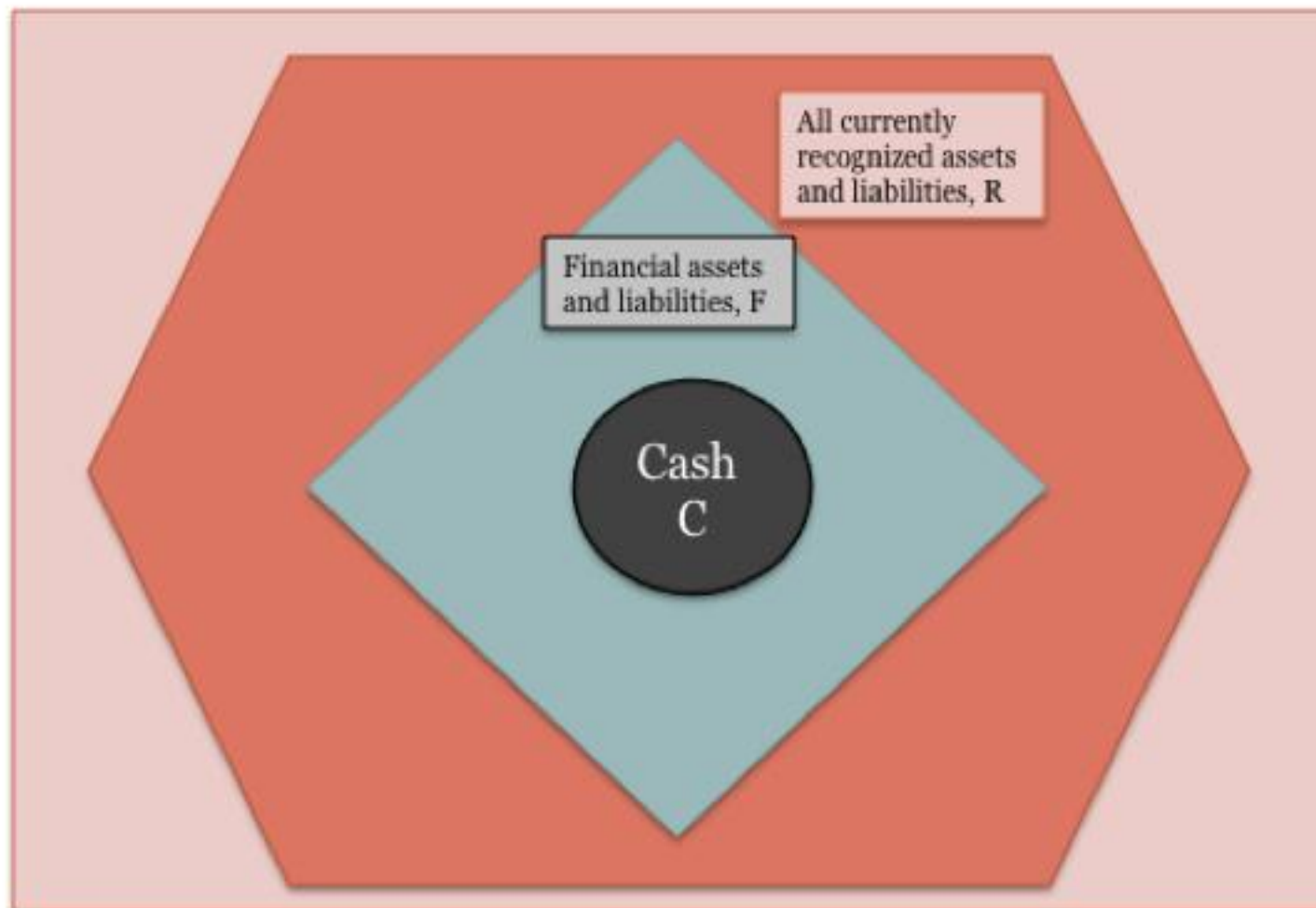
- Imperfect information
 - Leads to “game play” across levels of government
 - ✦ And between government and private contractors (leverage to re-contract, especially in high profile cases)
 - Hiding or non-recognition of liabilities
- In extreme cases, private debt could result in public assumption of the liabilities
 - Ireland and Spain, recent crisis; and Mexican roads in the 90s
- Could result in poor decision making and cost-overruns

Credibility of the State and Accountability

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- Follow spending by all levels of government
 - Institutions, economic classification, functions, projects, programs, outputs and outcomes
 - Manage liabilities
 - *Track using common standards: lesson from EU failures*
- Essential to know what was spent by each level,
 - before ascribing results to local “participatory or performance budgeting” in countries with overlapping responsibilities, earmarking
- Essential also to know extent of liabilities (also securitization of revenues, with single term mayors)
- Plus track the cash, to prevent cheating and leakages
- Harder to address “clientelism”, although “capture” is easier to detect

Rights and obligations associated with all future cash flows, E



PPPs—kicking the can down the road?

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- Very easy to use as a means of postponing reckoning and avoiding debt limits
- Pass the buck also to future administrations
 - Also other jurisdictions
 - The Center carries the can if there are no “own-source revenues”
- After European crisis—tightening of IPSAS rules
 - Who owns the assets—should guide provisioning
 - Resisted in EU, as it would add to deficits and debt

Credibility and Risk Mitigation

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- **Impartial arbiters between firms and governments**
 - Incentives to renege and renegotiate contracts
 - Asymmetric information
 - Political power with high profile projects (possible rent seeking as well)
- **Governments also cannot be trusted without adequate own-source revenues**
- **Scope for a new multilateral agency to do this?**

Incentives and transfer design

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- Central transfers in spheres of sub-national jurisdiction have a debilitating effect
- Badly design equalization systems or gap filling can negate the incentives to use “own-source revenues”
- In effect can lead to poor investment decisions, and build-up of unproductive assets and liabilities
- It’s all about incentives and the interactions between instruments
- Information is critical
 - GFSM2001 standards—not for reporting to IMF but for domestic management of liabilities
 - ✦ Big projects in Egypt: PR China; Saudi Arabia; needed elsewhere including in Europe....

GFSM2001 methodology for all levels of government, linked to SNA

Transactions

uses specific codes to identify economic flows and stocks

Revenue

1

Expense

2

Transactions in
Non financial
assets

3

Transactions in
financial assets
& liabilities
by instrument

Other Economic Flows

4

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Holding gains/
losses:
nonfinancial
assets,
financial assets,
liabilities

Other volume
changes:
nonfinancial
assets,
financial assets,
liabilities

Stocks

6

Nonfinancial
assets,
financial assets,
liabilities

Functions

7

Transactions in
Financial Assets
& Liabilities
by sector

8

Chart Of Accounts (COA)

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- Logical framework for recording and reporting financial information
- Modern systems include GFSM2001 fully in COA
 - Accommodate progressive move to accrual accounting
 - Program and performance budgeting
 - Asset and liability accounts in addition to revenue and expense accounts
 - Forms core of the information to be generated and tracked in a GFMISs
- Must be common across levels of government
 - Not always followed, with great difficulty in tracking spending or liabilities
 - Can be quite problematic

Chart of Accounts (COA) - Segments

No.	Segment	Size	Description
1.	Institutional Entity	2	Economic Entity – e.g. General Government Sector, Other Economic Entities
2.	Source of Funds	2	Funding Sources
3.	Functional Classification	8	UN/OECD COFOG
4.	Administrative Classification	6	Ministries, departments, agencies
5.	Program / Sub Program Classification	6	Outcomes
6.	Activities / Projects	6	Achieving Outputs
7.	Geographic	6	Region, District
8.	Economic Classification	8	GFSM2001 Revenue, Expense, Assets and Liabilities
9.	Spare	6	Including for possible performance indicators/Outputs

Preconditions for effective management of sub-national liabilities

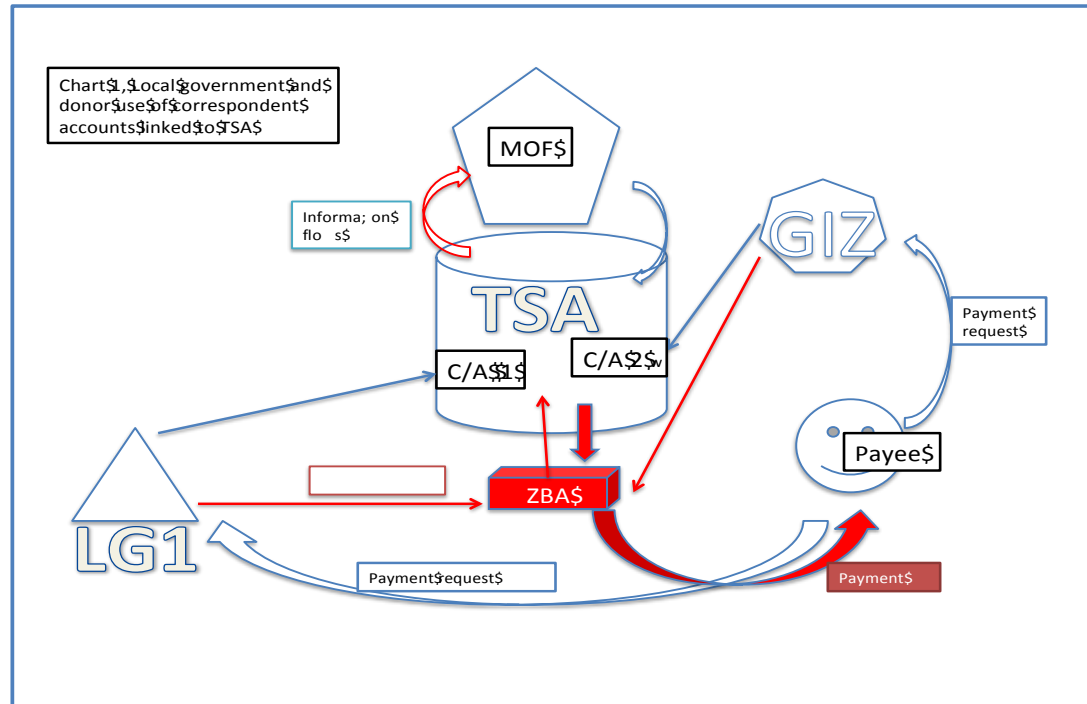
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- Need information to make the process more transparent and accountable
- Better linked to local priorities
 - Avoid exclusive emphasis on physical infrastructure
 - Balanced with o/m and human capital needs
- Essential to have own-source revenues at margin; ensure hard-budget constraints
- Moves to provide information to market, as well as monitoring at center essential
 - Ratings agencies
- Could be done in asymmetric manner

Important to track the cash....

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TSA with donors/local government



Source: Ahmad (2013, 2014)

Spending can be managed with a decentralized GFMIS infrastructure—if the COA is common

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- As with the tax administration, a common infrastructure can be used (both for the TSA as well as GFMIS)
 - Replicated at the regional level
 - With local administrations using on an agency basis
- Decentralized spending can be tracked/ GFMIS
 - But a common data base is critical
 - Essential ingredient is the COA
 - Mappings to the GFSM2001 are not adequate (commonly used, e.g., in Latin America)

Conclusions

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Longer-term agenda for sustainable growth

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- **Judicious use of private resources, cross-border financing, together with well defined public actions**
- **Overall revenue envelope**
 - Avoid inefficient subsidies (also inequality enhancing)
 - Efficient generation of overall revenues (VAT and CIT rather than cascading and distorting taxes)
 - Avoid special provisions, level playing field
 - Own-source revenues at sub-national level increasingly important
 - Political economy of gainers and losers
- **Institutions and information flows**
 - Critical for recognition of liabilities and inter-jurisdictional competition
 - Basis for the risk sharing needed in PPPs, and a function of sectoral characteristics (forthcoming paper with Bhattacharya, Vinella and Xiao)