COMMODITY PRICE VOLATILITY AND FISCAL MANAGEMENT IN RESOURCE RICH ECONOMIES

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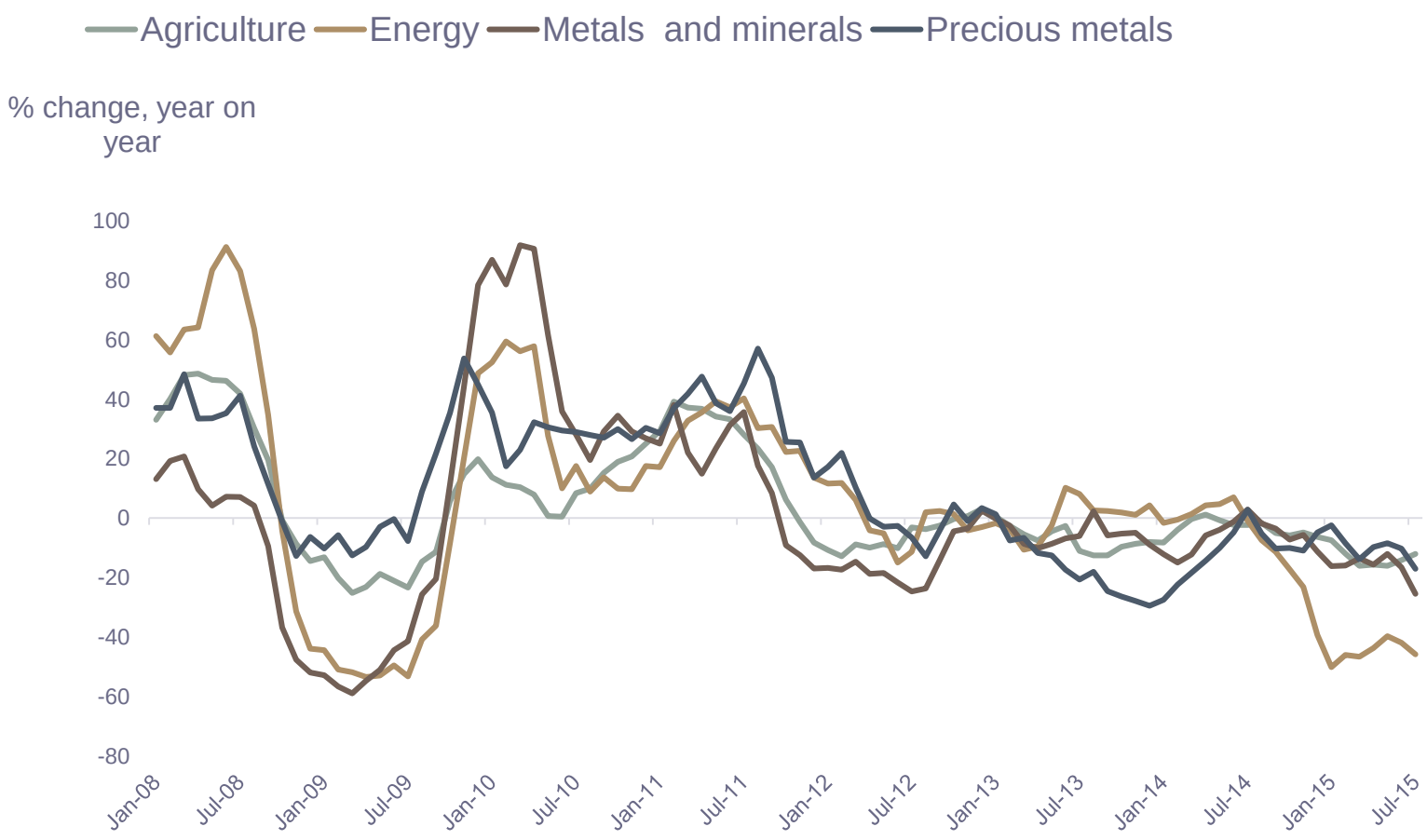
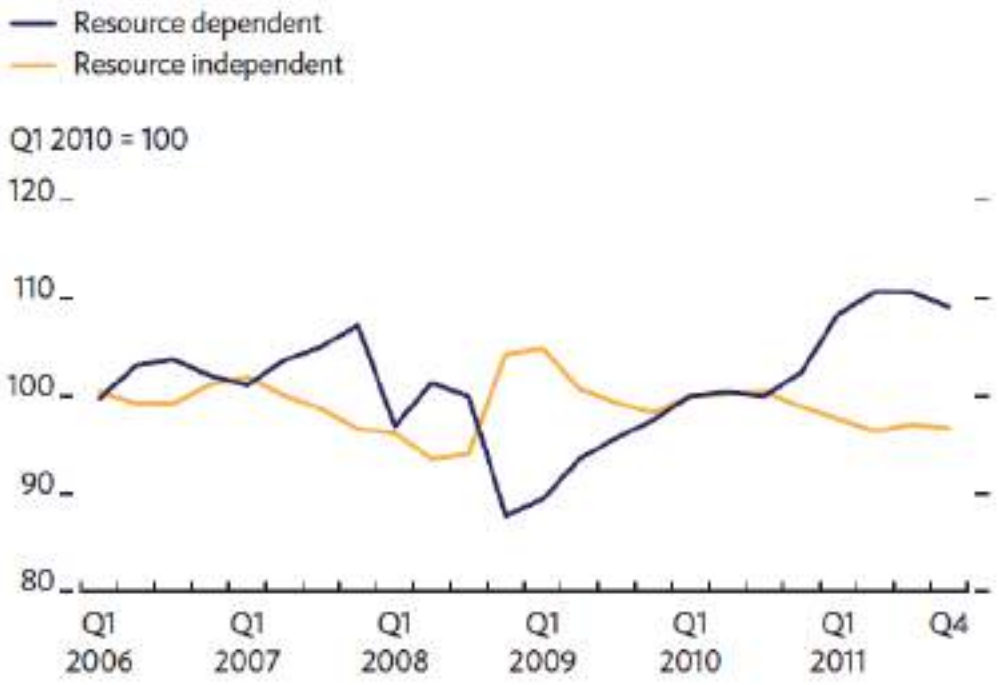
Synchronized Prices Driven by Demand



Source: WB pink sheets

Resource dependent countries face volatile terms of trade



Q = quarter.

Note: Commodity terms of trade refer to the ratio of export prices to import prices of commodities that include wheat, rice, maize, oilseed and soybean, palm oil, sugar, coffee, cotton, total energy, petroleum, natural gas, coal, electricity, biofuel, aluminum, copper, lead, nickel, tin, zinc, iron, and steel.

The country groupings are as listed in the table in Box 1.3.1 on page 26.

Sources: ADB estimates using data from World Bank, World Development Indicators online database; United Nations COMTRADE database. http://comtrade.un.org/data

Commodity Price Fluctuations on Fiscal and Real Sectors

- Price fluctuations account for 10%–30% of real GDP variation in resource-dependent economies. (Broda (2004) and Kose (2002))
- Historically, income volatility in countries dependent on exhaustible resources has been more than twice as large as income volatility in other economies.
- Such volatility has been especially large in countries that export commodities other than petroleum (Bems and Filho 2011).
- Resource windfalls are often outsized factors in otherwise small domestic economies. As the government is typically the main recipient of resource revenues, fiscal policy is the main medium through which windfalls impinge on domestic economic activity.

Source of Price Fluctuations

Asia has the largest commodity consumer in the region.

Asia's growing presence in commodity markets

- PRC is Asia's largest commodity consumer. It overtook the US in the consumption of major metals and agricultural commodities in the late 2000s, making it the world's largest consumer of many commodities.
- PRC consumed in 2011 about 20% of nonrenewable energy resources, 23% of major agricultural crops, and 40% of base metals.
- PRC's petroleum consumption—including gasoline, jet fuel, kerosene, distillate fuel oil, residual fuel oil, and liquefied petroleum gas—now occupies about 10% of world consumption, despite being less important in the PRC's energy mix than other forms of primary energy, particularly coal.
- PRC has accounted for 45% of the world's coal usage on average during around 2010s. Its use of natural gas and biofuels, on the other hand, remains limited.

1.5.1 Consumption share of selected commodities, average of 2009–2012

	PRC	India	ASEAN-5[a]	Total Asia	US	Rest of the world
	Share of world consumption					
Agriculture						
Milled rice	30.7	20.1	14.6	65.4	0.9	33.7
Palm oil	12.4	15.1	24.3	51.7	2.2	46.1
Sugar	9.2	15.0	7.0	31.1	6.4	62.5
Cotton[b]	38.4	18.4	3.6	60.4	3.2	36.4
Energy[c]						
Total energy	19.4	5.7	3.8	28.8	18.2	52.9
Petroleum	10.6	3.7	5.2	19.6	21.9	58.6
Natural gas	3.2	1.9	4.0	9.1	21.5	69.4
Coal	44.9	8.8	1.8	55.5	13.4	31.1
Electricity	19.3	3.8	2.6	25.7	21.2	53.0
Renewable energy (biofuels)	2.5	0.3	1.6	4.4	48.2	47.4
Metals[c]						
Refined aluminum	40.7	3.9	2.9	47.5	10.4	42.2
Refined copper	39.3	2.6	3.6	45.5	9.0	45.5
Stainless steel	32.5	5.6	...	38.1	8.4	53.5

... = data not available, ASEAN = Association of Southeast Asian Nations, PRC = People's Republic of China, US = United States.

[a] ASEAN-5 are Indonesia, Malaysia, the Philippines, Singapore, and Thailand.

[b] Domestic consumption of cotton in ASEAN-5 excludes Singapore.

[c] Data for energy and metals are up to 2010/11 only.

How sensitive other Asia to PRC's demand?

- Commodity exporters' vulnerability to changeable Asian demand can be measured using the export dependency index.
- The index is a geometric mean of three components: how concentrated a country's exports are in one commodity, how dependent the country is on a specific national market, and the buying and selling countries' relative power to set the price.
- The index is scaled from 0 (no dependence) to 1 (complete dependence). The higher the score, the more vulnerable an exporter is to disrupted trade.
- Commodity exporter is not vulnerable just because it ships a huge share of a particular commodity to one market. It is highly vulnerable only if its export performance depends heavily on that commodity and its pricing power is limited.

Heavy reliant on PRC import demand because of its sheer size

1.5.3 Top commodity exporters to the People's Republic of China, average of 2009–2012

Rank	Exporter	Commodity (excluding petroleum)	Export dependency
Top 10 of all exporters			
1	Solomon Islands	Wood in the rough or roughly squared	0.69
2	Mauritania	Iron ore	0.51
3	Australia	Iron ore	0.47
4	Benin	Cotton	0.45
5	Zambia	Copper	0.44
6	Chile	Copper	0.42
7	Togo	Cotton	0.40
8	Brazil	Iron ore	0.36
9	South Africa	Iron ore	0.34
10	Gabon	Wood in the rough or roughly squared	0.32
Top 5 Asian exporters			
1	Solomon Islands	Wood in the rough or roughly squared	0.69
2	India	Iron ore	0.25
3	Indonesia	Coal	0.24
4	Kazakhstan	Copper	0.23
5	Kazakhstan	Iron ore	0.21

Source: ADB estimates using United Nations, Comtrade database. http://comtrade.un.org (accessed 11 February 2013).

Dependency index: PRC

- Within the region, Solomon Islands is the most PRC-dependent economy for its exports of wood. More than half of its exports is wood and it shipped more than 90% of its total squared wood exports to PRC in 2011, a share that has tripled in the past decade.
- India and Kazakhstan depend heavily on the PRC for their exports of metal.
- Mongolia has data up to 2007. The dependency index of coal to PRC was 0.31. Almost 100% exported to PRC but the coal's share of its total export was just over 6%.

1.5.4 Top 10 commodity exporters to India and five ASEAN countries, average of 2009–2012

Rank	Exporter	Commodity (excluding petroleum)	Export dependency
India			
1	Bhutan	Steel	0.55
2	Nepal	Steel	0.42
3	Bhutan	Copper	0.33
4	Qatar	Natural gas	0.23
5	South Africa	Coal	0.23
6	Australia	Coal	0.22
7	Bahrain	Iron ore	0.21
8	Indonesia	Palm oil	0.21
9	Nepal	Tea	0.21
10	Nepal	Copper	0.20
ASEAN			
1	Burundi	Coffee	0.27
2	Benin	Cotton	0.20
3	Togo	Cotton	0.20
4	Namibia	Zinc	0.20
5	Burkina Faso	Cotton	0.17
6	Mali	Cotton	0.15
7	Indonesia	Natural gas	0.14
8	Uganda	Cotton	0.12
9	Zimbabwe	Cotton	0.12
10	Bahrain	Iron ore	0.12

ASEAN-5 = Association of Southeast Asian Nations.

ASEAN-5 here refers to Indonesia, Malaysia, the Philippines, Singapore, and Viet Nam.

Sources: ADB estimates using United Nations, Comtrade database. http://comtrade.un.org (accessed 11 February 2013).

India's import demand is much smaller but rising quickly

- Only a few countries rely heavily on Indian demand, mainly for minerals and metals such as coal, iron ore, and steel.
- Nepal and Bhutan are particularly exposed to Indian demand through exports of steel, copper, and construction materials such as cement and aggregate. Their export dependency ratios have increased over the past decade.
- By contrast, very few commodity exporters rely on demand from the five ASEAN countries, and the largest of these economies, Indonesia, is itself a net commodity exporter.

Case from Timor-Leste and PNG

Resource dependence combined with low absorptive capacity increases a country's vulnerability to commodity terms of trade shocks.

Fiscal Issues Facing Resource Rich Economies (RREs)*

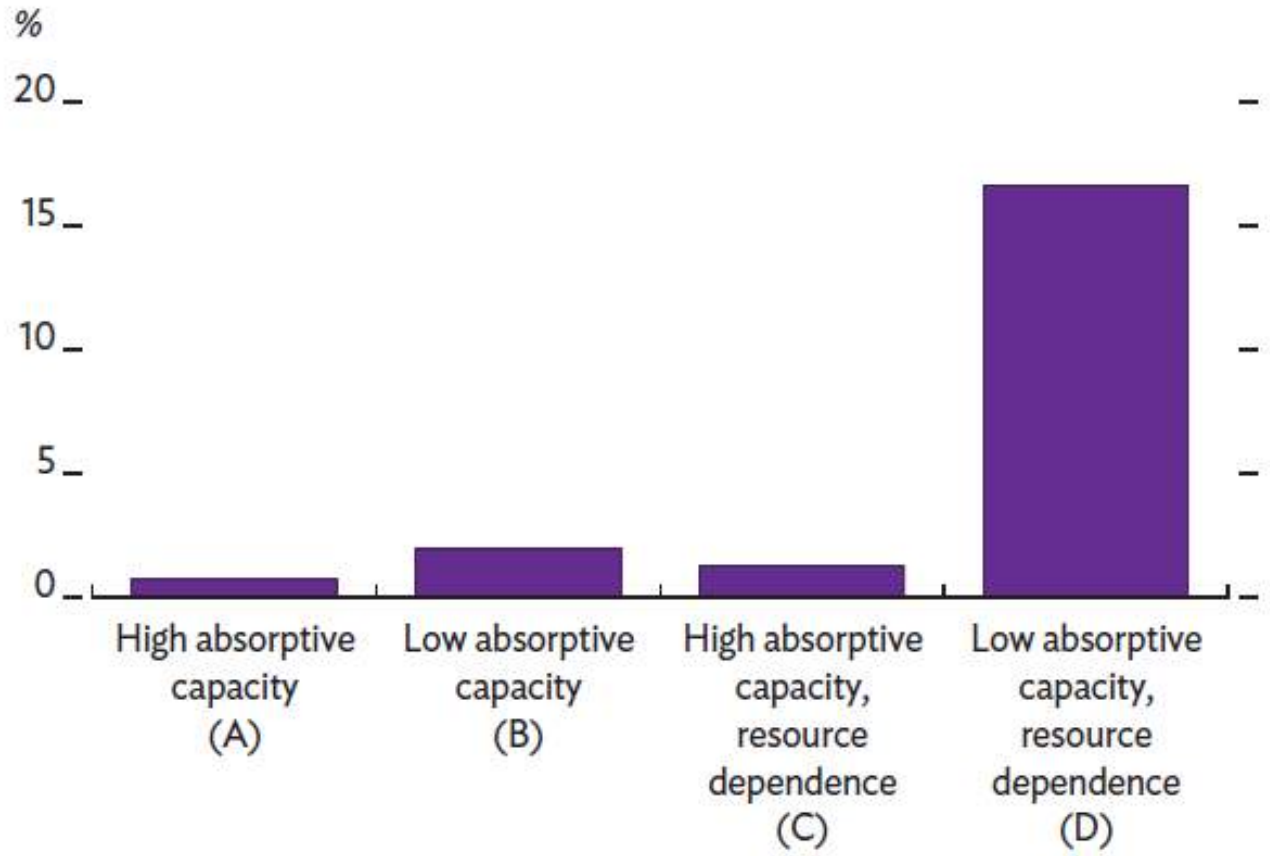
- RREs face special issues:
  - Dependence on resource-based revenue
    - Can make fiscal policy more pro-cyclical
    - May lead to lower taxation of non-resource sector
    - Can make budgets vulnerable to commodity price reversals (e.g., recent drop in oil prices)
  - Where rents allow low taxation, public scrutiny of budgets may be reduced, facilitating corruption
  - Resource rents can encourage non-transparency
  - Pro-cyclical policy and weak fiscal fundamentals can amplify business cycles and appreciate the exch. rate, weakening the non-resource sector ("Dutch disease"). NB: "resource curse"

*Source: Schmidt-Hebbel (2012), "Fiscal Institutions in Resource-Rich Countries"

Fiscal Issues Facing Resource Rich Economies (RREs), cont.

- Addressing these issues requires good institutions – which can be a challenge!
  - Successful countries have established effective fiscal institutions to manage wealth
  - Often involve fiscal rules for saving much of the earnings and governing transfers to the government budget. Establishing such rules may turn on having institutions that promote accountability and good governance.
  - In fact, the most successful RREs seem to be strong democracies with good political accountability (e.g., Norway, Chile)
- Less successful RREs lack the above features.
  - E.g.: Russian Federation, Nigeria, maybe Malaysia

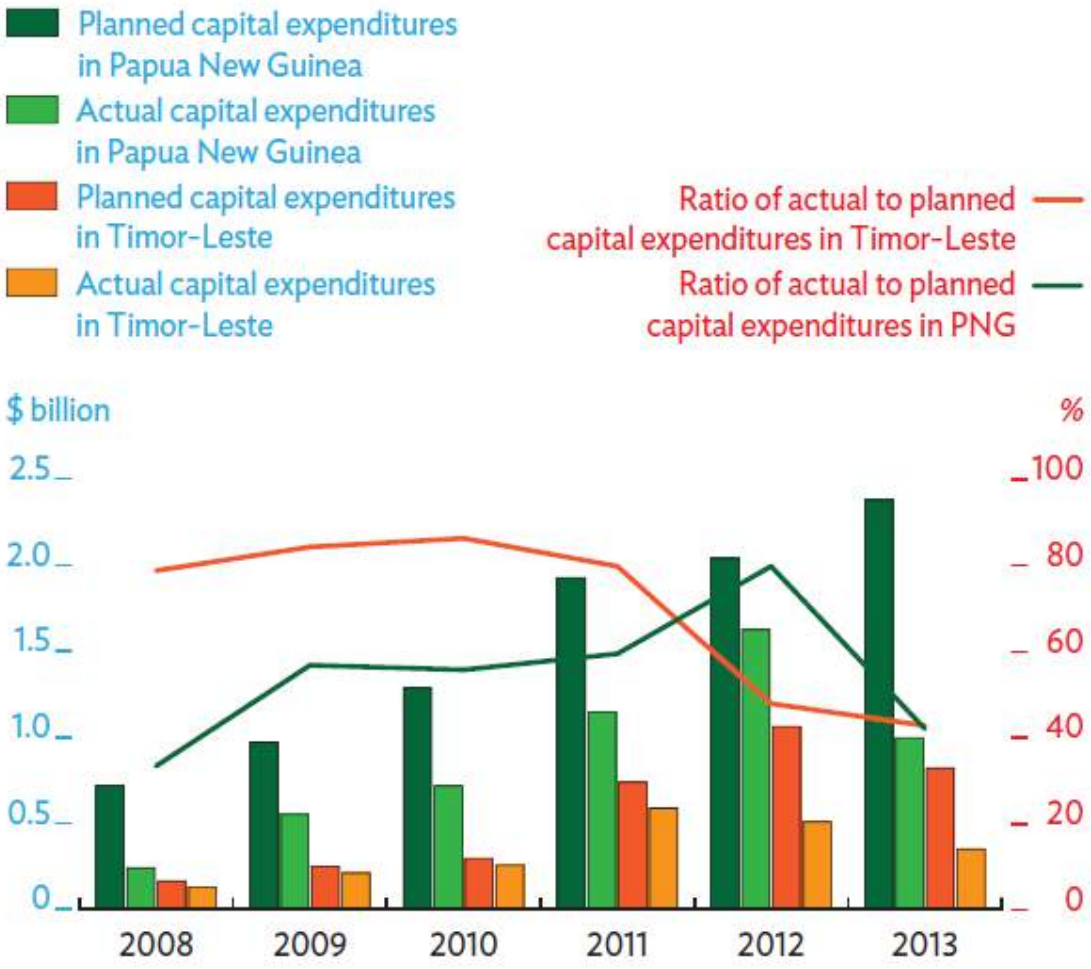
Absorptive capacity crucial in RREs



Note: The data refer to the average variance decomposition over 24 quarters. The country groupings are as listed in the table in Box 1.3.1.

Source: ADB estimates.

Public expenditure implementation challenges



Sources: ADB estimates using data from Papua New Guinea Department of Treasury; Democratic Republic of Timor-Leste, Ministry of Finance. https://www.mof.gov.tl (accessed 10 March 2014).

Fiscal policy should play a vital role…

- …in translating economic growth into improved human development outcomes for the population. Yet just expanding budget allocations to priority sectors is not enough.
- Time and resources are needed to strengthen the underlying systems and institutions charged with executing budgetary plans and to build the human-resources needed to effectively implement government programs and investments.
- In the cases of PNG and Timor-Leste, translating the windfall from natural resource extraction into inclusive fiscal policy requires a stronger focus on building the capacity of the civil service, strengthening coherence and coordination in the budget process, and ensuring adequate funding to maintain and operate assets once they are built.

THANK YOU

Reference: Various issues of Asian Development Outlook

http://www.adb.org/sites/default/files/publication/30205/ado2013_1.pdf (pp29-36)

http://www.adb.org/sites/default/files/publication/31241/ado-2014_1.pdf (pp23-27)