BANK FOR INTERNATIONAL SETTLEMENTS

How can emerging market economies best cope with the current complex global economic environment?

XVIII Annual Inflation Targeting Seminar of the Central Bank of Brazil

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The views expressed in this presentation are those of the speaker and do not necessarily reflect those of the BIS. These remarks were co-authored by Boris Hofmann, Enisse Kharroubi, Emanuel Kohlscheen, Luiz A. Pereira da Silva and Christian Upper

Introduction: EMEs need sober self-assessment

- Avoid complacency: illusion that current ultra-low policy rates and investors in search for yield are sufficient to sail through complex, volatile global economy.
- Beware of global economy risks: among them, bond yield snapback → spreads, capital flows, financial stability in EMEs (but also AEs).
- Establishing "confidence" is complex: not just yield differential, current asset prices, good intentions → strong macro-financial fundamentals, credibility of policy framework are necessary but not sufficient to revive "animal spirits" and growth; good governance, durable socio-economic stability.
- Show capacity to adjust & conduct structural reforms: factor market flexibility vs political economy conditions → "fairness" in sharing adjustment costs but also policymaker determination and resolve.

Outline

- Among risks for EMEs: bond yield snapback
- Comparison with taper tantrum: why inflation outcomes were so different among EMEs, role of fiscal imbalances
- Policy implications

The risk of bond yield snapback

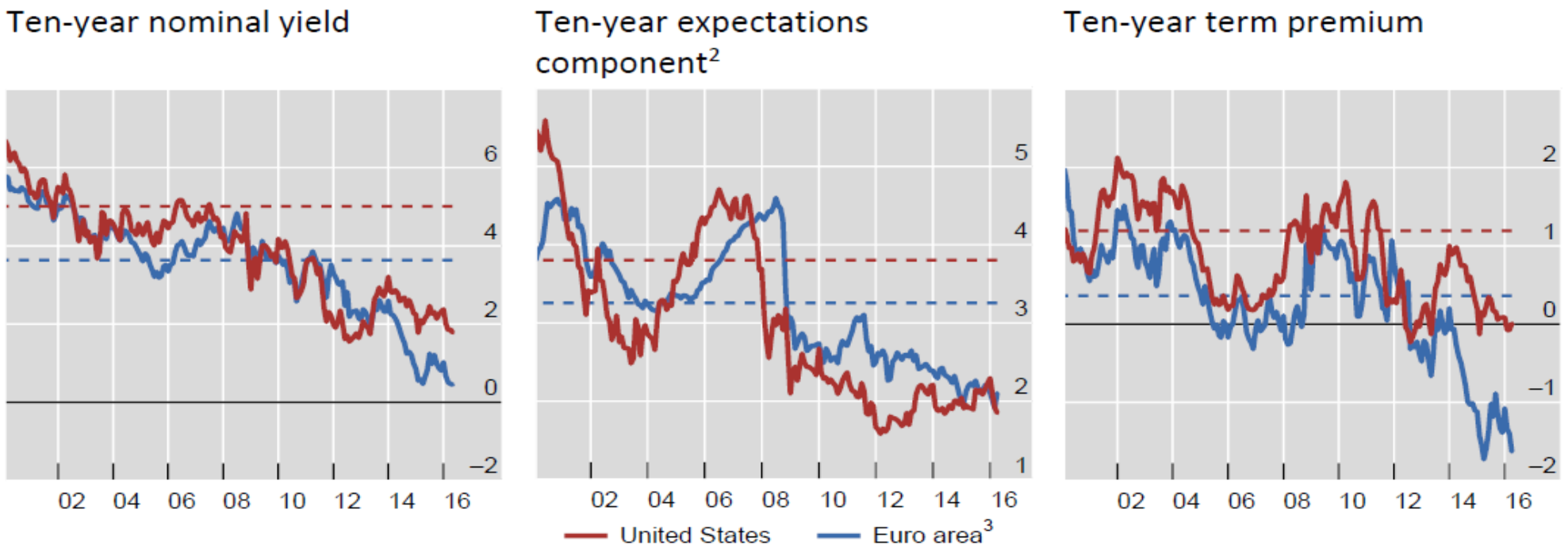
- Global economy with many risks (growth, commodities, China, Brexit, Europe, refugees, terrorism, cybersecurity etc): among those *bond yield snapback* in AEs (equivalent to taper tantrum) → EMEs & USD
- Why are bond yields low and stable?
- What could trigger a bond yield snapback?
- What would be the macro-financial consequences?
- What are the lessons from previous episodes (eg taper tantrum)?

Why are bond yields low and stable?

Bond yield decompositions [1]

In per cent

Graph 1



[1] The dashed horizontal lines represent historical averages for the period 1990–2016 for the United States and 1999–2016 for euro area. [2] Difference between 10-year nominal zero-coupon yield and 10-year estimated term premium. [3] For the euro area, French government bond data are used.

Sources: Bloomberg, BIS calculations.

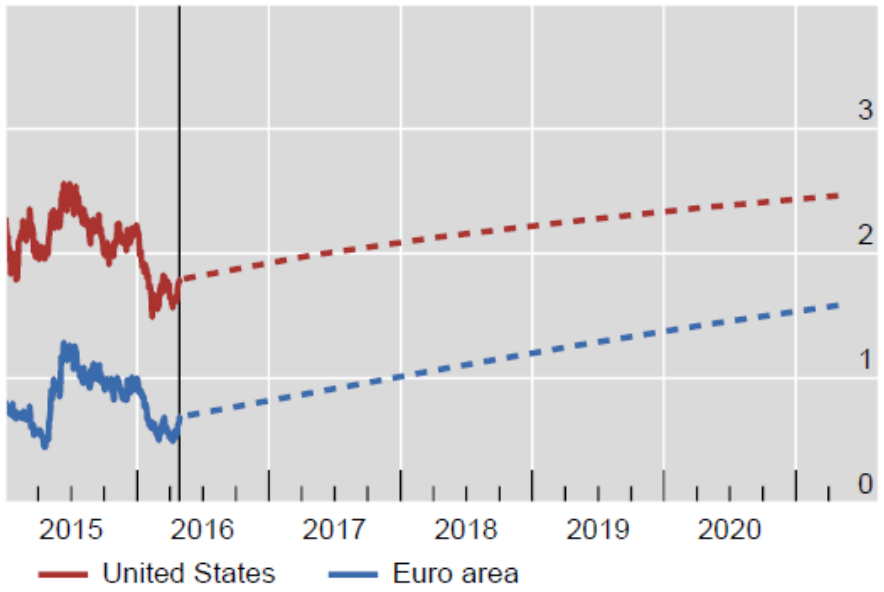
What could trigger a bond yield snapback?

Financial market participants perceive snap-back risk as low

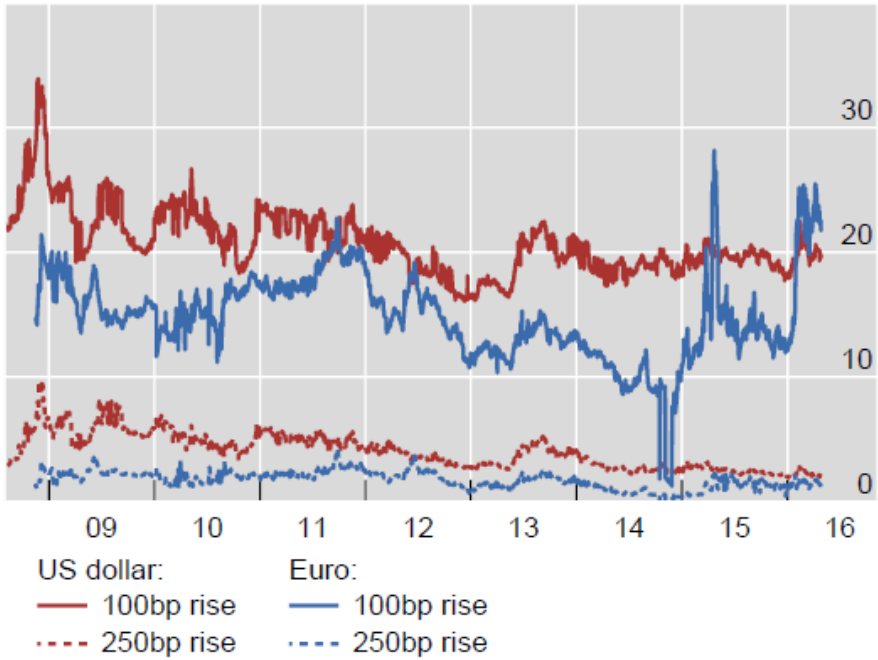
In per cent

Graph 2

Ten-year yield curve projections[1]



Probability of a rise in 10-year rates over a two-year period[2]

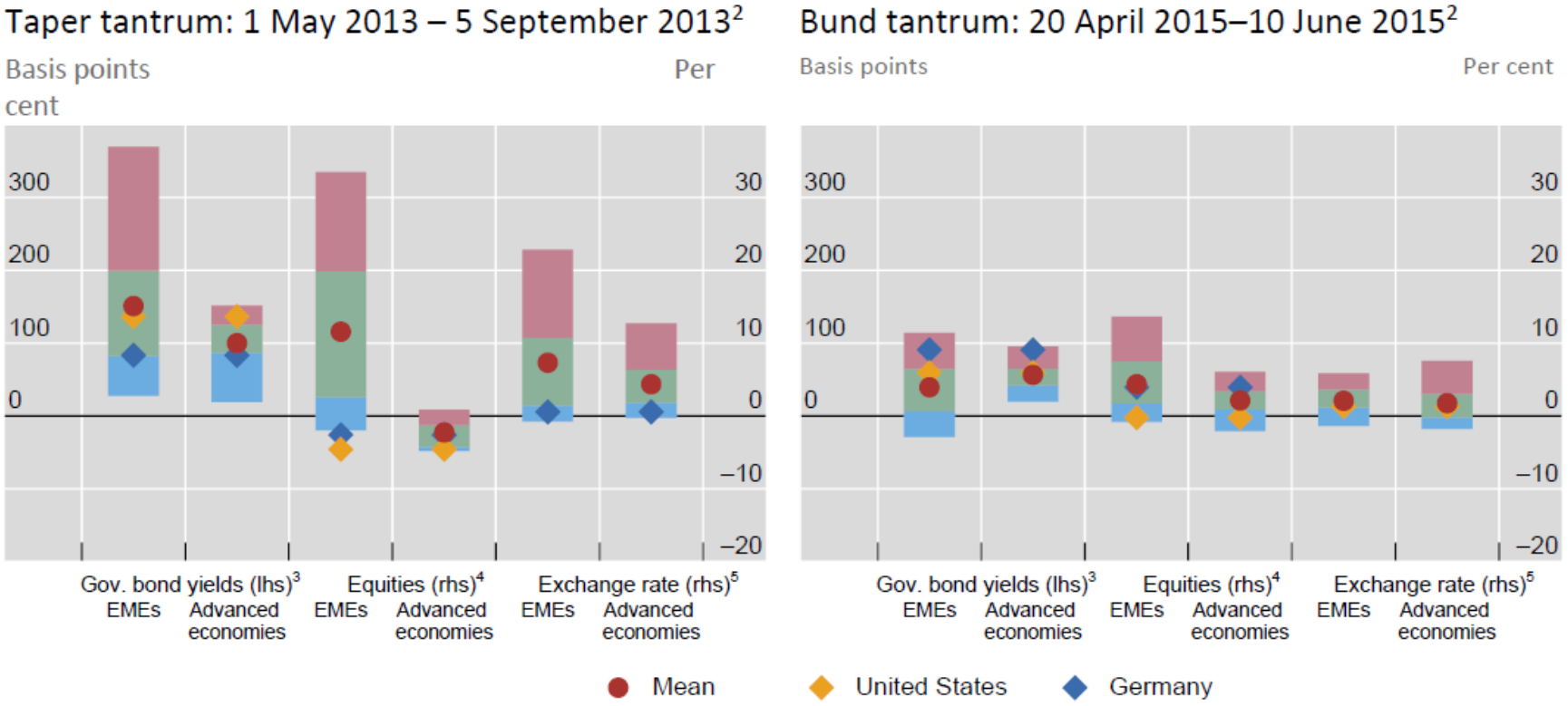


[1] Projections on 26 April 2016. Central projections are based on forward rates. [2] The risk-neutral probabilities are derived from probability densities based on implied volatilities of swaptions with two-year expiries and a 10-year swap tenor.

Sources: Bank of America Merrill Lynch; Bloomberg; JPMorgan Chase; BIS calculations.

What would be the macro-financial consequences?

Bond tantrum impacts[1] Graph 4

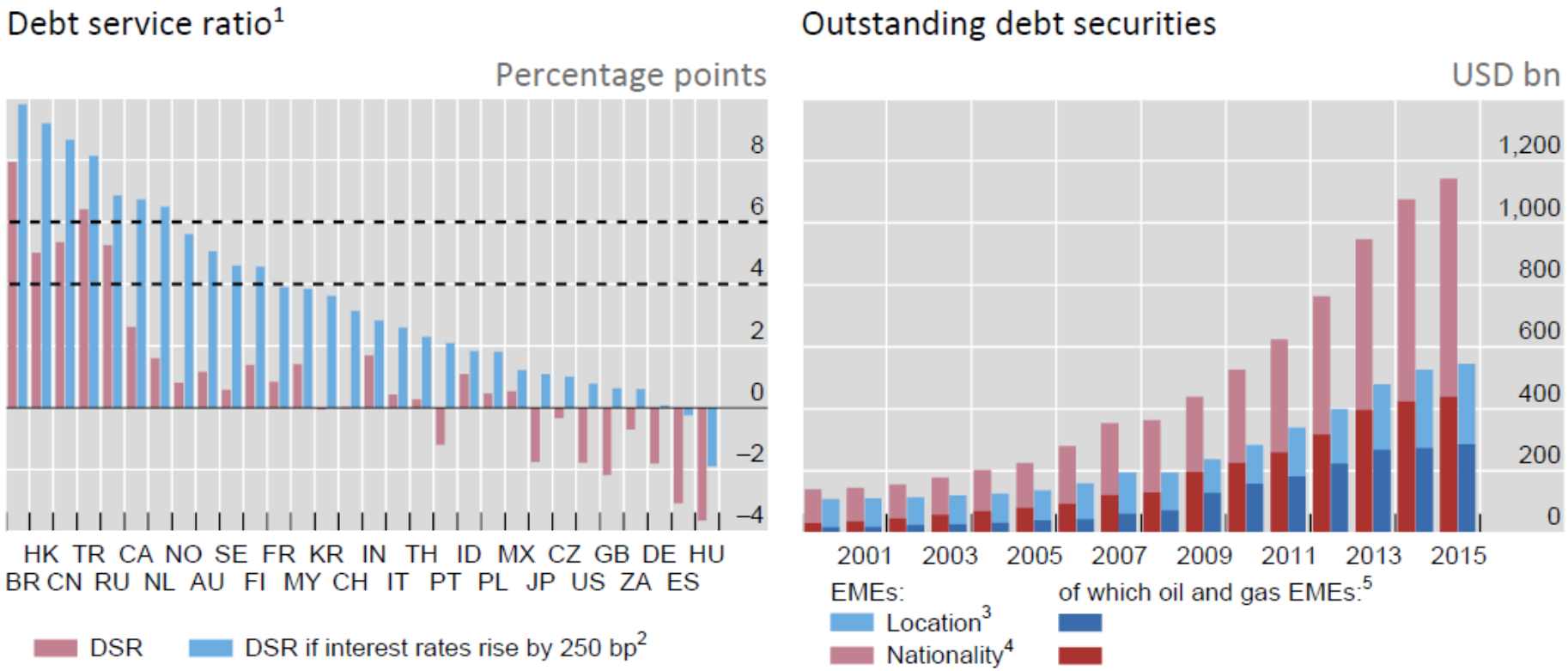


Bars represent distribution (upper quartile, interquartile range and lower quartile) of the countries in the regions.

[1] EMEs: Brazil, China, Chinese Taipei, Colombia, the Czech Republic, Hong Kong SAR, Hungary, India, Indonesia, Korea, Malaysia, Mexico, Peru, the Philippines, Poland, Russia, Singapore, Thailand, Turkey and South Africa. Advanced economies: Australia, Canada, Denmark, Germany, Japan, New Zealand, Norway, Sweden, Switzerland and the United Kingdom. [2] Changes between the listed dates or the closest alternatives depending on data availability. [3] Ten-year government bond yields, in local currency. [4] A positive value represents a fall in the index value. [5] Left-hand panel: Bilateral exchange rates against the US dollar; Right-hand panel: Bilateral exchange rates against EUR. A positive value represents a depreciation of the local currencies. Sources: Bloomberg; Datastream, national data; BIS calculations.

What would be the macro-financial consequences?

Debt burdens increase in EMEs — Graph 5



[1] For the DSR series and methodology see www.bis.org/statistics/dsr/index.htm. Difference of DSRs from country-specific long-run averages since 1999 or later depending on data availability and when five-year average inflation fell below 10%. The dashed horizontal lines represent thresholds of 4 and 6 percentage points. [2] Assuming that interest rates increase 2.50 percentage points and that all of the other components of the DSR stay fixed. [3] Non-financial corporation headquarters, by residence of issuer. [4] Non-financial corporation headquarters, by nationality of issuer. [5] EMEs countries with oil production above 1 million barrels per day. Include Brazil, China, Colombia, Indonesia, Kuwait, Kazakhstan, Malaysia, Mexico, Nigeria, Qatar, Russia, United Arab Emirates and Venezuela.

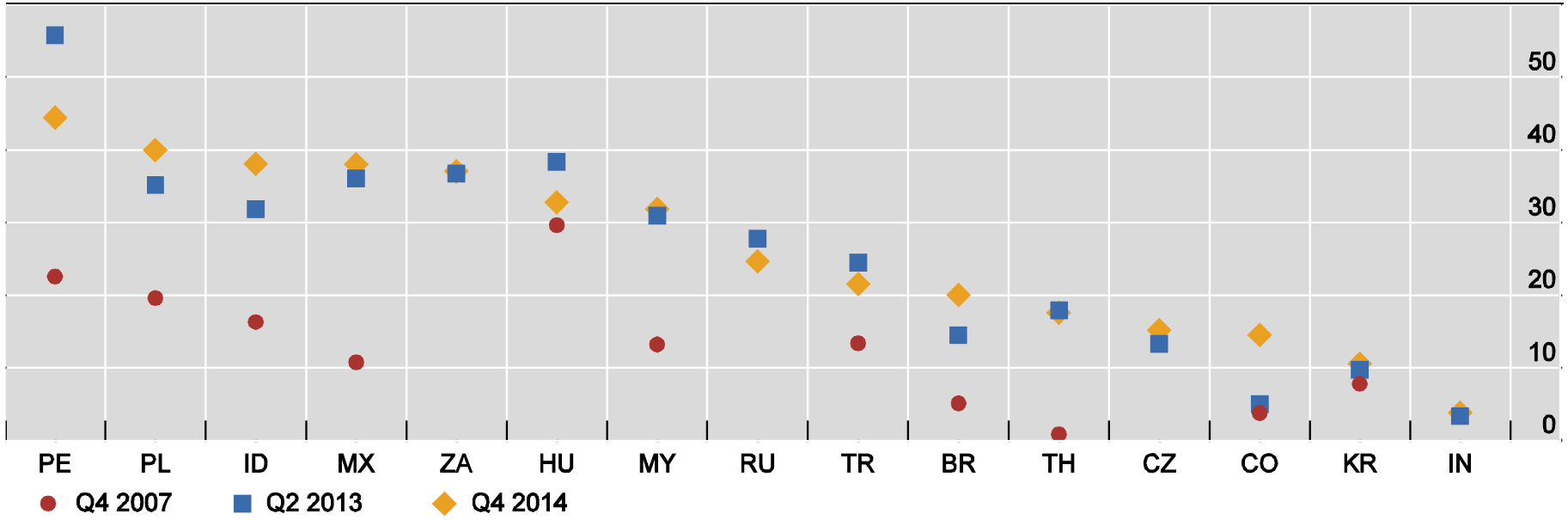
Sources: IMF, *International Financial Statistics*; BIS international debt securities statistics; BIS locational banking statistics, BIS; BIS calculations.

What would be the macro-financial consequences?

Foreign investors' share in the local government debt market

In per cent

Graph 3



BR = Brazil; CO = Colombia; CZ = Czech Republic; HU = Hungary; ID = Indonesia; IN = India; KR = Korea; MX = Mexico; MY = Malaysia; PE = Peru; PL = Poland; RU = Russia; TH = Thailand; TR = Turkey; ZA = South Africa.

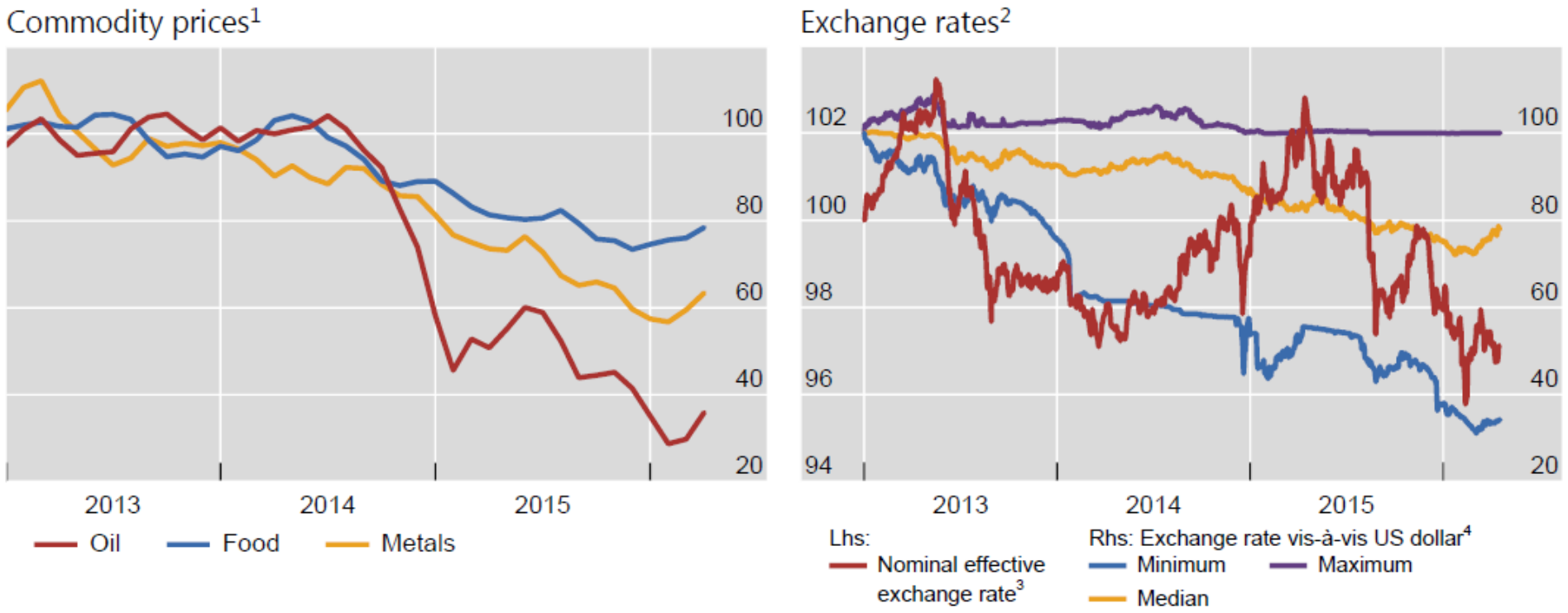
Source: Institute of International Finance.

Comparison with taper tantrum: why inflation outcomes were so different among EMEs? Role of fiscal and risk

- Bond yield snapback part of / trigger to other global forces affecting EME inflation (commodity prices and exchange rate).
- Two global forces (among others) affecting inflation in EMEs: commodity prices and exchange rate → different results, why?
- Changing determinants of inflation in EMEs (lower inflation persistence, flatter Phillips curve - output gap, weaker ER pass-through but also significant role of inflation expectations).
- MP main determinant of inflation; but other channels also relevant in EMEs recently (market flexibility, contestability, risk premia effect on expectations and then on ER).

Two global forces at play for EME inflation

Commodity prices and exchange rates — Graph 7



[1] The IMF's primary commodity prices; oil = crude oil (petroleum), price index: 2005 = 100, simple average of three spot prices: Dated Brent, West Texas Intermediate and Dubai Fateh; for food, food price index: 2005 = 100, includes price indices of cereal, vegetable oils, meat, seafood, sugar, bananas and oranges; for metals, metals price index: 2005 = 100, includes price indices of copper, aluminium, iron ore, tin, nickel, zinc, lead and uranium. [2] An increase signifies appreciation of the local currency. [3] Aggregate for emerging economies; weighted average based on the GDP and PPP exchange rates of Argentina, Brazil, Chile, China, Colombia, the Czech Republic, Hong Kong SAR, Hungary, India, Indonesia, Israel, Korea, Malaysia, Mexico, Peru, the Philippines, Poland, Russia, Saudi Arabia, Singapore, South Africa, Thailand and Turkey. [4] Bilateral exchange rates; beginning of 2013 = 100.

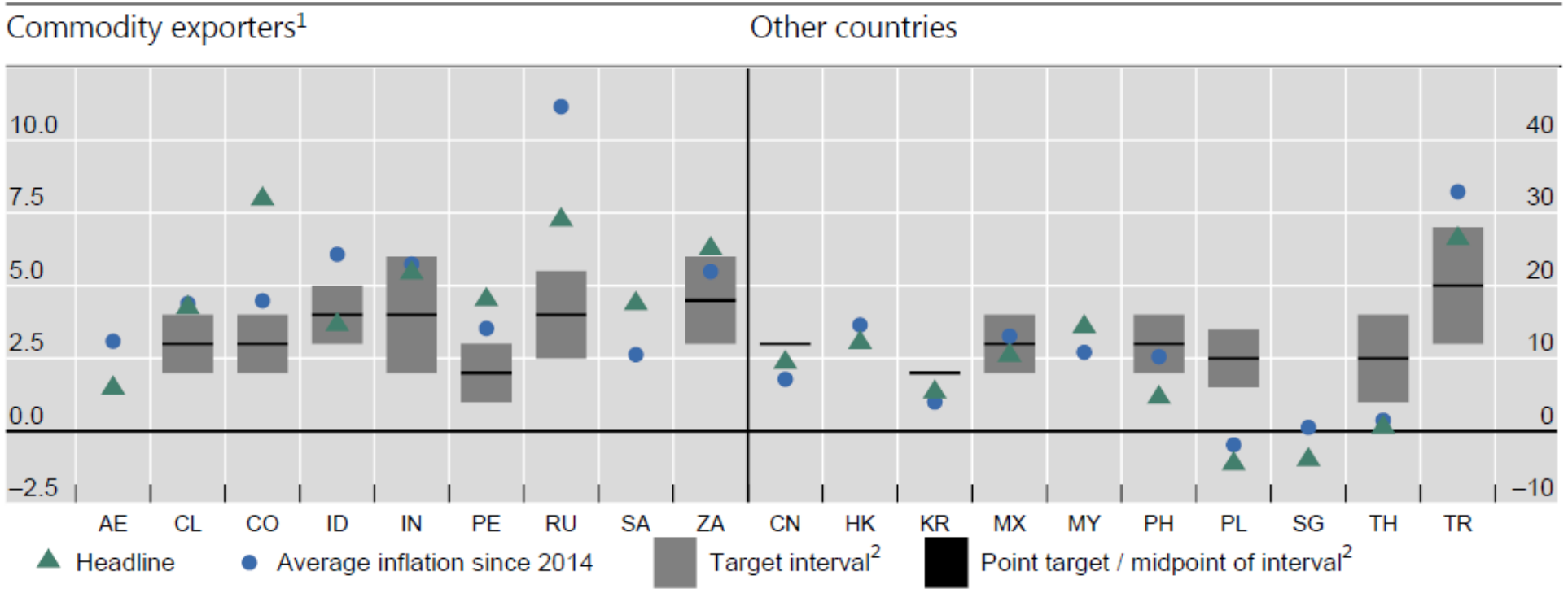
Sources: IMF, Primary Commodity Prices Database; national data; BIS calculations.

Different outcomes by X-orientation of EMEs

Headline inflation and inflation targets

In per cent

Graph 6



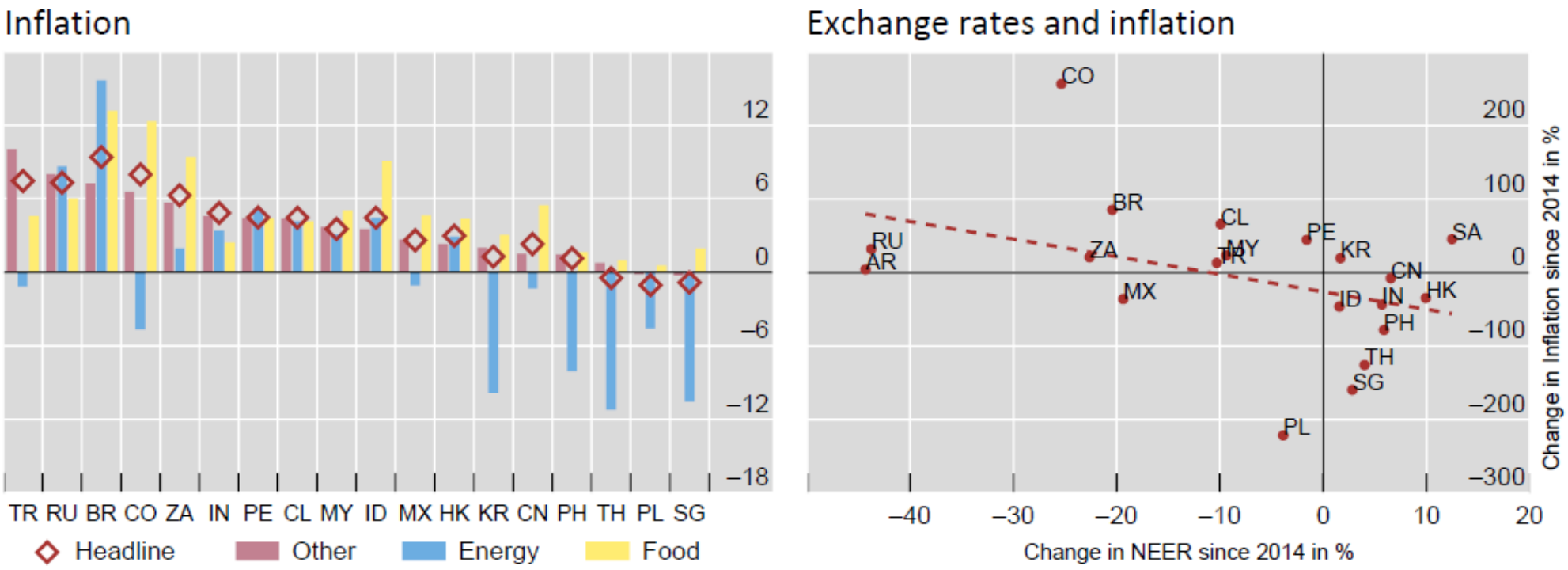
AE = United Arab Emirates; CL = Chile; CN = China; CO = Colombia; HK = Hong Kong SAR; ID = Indonesia; IN = India; KR = Korea; MX = Mexico; MY = Malaysia; PE = Peru; PH = Philippines; PL = Poland; RU = Russia; SA = Saudi Arabia; SG = Singapore; TH = Thailand; TR = Turkey; ZA = South Africa.

[1] Commodity exporters are countries for which more than 40% of the exports are commodities. [2] For countries following an inflation targeting strategy.

Sources: Datastream; national data; BIS calculations.

Different outcomes by intensity of depreciation

Exchange rates and inflation — Graph 8

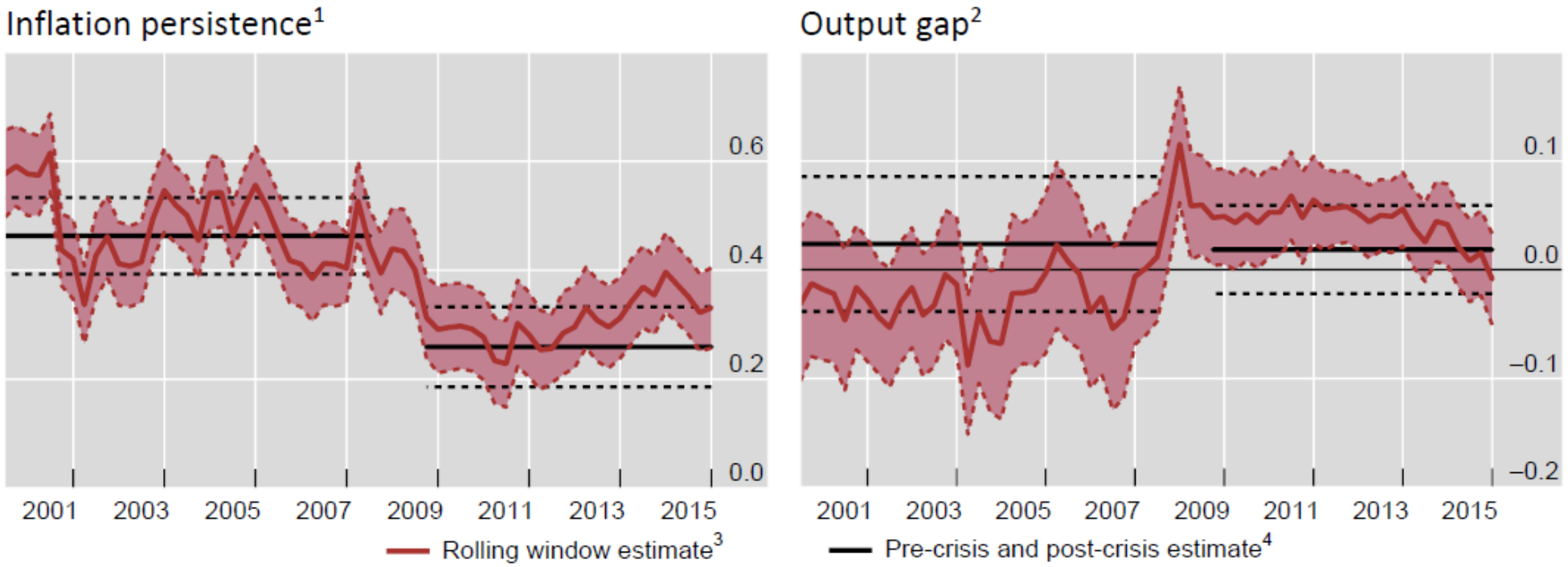


AR = Argentina; BR = Brazil; CL = Chile; CN = China; CO = Colombia; HK = Hong Kong SAR; ID = Indonesia; IN = India; KR = Korea; MX = Mexico; MY = Malaysia; PE = Peru; PH = Philippines; PL = Poland; RU = Russia; SA = Saudi Arabia; SG = Singapore; TH = Thailand; TR = Turkey; ZA = South Africa.

Sources: National data; BIS; BIS calculations.

Changing determinants for EME inflation

Changing inflation dynamics — Graph 9



[1] Persistence is defined as the autoregressive coefficient in the inflation process, ie δ from the equation: $\pi_{it} = \alpha_i + \beta_t + \delta\pi_{it-1} - \sum_{j=0}^{3}\gamma_j \Delta NEER_{it-j} + \phi ygap_{it} + \varepsilon_{it}$, where π_{it} is the log change in CPI in country i in quarter t; α_i are country fixed effects and β_t time fixed effects; $ygap_{it}$ is the domestic output gap; and $NEER_{it}$ is the log change in the nominal effective exchange rate in country i in quarter t.

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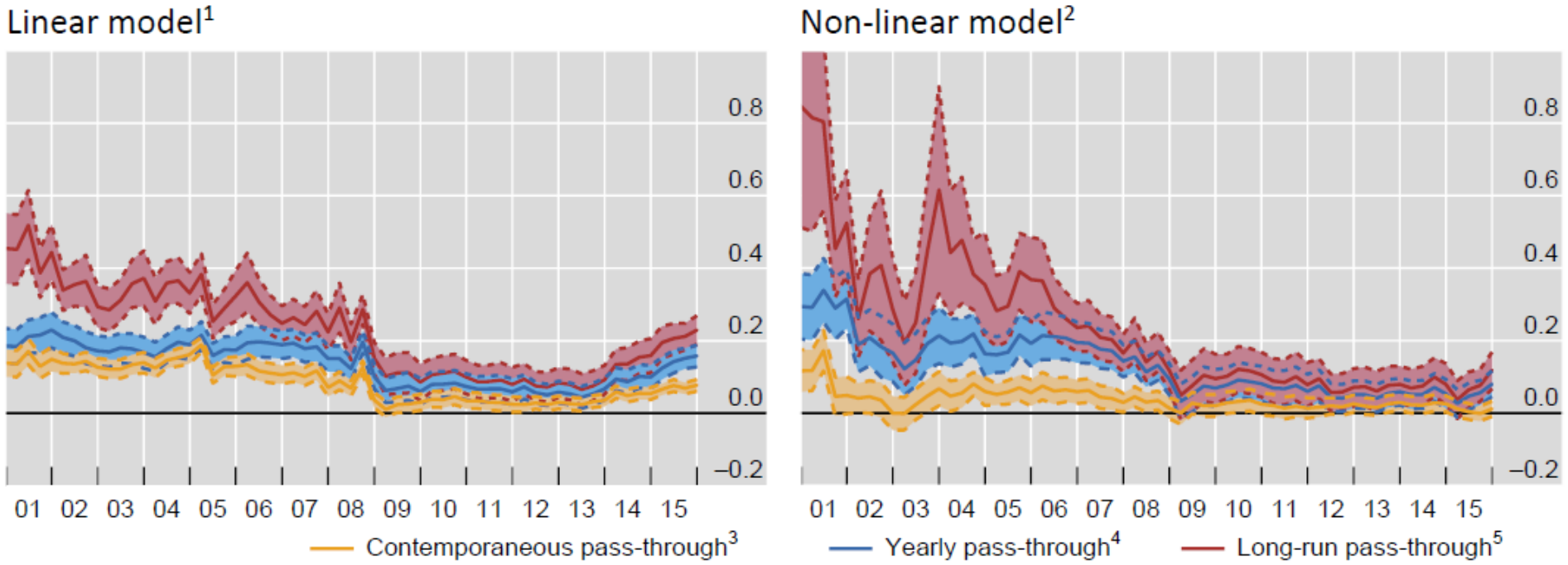
Sources: Jašová et al (2015); IMF, *International Financial Statistics* and *World Economic Outlook*; CEIC; Datastream; national data; BIS calculations.

Changing determinants for EME inflation

Exchange rate pass-through

Graph 10



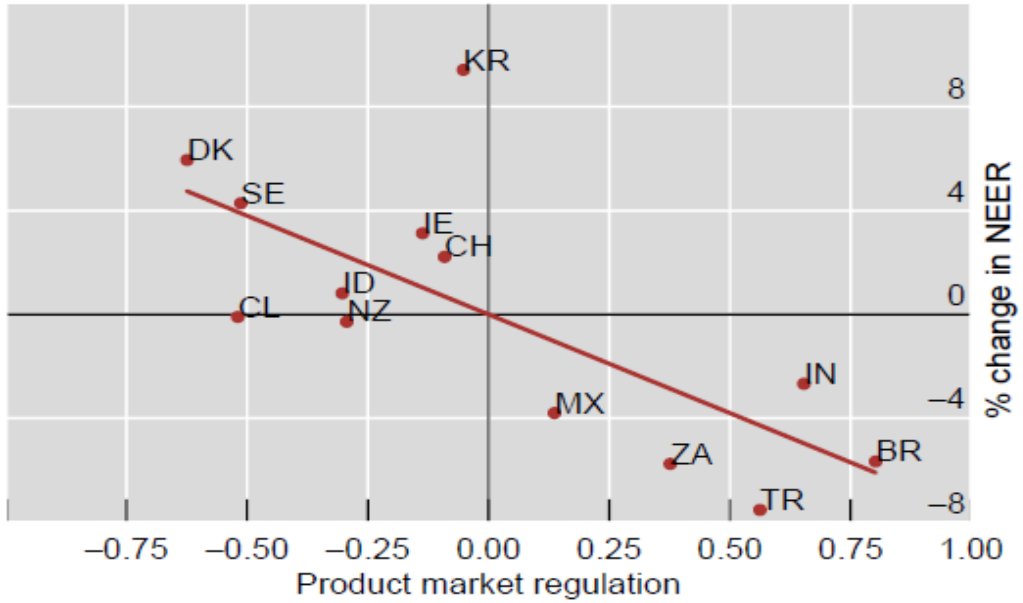
[1] Pass-through results are derived from the equation: $\pi_{it} = \alpha_i + \beta_t + \delta\pi_{it-1} - \sum_{j=0}^{3}\gamma_j \Delta NEER_{it-j} + \phi ygap_{it} + \varepsilon_{it}$, where π_{it} is the log change in CPI in country *i* in quarter *t*; α_i are country fixed effects and β_t time fixed effects; $ygap_{it}$ is the domestic output gap; and $\Delta NEER_{it}$ is the log change in the nominal effective exchange rate in country *i* in quarter *t*. The estimates are obtained in a dynamic panel-data setup using the generalised method of moments following Arellano and Bover (1995) and Blundell and Bond (1998) for Argentina, Brazil, Chile, China, Colombia, the Czech Republic, Hong Kong SAR, Hungary, India, Indonesia, Israel, Korea, Malaysia, Mexico, Peru, the Philippines, Poland, Russia, Saudi Arabia, Singapore, South Africa, Thailand and Turkey. [2] Results are derived based on the equation from footnote 1 extended with non-linear exchange rate terms, ie $\pi_{it} = \alpha_i + \beta_t + \delta\pi_{it-1} - \sum_{j=0}^{3}\gamma_j \Delta NEER_{it-j} - \sum_{k=0}^{3}\mu_k \Delta NEER^2_{it-k} - \sum_{l=0}^{3}\nu_l \Delta NEER^3_{it-l} + \phi ygap_{it} + \varepsilon_{it}$. [3] Contemporaneous pass-through is defined as the quarterly coefficient in the inflation process, ie γ_0. [4] Yearly pass-through is defined as the sum of yearly coefficients in the inflation process, ie $\gamma_0 + \gamma_1 + \gamma_2 + \gamma_3$. [5] Long-run pass-through is defined as the sum of yearly coefficients in the inflation process, ie $(\gamma_0 + \gamma_1 + \gamma_2 + \gamma_3)/(1 - \delta)$.

Sources: Jašová et al (2015); IMF, *International Financial Statistics* and *World Economic Outlook*; CEIC; Datastream; national data; BIS calculations.

EMEs exchange rates movements and market flexibility

Nominal effective exchange rate and measures of factor market flexibility — Graph 12

NEER change and product market regulation[2]/



NEER change and labour market regulation[1]/

[1]/ the labour market regulation index measures the protection of permanent workers against dismissals. At the beginning of 2013, the OECD average was 2.03

[2]/ The product market regulation index is the simple average of 3 sub-indexes: (i) State control (in 2013, OECD av.: 2.18); (ii) Barriers to Entrepreneurship (in 2013, OECD av.: 1.70); (iii) Barriers to trade and investment (in 2013, OECD av.: 0.52)

In both cases, higher readings of the index indicate tighter regulation. Last, the NEER percentage change is measured from April 2013 to Oct 2013.

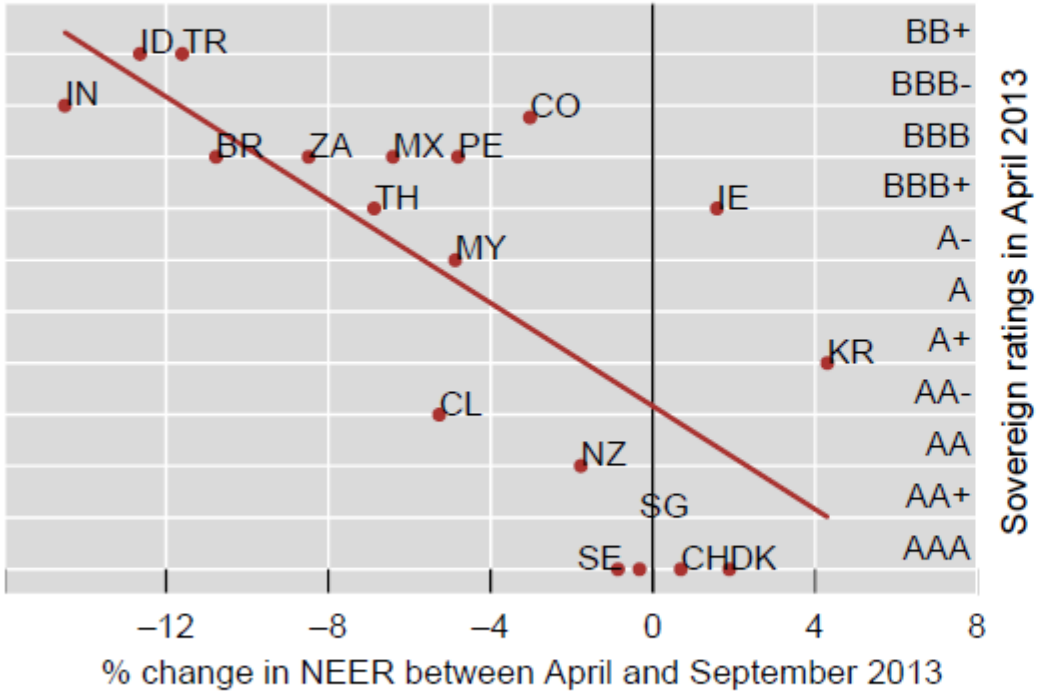
Sources: BIS, OECD, BIS calculations.

EMEs exchange rate movements and risk

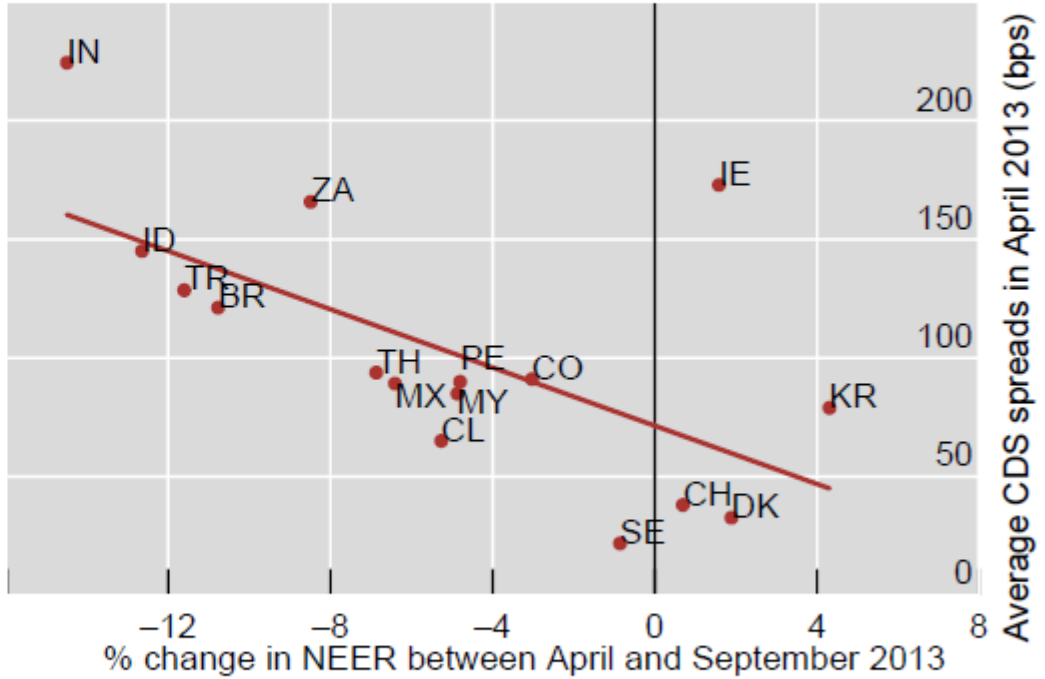
Nominal effective exchange rate, sovereign ratings and CDS spreads

Graph 11

Exchange rates and foreign currency long-term ratings



Sovereign CDS spreads

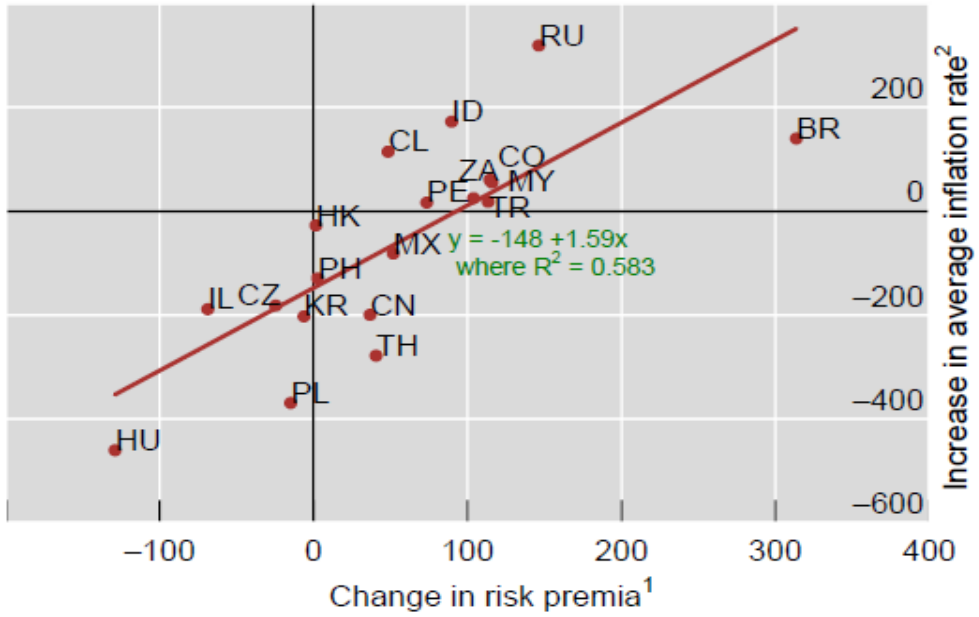


Sources: Bloomberg; Markit; national data; BIS; BIS calculations.

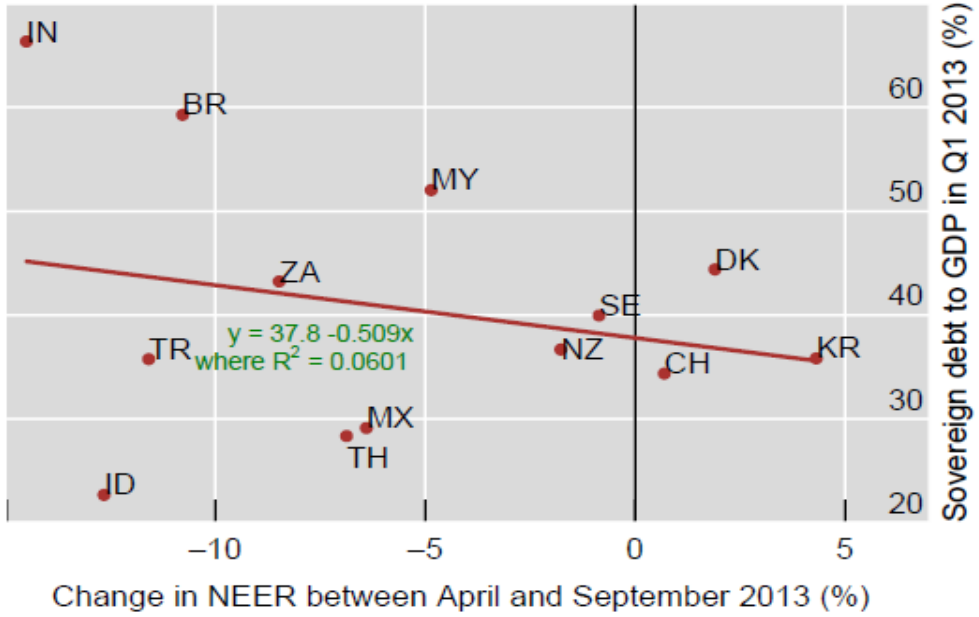
EMEs changes in inflation rate versus risk premia

Inflation and changes in risk premia, direct relation and underlying debt levels — Graph 13

Increases in inflation and changes in risk premia



Exchange rates and sovereign debt as a % of GDP



BR = Brazil; CL = Chile; CH = Switzerland; CN = China; CO = Colombia; CZ = Czech Republic; DK = Denmark; HK = Hong Kong SAR; HU = Hungary; ID = Indonesia; IL = Israel; IN = India; KR = Korea, MX = Mexico; MY = Malaysia; NZ = New Zealand; PE = Peru; PH = Philippines, PL = Poland; RU = Russia; SE = Sweden; TH = Thailand; TR = Turkey; ZA = South Africa.

[1] Change in five-year CDS risk premia, in basis points. [2] Change in average CPI inflation over last three years, in basis points.

Sources: E. Kohlscheen; national data; BIS; BIS calculations.

EMEs changes in risk premia versus fiscal balance

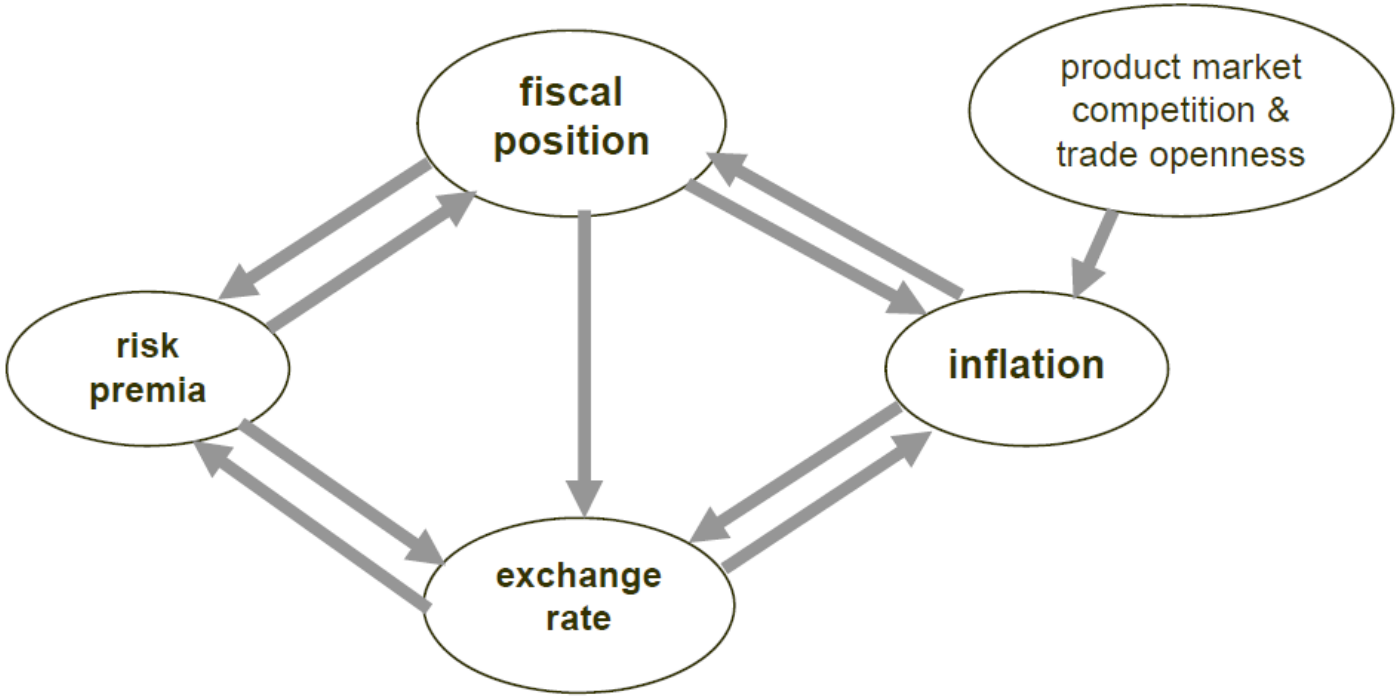
Determinants of sovereign risk premia in EMEs (5 yr sovereign CDS spread)

Estimated at	10% percentile (low CDS spread)	25% percentile	Median CDS	75% percentile	90% percentile (high CDS spread)
CPI inflation	0.062***	0.063***	0.107***	0.156***	0.157***
	0.005	0.016	0.022	0.021	0.021
Fiscal balance / GDP	**-0.051*** **	**-0.050*** **	**-0.066*** **	**-0.090*** **	**-0.130*** **
	0.008	**0.013**	**0.016**	**0.022**	**0.031**
GDP growth	-0.030***	-0.037***	-0.067***	-0.087***	-0.075***
	0.008	0.011	0.014	0.017	0.022
US GDP growth	0.003	-0.001	0.059***	0.112***	0.105***
	0.012	0.016	0.02	0.029	0.039
log of VIX	0.425***	0.595***	0.860***	1.028***	1.500***
	0.045	0.074	0.098	0.127	0.192
FX reserves / imports	-0.081	-0.205	-0.416**	-1.194***	-1.772***
	0.111	0.129	0.192	0.287	0.489
estimation method	quantile reg.	quantile reg.	quantile reg.	quantile reg.	quantile reg.
fixed effects	yes	yes	yes	yes	yes
observations	1068	1068	1068	1068	1068
pseudo R2	0.3631	0.3498	0.3379	0.3746	0.4777

Estimated on quarterly data. All explanatory variables are lagged. *, ** and *** denote statistical significance at 10%, 5% and 1%, respectively. Standard errors obtained via bootstrapping. Countries covered are Brazil, Chile, P.R. China, Colombia, Czech Rep., Hong Kong, Hungary, India, Indonesia, Israel, Malaysia, Mexico, Peru, Philippines, Poland, Russia, Singapore, Thailand, Turkey and South Africa.

Openness, product market flexibility and risk, inflation

The pass-through of global forces driving inflation through the exchange rate into EME inflation can be affected by risk premia and compounded by local market rigidities (eg, factor market contestability, specificities in labour markets). These additional factors help to explain the variance of inflation across EMEs.



EMEs inflation, risk premia versus fiscal balance

- Openness to trade and competition are important factors to contain inflation (eg, product market flexibility); greater integration and a more competitive market structure market (contestability) could reduce the burden of monetary policy (Auer and Fischer (2010), Auer (2015)).
- A reasonable degree of fiscal discipline and a sustainable debt dynamics are key for control of inflation (Blanchard (2004) and Favero and Giavazzi (2004)).
- A better fiscal position diminishes risk premia; in EMEs lower risk premia are associated with lower inflation.

Conclusions: EMEs strengthen fundamentals

- Macroeconomic stability. Floating ERR, sustainable fiscal/public debt stance, independent MP to achieve low and stable inflation (eg, under IFT framework or other) (Obstfeld (2015)).
- Financial stability. Prevention of excessive exuberance in credit-financial cycles; regulation & macroprudential (MaP) tools; FX interventions if/when FS threaten, ie. spillovers from global economy (Agénor and Pereira da Silva (2013)).
- Capacity to "look through" external shocks (eg snapback etc). Good news but also bad news (expectations) → risk premia → fiscal/public debt stance → negative feedback loop for inflation.

EME structural reforms

- Strengthen overall institutional framework. Better governance, predictability through explicit rules for investors, established and well communicated policy reactions countered (Acemoglu and Robinson (2012)).
- Factor markets. Greater openness, flexibility, competitive and contestable markets; more incentives for innovation and growth not to rent-seeking and protection (Akerlof and Shiller (2009, 2016)).
- Public (private) sector balance sheet. Sustainable (perceived, actuarial, simulated) debt dynamics; smooth social welfare inter-temporal inconsistencies through transparent arrangements.

EME political economy of structural reforms

- Impediments. "Wait-and-see" and "war of attrition" are common in reforms and adjustment processes; uncertainty over welfare implications and distribution of costs and benefits → blocking coalitions (Drazen (2000), (Alesina and Drazen (1991)).
- "Fairness". Sharing the burden of costs for winners and losers can enhance socio-political consensus; inter-temporal inconsistencies can be explained / traded (on wage determinants, Akerlof (1982), Akerlof and Yellen (1990)).
- "Resolve" and "determination". Policymakers can use political capital to implement reforms when they are needed (eg prevention) or when there's no choice (eg crisis).

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