



REIGNITING GROWTH IN EMERGING MARKET AND LOW-INCOME ECONOMIES: WHAT ROLE FOR STRUCTURAL REFORMS?

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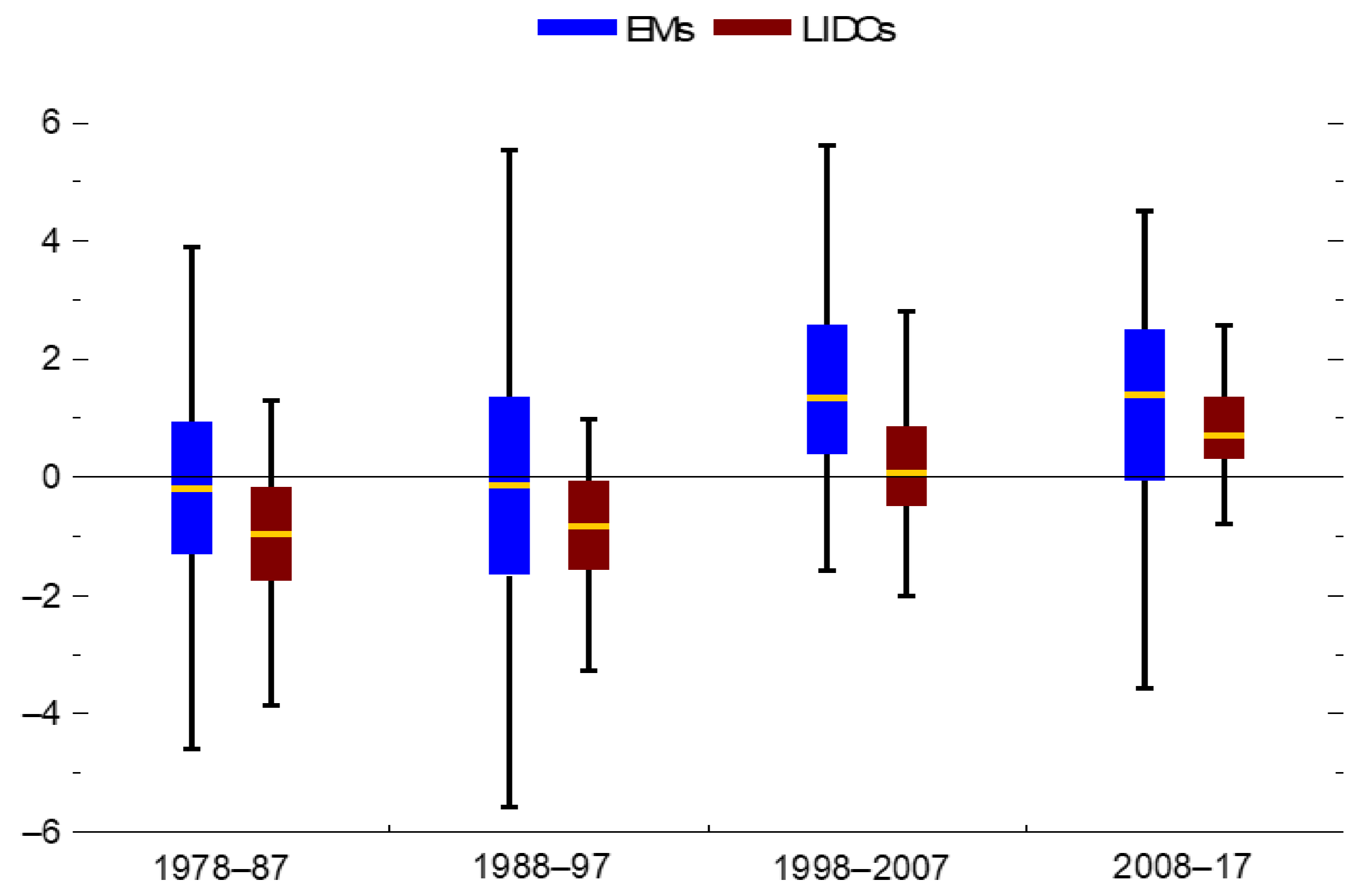
Gabriele Ciminelli, Romain Duval (lead), Davide Furceri (lead), Guzman Gonzalez-Torres Fernandez, Joao Jalles, Giovanni Melina and Cian Ruane, with contributions from Zidong An, and supported by Hites Ahir, Jun Ge, Yi Ji and Qiaoqiao Zhang.

Background

- Rather slow speed of convergence of per-capita income over last decade...
 - Just 1% per year for median EMDE, 0.7% for median LIC (vis-à-vis US)
 - A fraction of countries (22%) actually diverging.
- ...and less favorable macro environment (uncertain AE growth and policy prospects and commodity prices, shrinking fiscal space) ...
- ...reviving policymakers' interest in structural reforms in EMDEs, all the more so as pace of reform is widely perceived to have slowed...
- ...But past experience of individual countries with reforms has been mixed
- ***Could a major structural reform push help reignite growth and income convergence?***

The speed of income per capita convergence remains rather slow and highly heterogenous across EMDEs.

Speed of Income-per-Capita Convergence in Emerging Market and Low-Income Developing Economies (Percent)

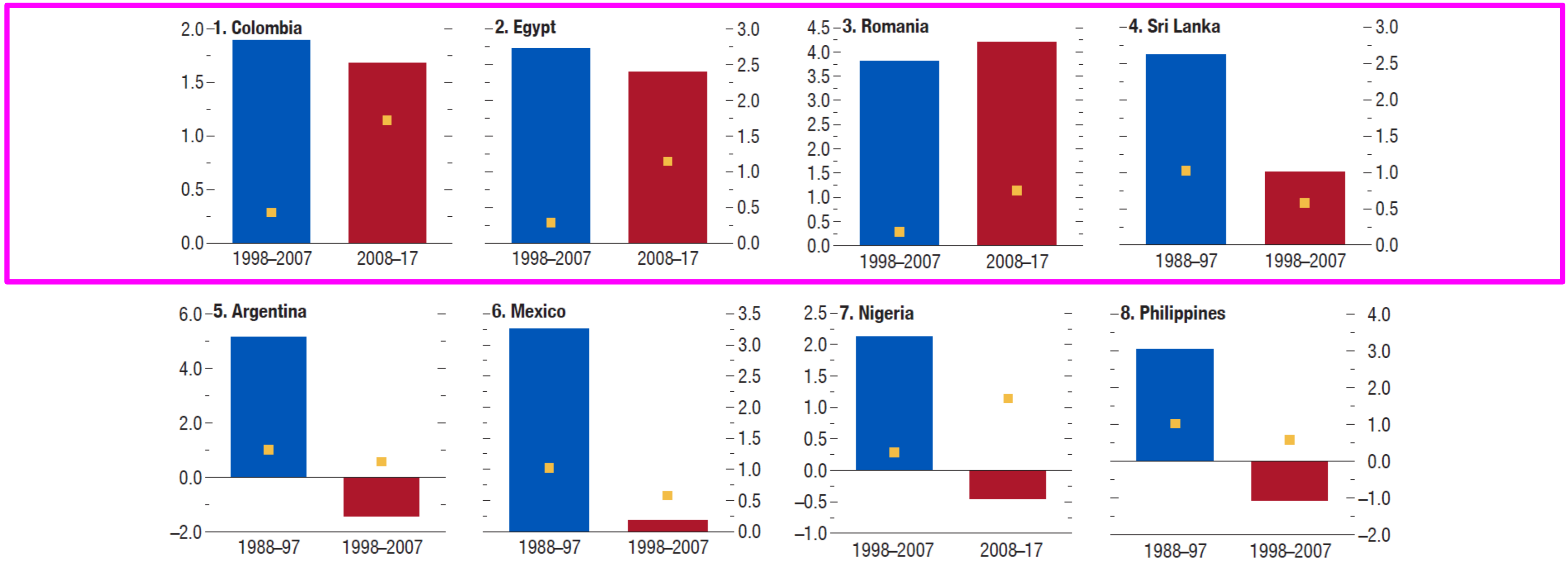


Sources: Penn World Tables; and IMF staff calculations. The speed of convergence for each decade is computed as the ratio between average annual real per capita GDP growth relative to the United States and the percent difference between the US real per capita GDP and that of each country at the beginning of each decade at purchasing power parity. The horizontal line inside each box represents the median; the upper and lower edges of each box show the top and bottom quartiles, respectively; and the top and bottom markers denote the maximum and the minimum.

Mixed experience with past reforms?

Reform Intensity and Speed of Income-per-Capita Convergence in Selected Economies (*Percent*)

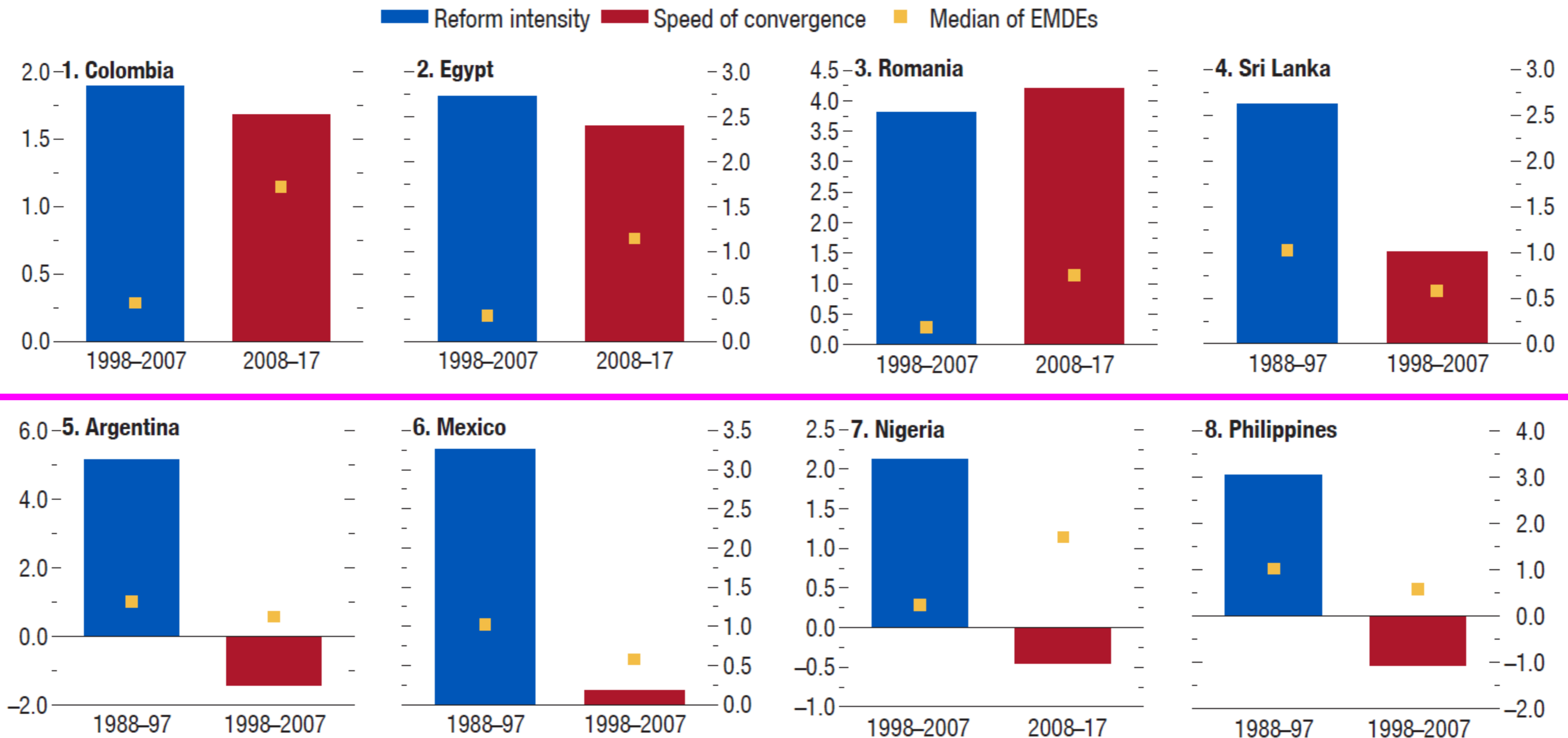
■ Reform intensity ■ Speed of convergence ■ Median of EMDEs



Sources: Penn World Tables; Alesina and others (forthcoming); and IMF staff calculations. The speed of convergence for each decade is computed as the ratio between average annual real per capita purchasing power parity GDP growth relative to the United States and the percent difference between the US real per capita GDP and that of each country at the beginning of each decade. Reform intensity is the average annual change in each decade (multiplied by 100) of the average reform index, which in turn is the arithmetic average of indicators capturing liberalizations in five areas: domestic finance, external finance, trade, product market, and labor market. The index ranges from 0 to 1, with higher values denoting greater liberalization.

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Questions

- Q1.** How has reform progress evolved over time in EMDEs? How large is the remaining scope for reforms? *New reform dataset*
- Q2.** What is the average impact on growth and jobs of structural reforms in the areas of (i) domestic finance; (ii) external finance; (iii) trade; (iv) product market; (v) labor market; and (vi) governance? *Empirical and model analysis*
- Q3.** How do the effects of reforms vary across countries and time, and why? (role of prevailing business conditions, complementarities across reforms...) *Empirical and model analysis*
- Q4.** What implications for the timing, design, sequencing and packaging of reforms? (also factoring in political economy obstacles to reform)

Key findings

- A1.** Slowing pace of reform during the 2000s, after liberalization wave of 1980s and—especially—1990s. Large remaining scope for reforms especially in LIDCs.
- A2.** Reforms in each area raise average income levels—comprehensive package could boost growth by over 1 percentage point in average EMDE over next 5-10 years.
But gains can take time to materialize (3+ years) and can be heterogenous across countries.
- A3.** The payoff from reforms is larger when:
- Economy is in expansion (labor market and domestic finance reforms)
 - Informality is high (because reforms help reduce it)
 - Governance and access to credit—two binding constraints on growth—are strong
- A4.** Lessons for reform strategies:
- Reform early in mandate and factor in macro conditions (prioritization, design, support)
 - Prioritize, or package with, reforms to enhance governance and access to credit
 - Address distributive effects upfront (e.g. social safety nets)

The new reform dataset

IMF:

- New narrative database on market regulations and reforms
- Covers sample of 90 advanced and developing economies (41 current EMs, 7 former EMs, and 20 LIDCs) over 40 years
- Two main advantages: (i) covers larger set of policy areas and years than existing databases; and (ii) documents exact nature and precise timing of major reforms.
 - **Domestic finance:** credit controls, interest rate controls, entry barriers, banking supervision, privatization, security markets
 - **Capital account:** restrictions on capital inflows and outflows
 - **Trade indicator:** tariffs
 - **Labor:** procedural requirements, firing costs, redress measures
 - **Product market:** telecoms and electricity (access, regulation, competition, ownership)

Other:

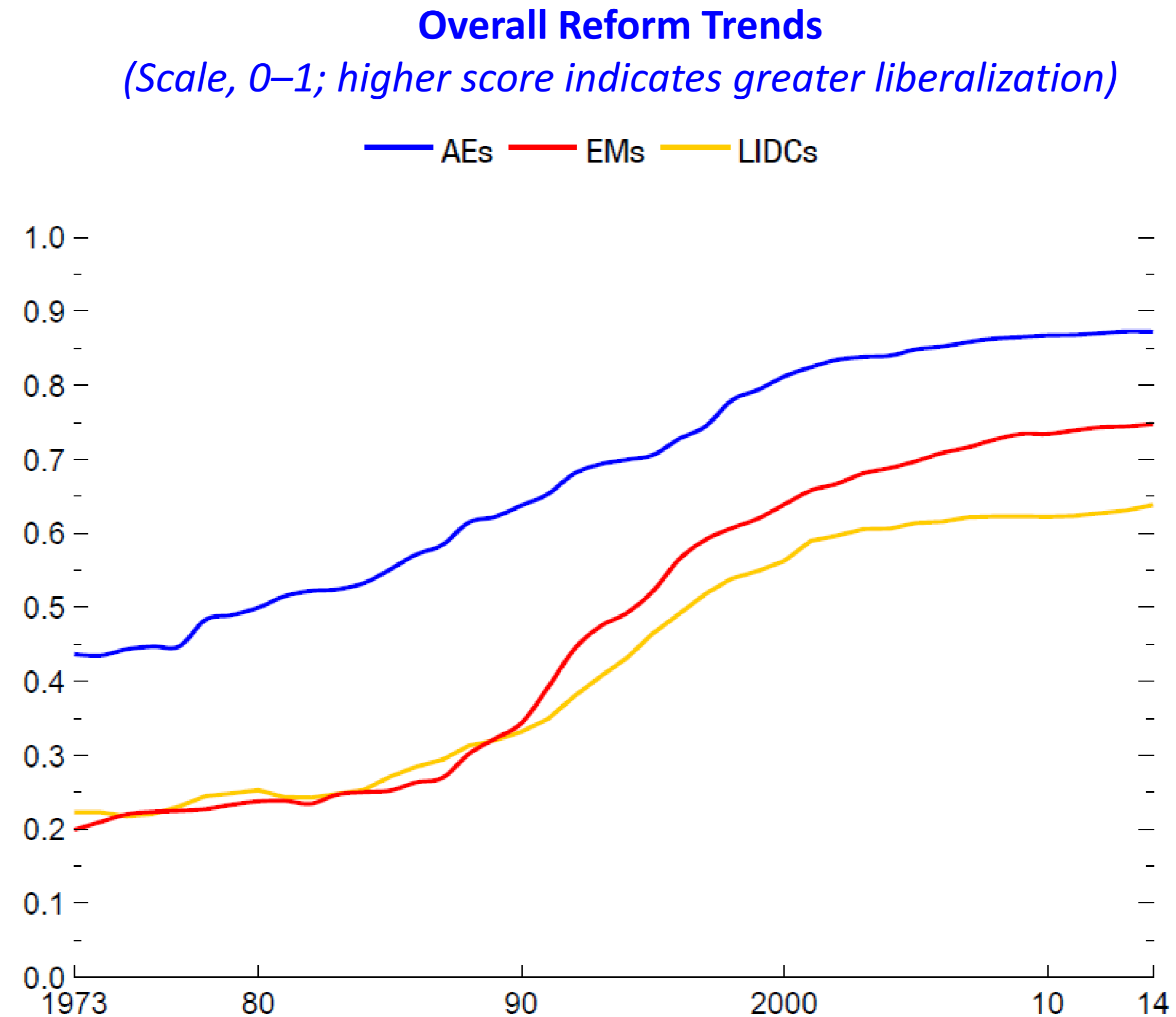
- **Worldwide Governance Indicators** (voice and accountability, political stability and absence of violence, government effectiveness, regulatory quality, rule of law, control of corruption).

Limitations:

- Indices (and reform intensity) are area-specific—cannot be compared across reform areas
- Focus on market regulations—other key reform areas include education, health, infrastructure and innovation policies

Stylized facts

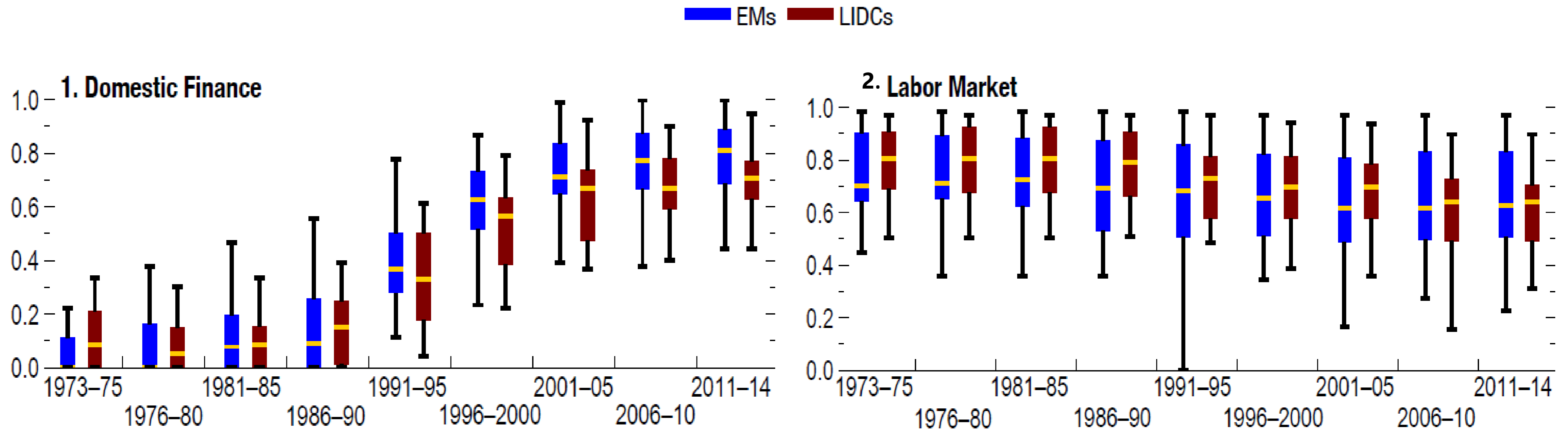
After liberalization wave of 1980s-1990s, regulatory convergence has stalled since the 2000s, especially in LIDCs



Sources: Alesina and others (forthcoming); and IMF staff calculations. The average reform index is computed as the arithmetic average of indicators capturing liberalizations in five areas: domestic finance, external finance, trade, product market, and labor market. It excludes the governance indicator due to its lower time coverage. The index ranges from 0 to 1, with higher values denoting greater liberalization.

Reform trends have varied across areas—major deregulation in finance vs. stable labor market regulation, for example...

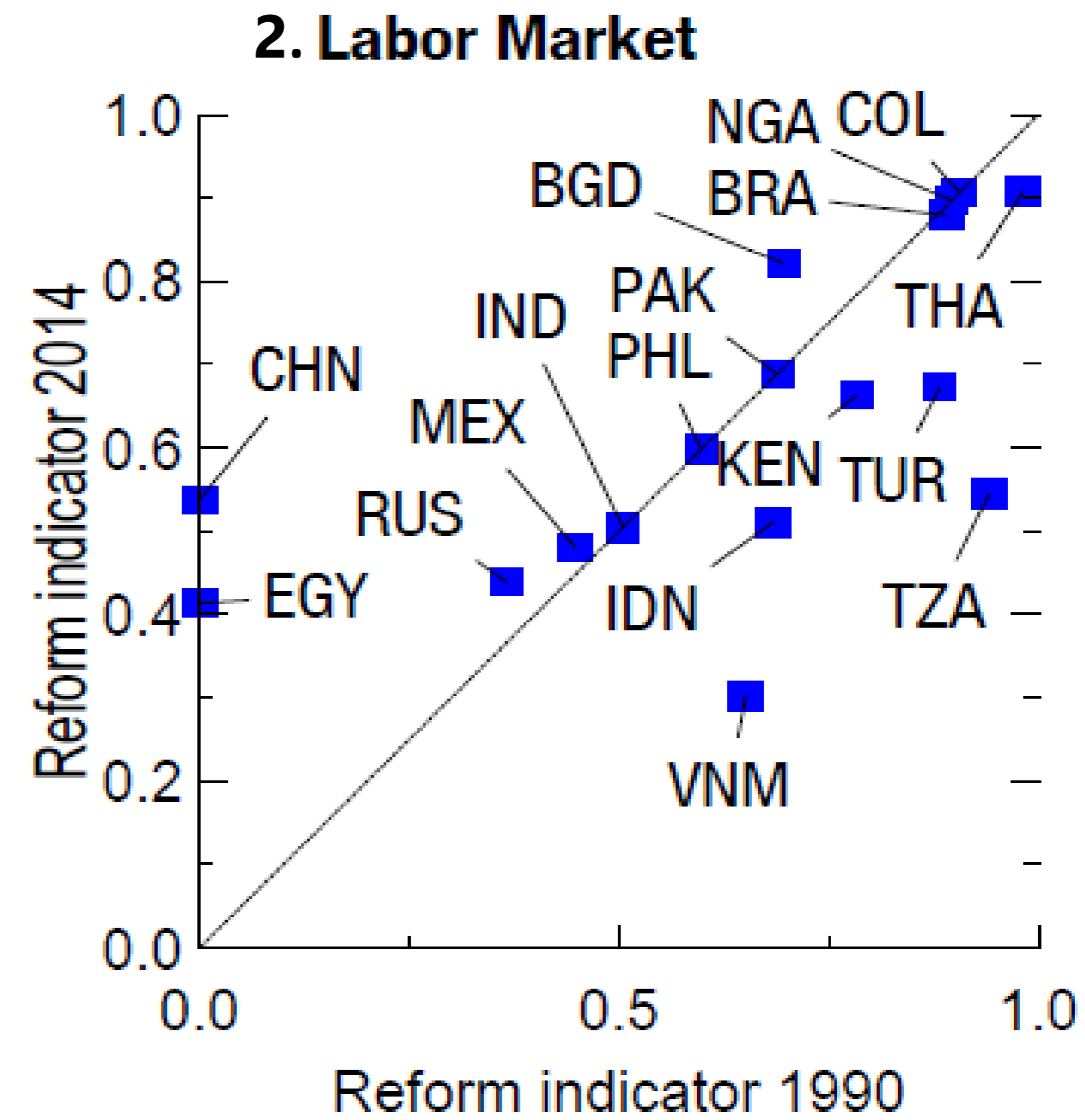
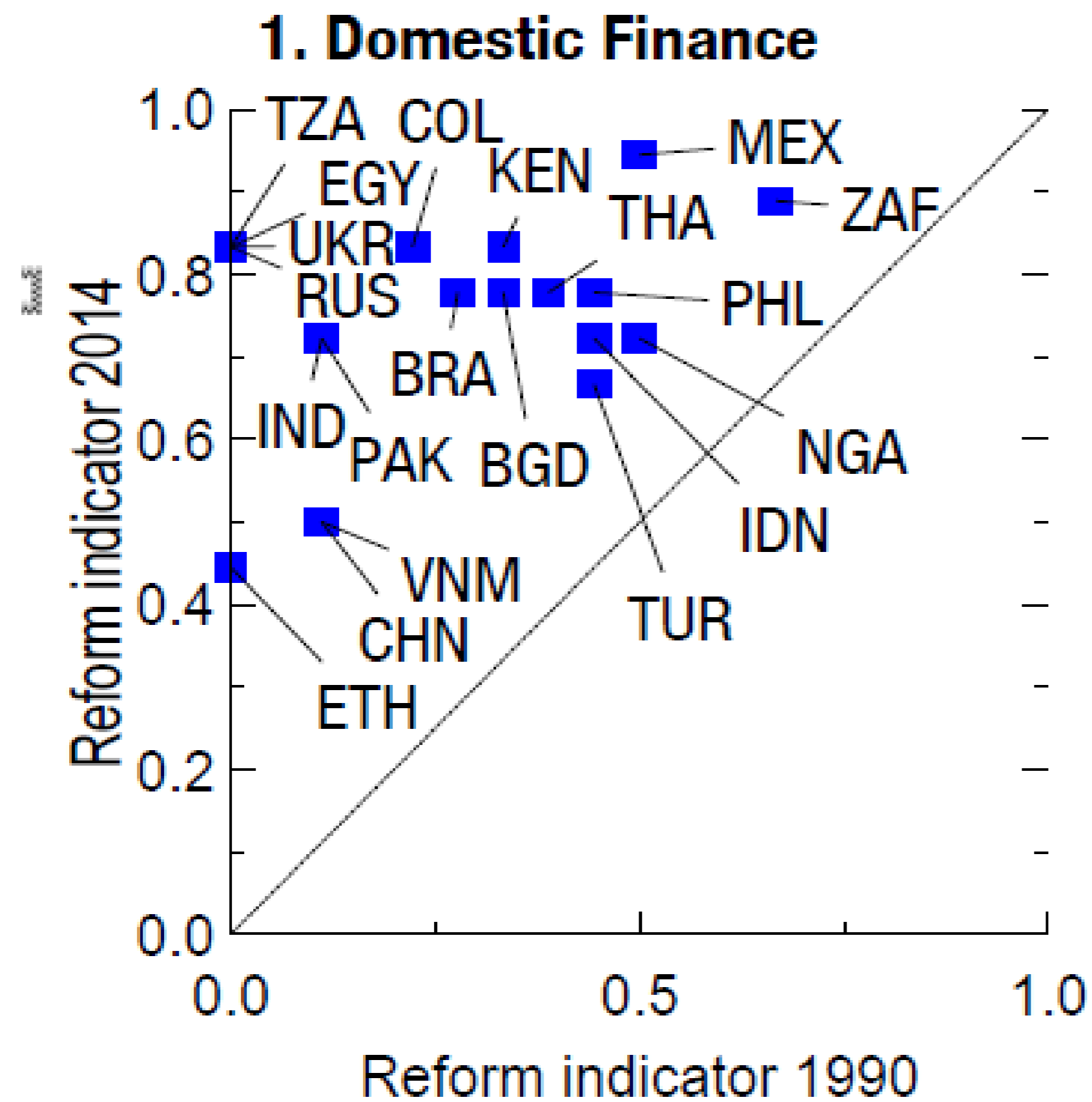
Reform Trends by Area
(Scale, 0–1; higher score indicates greater liberalization)



Sources: Alesina and others (forthcoming); and IMF staff calculations. The horizontal line inside each box represents the median; the upper and lower edges of each box show the top and bottom quartiles, respectively; and the top and bottom markers denote the maximum and the minimum, respectively.

... and across countries within each area

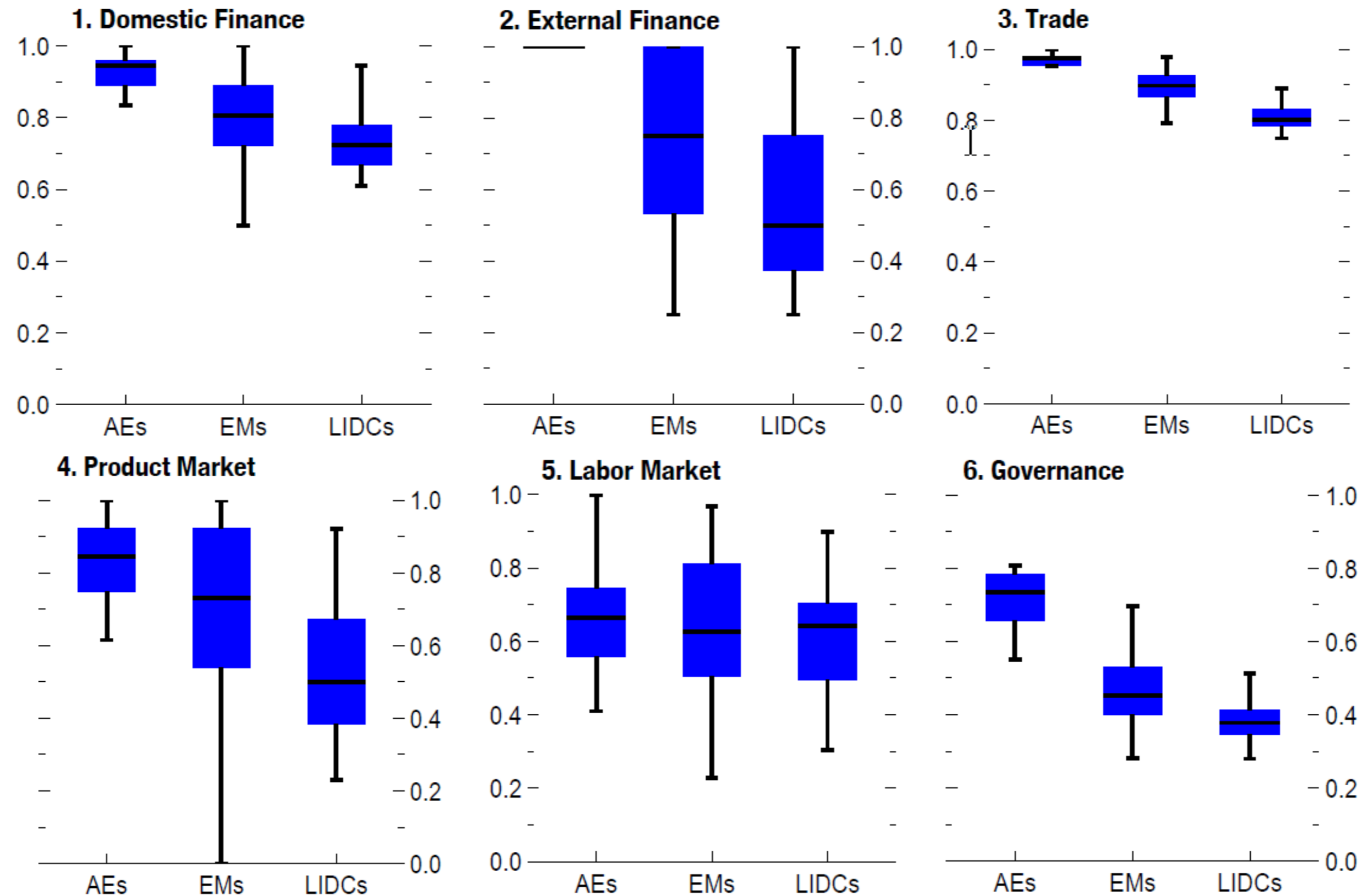
Reforms over the past two decades in selected EMDEs
(Scale, 0–1; higher score indicates greater liberalization)



Sources: Alesina and others (forthcoming); and IMF staff calculations. Data labels use International organization for Standardization (ISO) country codes. Markers represent the largest 20 EMDEs by population. The dashed lines represent the 45-degree line.

Remaining scope for reform in many economies, especially in LIDCs...

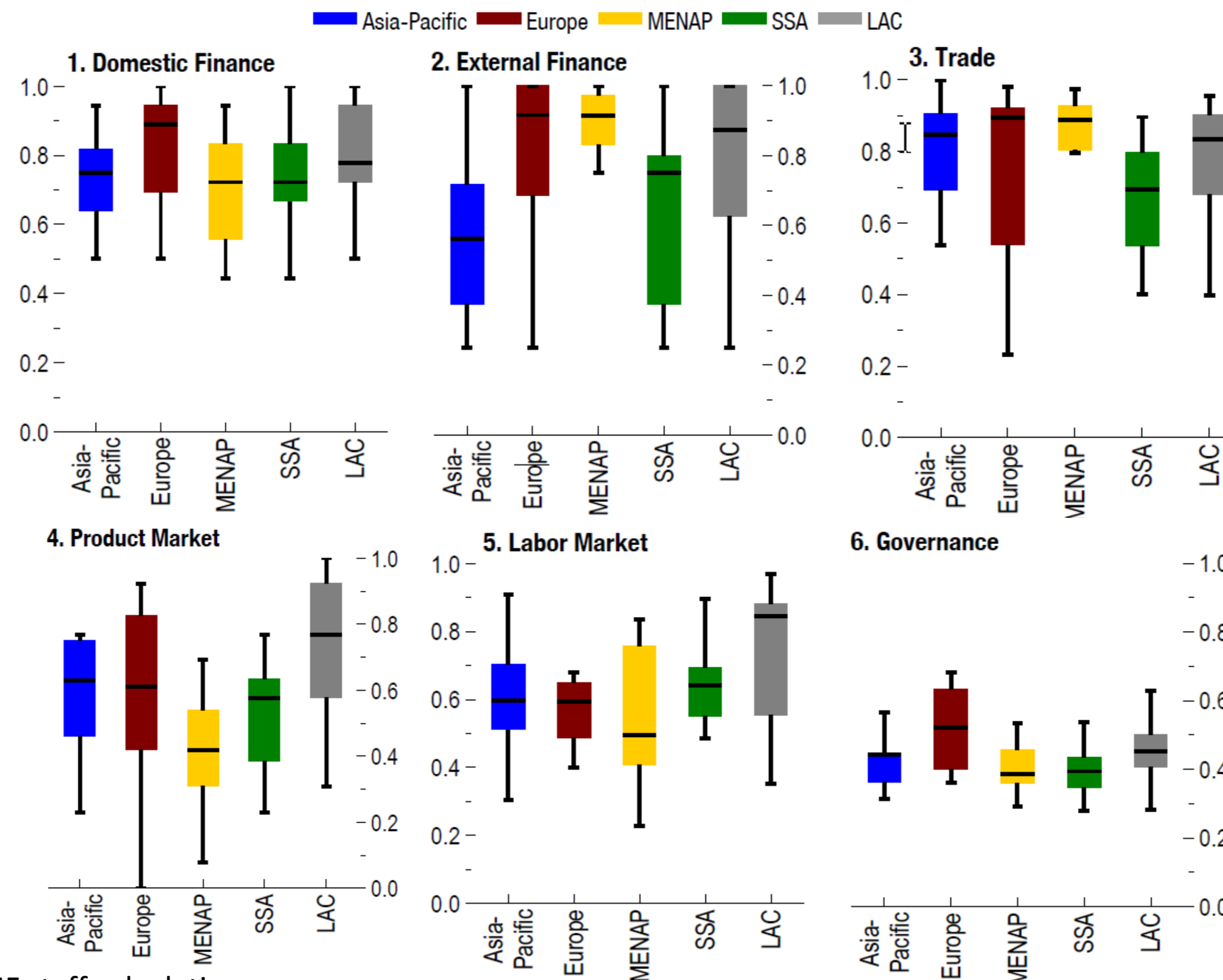
Regulatory Indices by Country Income Groups
(Scale, 0–1; higher score indicates greater liberalization)



Sources: Alesina and others (forthcoming); and IMF staff calculations. Bars represent the 2014 value of each index (2013 for the governance index). The horizontal line inside each box represents the median; the upper and lower edges of each box show the top and bottom quartiles, respectively; and the top and bottom markers denote the maximum and the minimum, respectively. 13

...and in most regions—especially in sub-Saharan African and Middle East-North African, although varies across countries and areas

Regulatory Indices by Geographical Regions
(Scale, 0–1; higher score indicates greater liberalization)



Sources: Alesina and others (forthcoming); and IMF staff calculations.

Note: Each region includes only EMDEs. Bars represent the 2014 value of each index (2013 for the governance index). The horizontal line inside each box represents the median; the upper and lower edges of each box show the top and bottom quartiles, respectively; and the top and bottom markers denote the maximum and the minimum, respectively. LAC = Latin America and the Caribbean; MENAP = Middle East, North Africa, Afghanistan, and Pakistan; SSA = sub-Saharan Africa.

Empirical Analysis

Empirical analysis—average macroeconomic effects

- **Dynamic impact of reforms** on aggregate output, investment, employment and labor productivity using the local projection method (Jordà, 2005):

$$y_{i,t+k} - y_{i,t-1} = \alpha_i + \gamma_t + \beta_k R_{i,t} + \theta X_{i,t} + \epsilon_{i,t}, \quad k = 0, 1, 2, \dots, 6$$

where: $y_{i,t}$ = outcome variable

α_i = country fixed effects

γ_t = time fixed effects

$R_{i,t}$ = reform defined as the first difference of the regulatory indicator considered

$X_{i,t}$ = controls (lags of dependent variable, past economic growth and past reforms)

$\epsilon_{i,t}$ = error term

- **Country coverage:** 75 countries (41 current EMs; 7 former EMs; 20 LIDCs).
- **Robustness checks—further addressing reverse causality and omitted variable bias concerns:** control for expectations of future growth/all other reforms/current growth/crises.

Empirical analysis—heterogeneity

1. **Across time:** check whether impact varies with business conditions (Auerbach and Gorodnichenko, 2012):

$$y_{i,t+k} - y_{i,t-1} = \alpha_i + \gamma_t + \beta_k^L F(z_{i,t}) R_{i,t} + \beta_k^H [1 - F(z_{i,t})] R_{i,t} + \theta X_{i,t} + \epsilon_{i,t}, \quad k = 0, 1, 2, \dots$$

where $F(z_{i,t}) = \frac{\exp(-\gamma z_{i,t})}{1 + \exp(-\gamma z_{i,t})}$, $\gamma > 0$ and $z_{i,t}$ is standardized real GDP growth.

2. **Across industries:** use dif-in-dif approach (Rajan and Zingales, 1998) exploiting cross-industry heterogeneity in exposure to reforms (D_j) and controlling for country-wide macroeconomic shocks:

$$y_{i,j,t+k} - y_{i,j,t-1} = \alpha_{i,t} + \tau_{j,t} + \gamma_{i,j} + \beta_k D_j R_{i,t} + \theta X_{i,j,t} + \epsilon_{i,j,t}, \quad k = 0, 1, 2, \dots$$

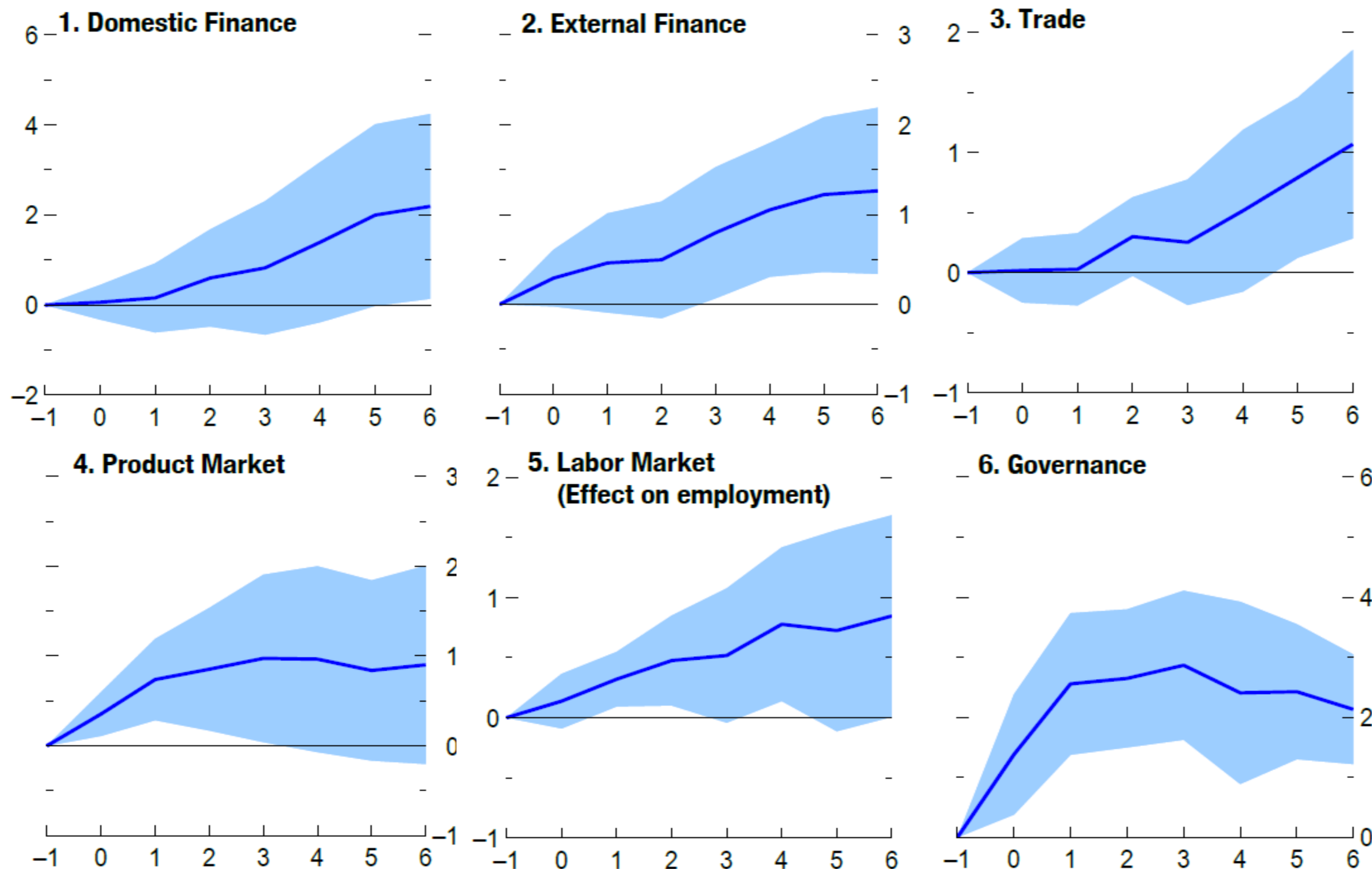
where e.g. D_j is industry-specific external finance dependence for domestic and external finance reforms

3. **Across countries:** Bayesian Hierarchical Model (BHM) analogous to Boz, Gopinath and Plagborg-Møller (2017), focusing on medium-term (5-year ahead) effect and computing *cross-sectionally varying coefficients* (β_i) conditional on country characteristics (e.g. level of governance and informality):

$$y_{i,t+5} - y_{i,t} = \alpha_i + \gamma_t + \beta_i R_{i,t} + \theta X_{i,t} + \epsilon_{i,t}.$$

Average impact of major historical reforms is sizable, although it often materializes gradually...

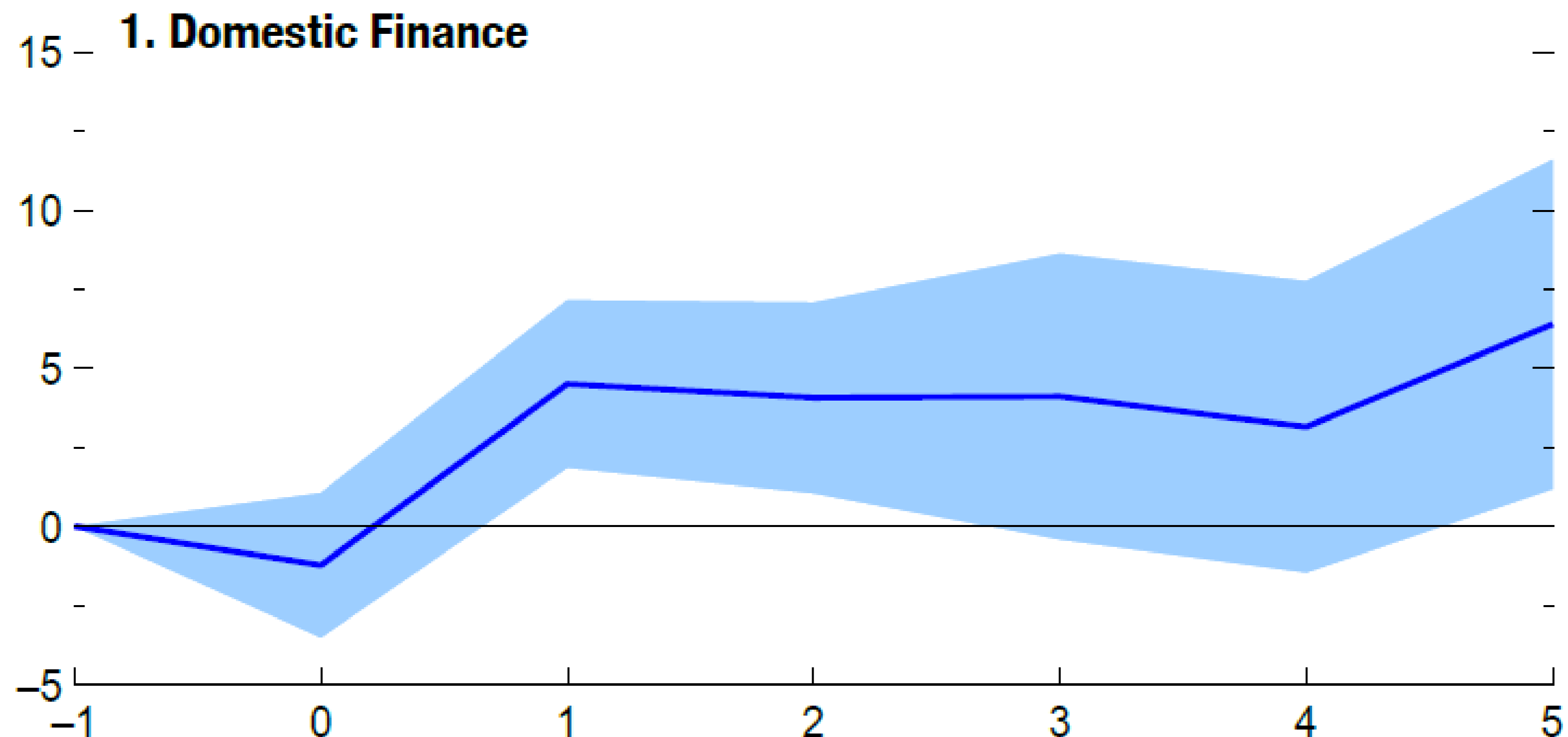
Average Output Effects of Major Historical Reforms
(Percent; effect on output unless noted otherwise)



➔ A package of major reforms in each area may raise GDP per capita by over 7 percent in six years in average EMDE

Reform gains are confirmed by industry-level analysis...

Industry-Level Effect of Major Historical Domestic Finance Reform on Output
(Percent)



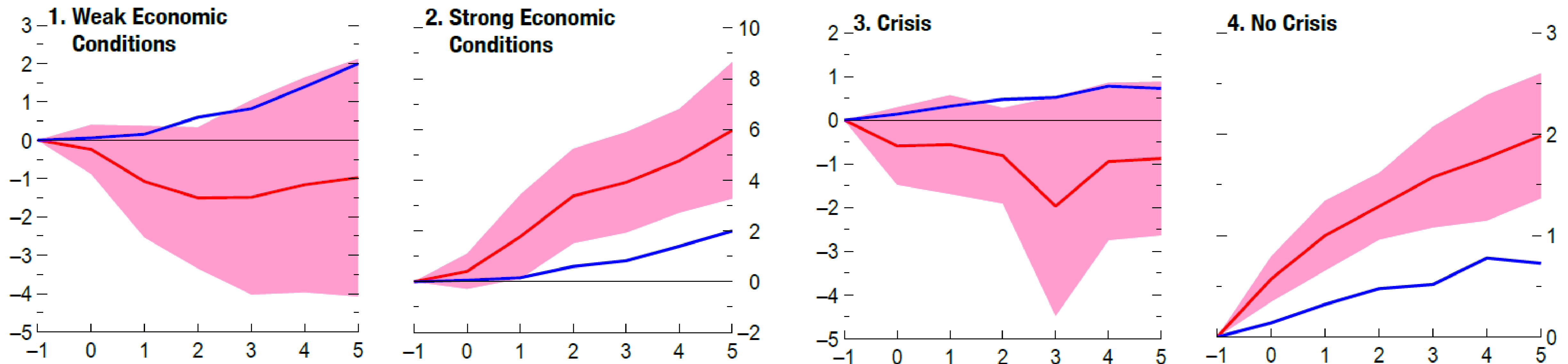
Source: IMF staff calculations. x-axes in years; t = 0 is the year of the shock. The shock represents a major historical reform (two standard deviations); the lines denote the differential impact in percent between the sector at the 75th percentile of the degree of dependence on external finance versus the sector at the 25th percentile; the shaded areas denote 90 percent confidence bands. External finance dependence in each industry is measured as the median across all US firms, in each industry, of the ratio of total capital expenditures minus the current cash flow to total capital expenditure.

Heterogeneity I: some reforms do not pay off when undertaken in bad times

Effects of Major Historical Reforms: The Role of Macroeconomic Conditions (Percent)

Effect of Domestic Finance Reforms on Output

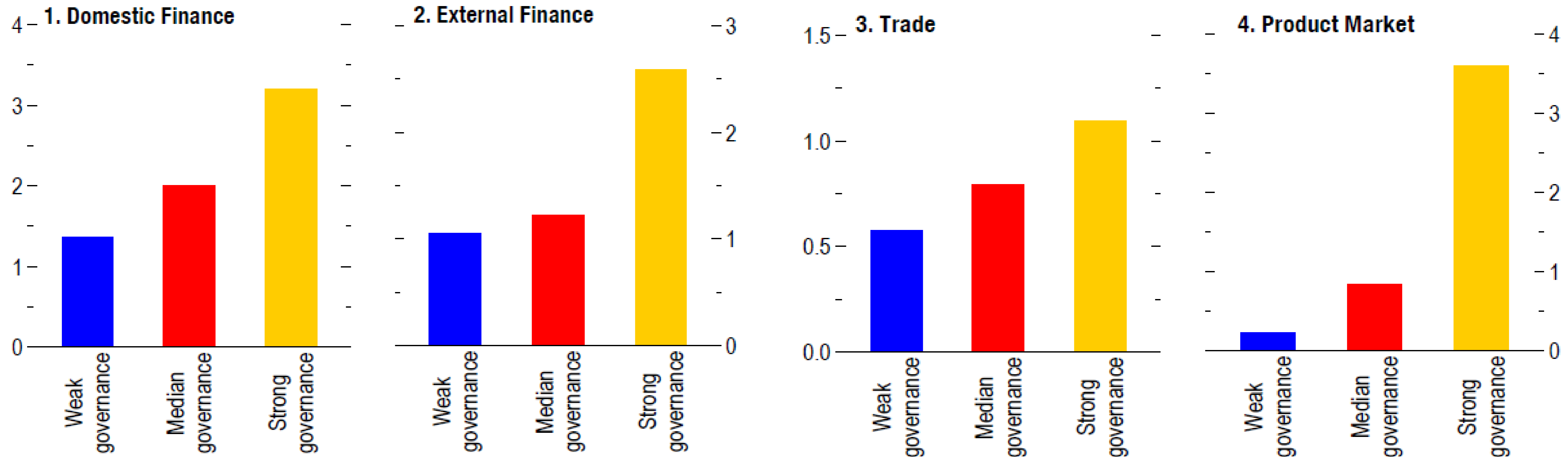
Effect of Labor Market Reforms on Employment



Source: IMF staff calculations. x-axes in years; t = 0 is the year of the shock. Red lines denote the percent response to a major historical reform (two standard deviations). Shaded areas denote 90 percent confidence bands. Blue lines represent the unconditional result.

Heterogeneity II: Strong governance magnifies the impact of reforms

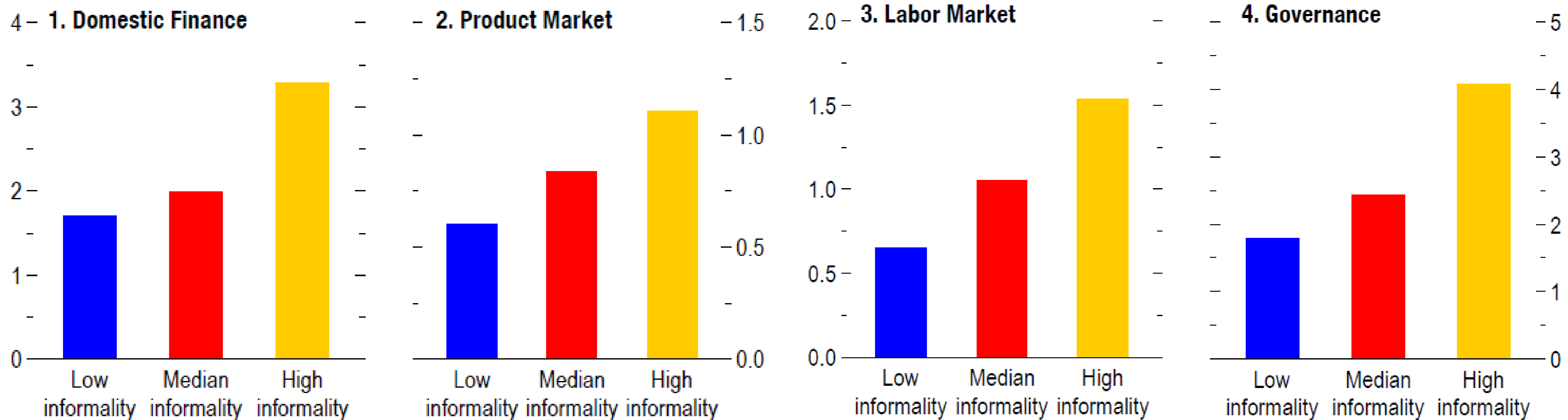
Output Effects of Major Historical Reforms: The Role of Good Governance
(Percent)



Sources: IMF reform dataset; and IMF staff calculations. Bars denote the five-year-ahead output response to a major historical reform (two standard deviations). Weak (strong) governance refers to a level of governance equal to the 25th (75th) percentile of the governance index.

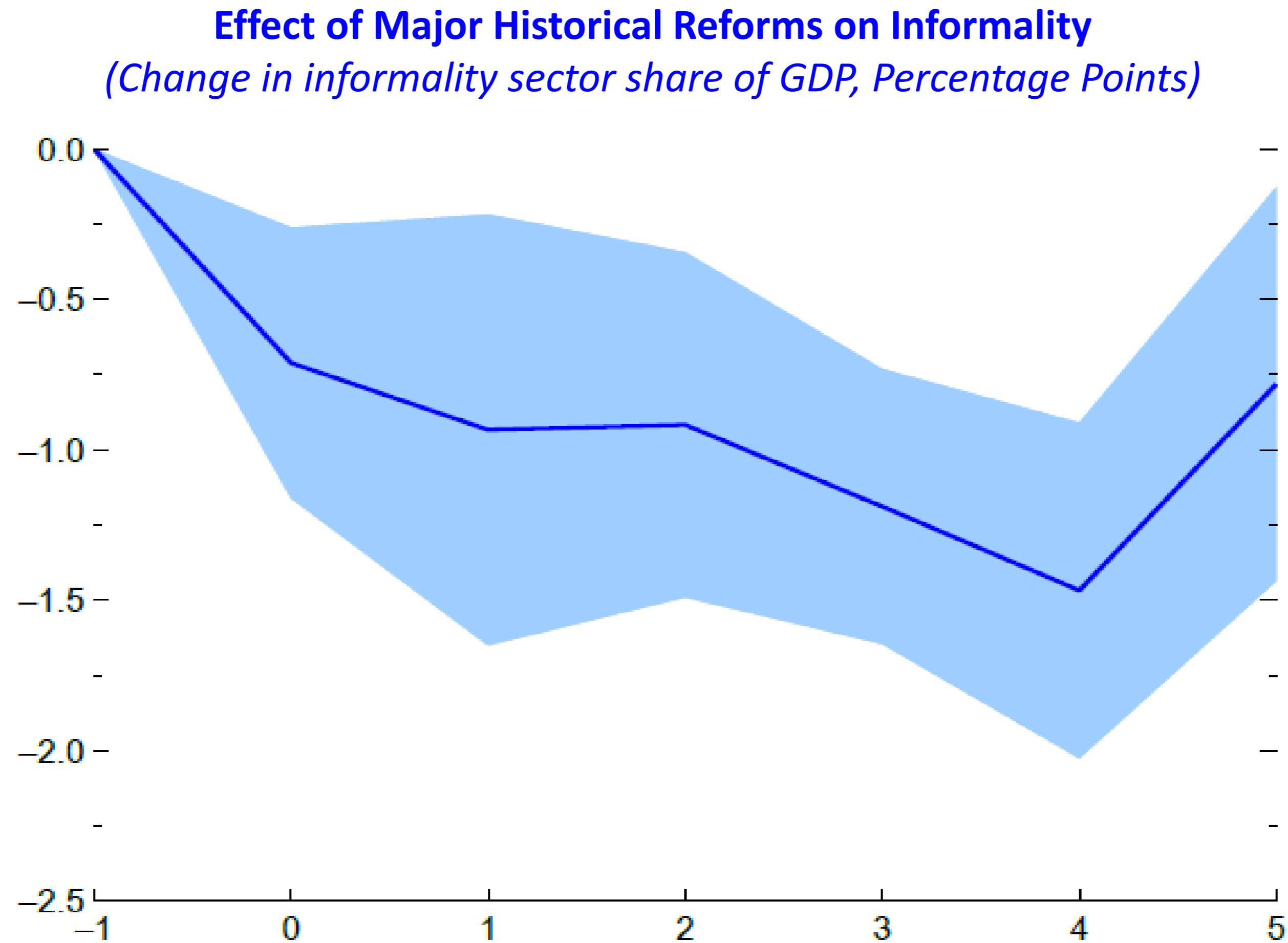
Heterogeneity III: Larger reform payoffs where informality is higher...

Output Effects of Major Historical Reforms: The Role of Informality
(Percent)



Source: IMF staff calculations. Bars denote the five-year-ahead output response to a major historical reform (two standard deviations). Low (high) informality refers to a level of informality equal to the 25th (75th) percentile of the informality index.

...partly because reforms help reduce lower informality



Source: IMF staff calculations. x-axis in years; t = 0 is the year of the shock. The lines denote the response of the informality indicator to an average reform (across the five areas covered by the indicators) of size two standard deviations. The shaded areas denote 90 percent confidence bands.

Model Analysis

Model analysis complements empirical analysis

- Structural general equilibrium model with heterogeneous firms calibrated on median EMDE. Gain:
 - Quantification of **longer-run** impacts of reforms (e.g. once their impact on firm transitions from informal to formal sector and capital accumulation runs its course)
 - Highlight **mechanisms** through which reforms affect income (firm entry in formal sector...etc)
 - Explore role of **individual country characteristics**, including regulations in other areas, for the payoff from a given reform
- **4 reform areas:** i) domestic finance, ii) labor market, iii) governance and iv) barriers to entry in product market
- **Two main mechanisms** through which reforms affect output:
 - Entry from informal into formal sector → higher productivity, higher investment
 - Misallocation of capital across firms

Model framework

- Small open economy: Midrigan and Xu (2014, AER) + additional market frictions
- Two types of agents who both save and consume:
 - **Workers:** hit by unemployment shocks, own firm equity, save in risk-free asset
 - **Entrepreneurs:** permanent and transitory productivity shocks
- Two sectors – **informal** and **formal**:
 - Informal sector only uses labor – new entrepreneurs start here
 - Formal sector uses labor and capital, exogenously higher productivity, sunk entry costs
- Frictions faced by entrepreneurs:
 - **Collateral constraint:** $\text{Debt} \leq \theta \times \text{Fixed Capital Stock}$
 - Sunk **entry costs** into formal sector f_m
 - Proportional **revenue wedge** (τ_y) and **labor wedge** (τ_w) in formal sector

Calibration to data from large sample of EMDEs

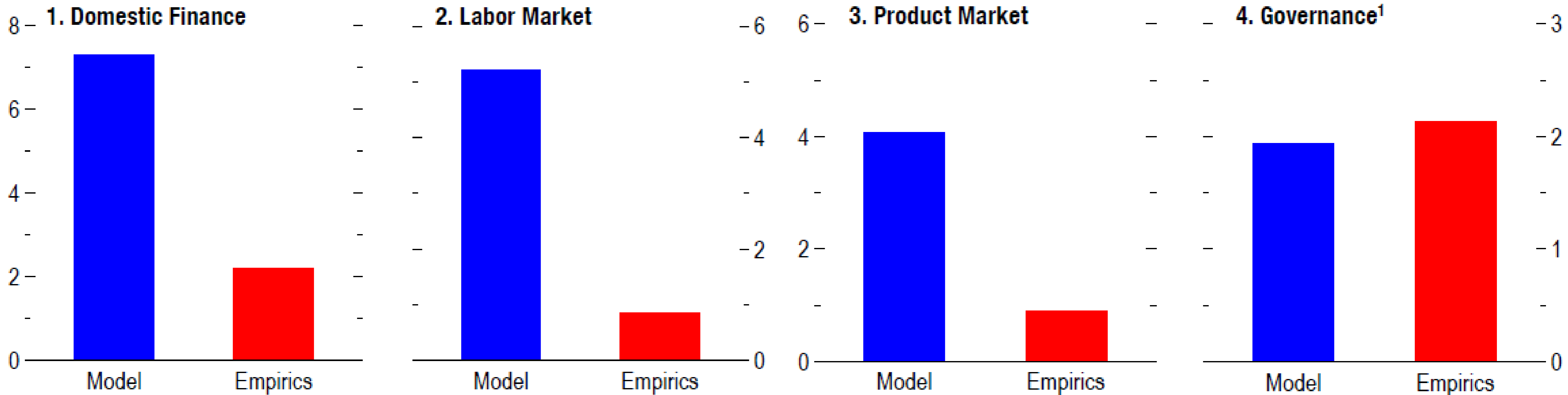
- Jointly calibrate model to target median moments from large sample of EMs and LICs (2013-2018):

Parameter	Moment	Source	# Countries	Target
Collateral constraint	Private Sector Debt / GDP	IMF Global Debt Database	46	31.7%
Formal sector regulatory entry cost	Monetized cost of entry regulations (time + financial), as % GDP/capita	WB Doing Business Surveys	150	30.9%
EPL (labor) wedge	Monetary cost of EPLs (months notice + severance payments), as % of wage	Our labor market reform indicators	60	5.2%
Governance/corruption wedge	Non-agricultural informal employment share	International Labor Organization	66	68%
Equity issuance constraint	Market Capitalization / GDP	WB Financial Structures Database	37	37.4%
SD of permanent firm productivity	SD of $\ln(\text{employment})$	World Bank Enterprise Surveys	89	1.04
SD of transitory firm productivity	SD of $\Delta \ln(\text{employment})$	World Bank Enterprise Surveys	89	0.15
Persistence of transitory firm productivity	Serial Correlation of $\ln(\text{employment})$	World Bank Enterprise Surveys	89	0.96

- Other parameters: labor elasticity, span of control, discount factor, capital depreciation, growth rate, transition probabilities in and out of unemployment, relative efficiency of formal sector

Model implies sizable long-term gains from major historical reforms in the median EMDE...

Output Effects of Major Historical Reforms: Model-Based versus Empirical Estimates
(Percent of GDP)

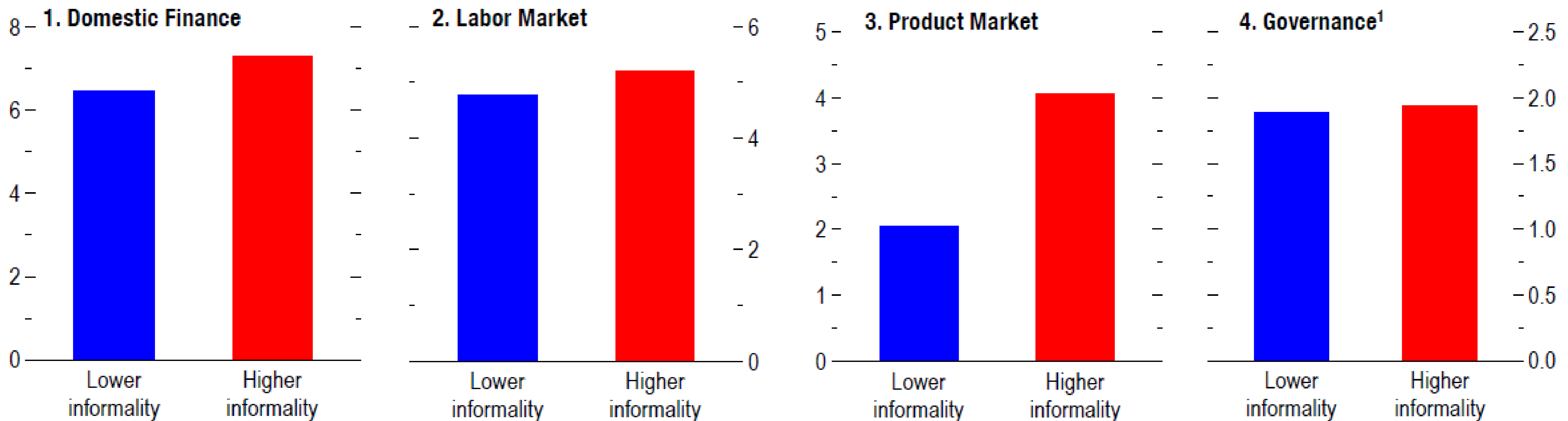


Source: IMF staff calculations. Bars represent the percent increase in aggregate output from a reduction in the corresponding friction at the benchmark calibration. The size of the reforms is designed to be in line with a major reform in the reform indices ($\Delta Reform: \Delta Targeted Moment = \frac{2\sigma_{\Delta Reform Index}}{\sigma_{Reform Index}} \cdot \sigma_{Targeted Moment}$) For example, in the case of domestic finance reform, the parameter representing the financial friction is changed such that the credit-to-GDP ratio shifts across the distribution (of the credit-to-GDP ratios across countries) the same way the domestic finance regulation indicator does across the distribution (of this indicator across counties) after a major reform in the empirical analysis.

1. "Governance" is modeled as a reduction in an implicit tax on formal firms' revenue. While conventional, this modeling choice ignores other potential gains from strengthening governance, such as lower costs of doing business in the informal sector, lower operational uncertainty, and reduced misallocation across firms in the formal sector—to the extent that these might suffer to different degrees from poor governance.

... and also points to cross-country heterogeneity, confirming that formalization is an important source of gains...

Model-Implied Gains from Major Historical Reforms: The Role of Informality
(Output gains from major historical reforms under high versus low informality, percent)

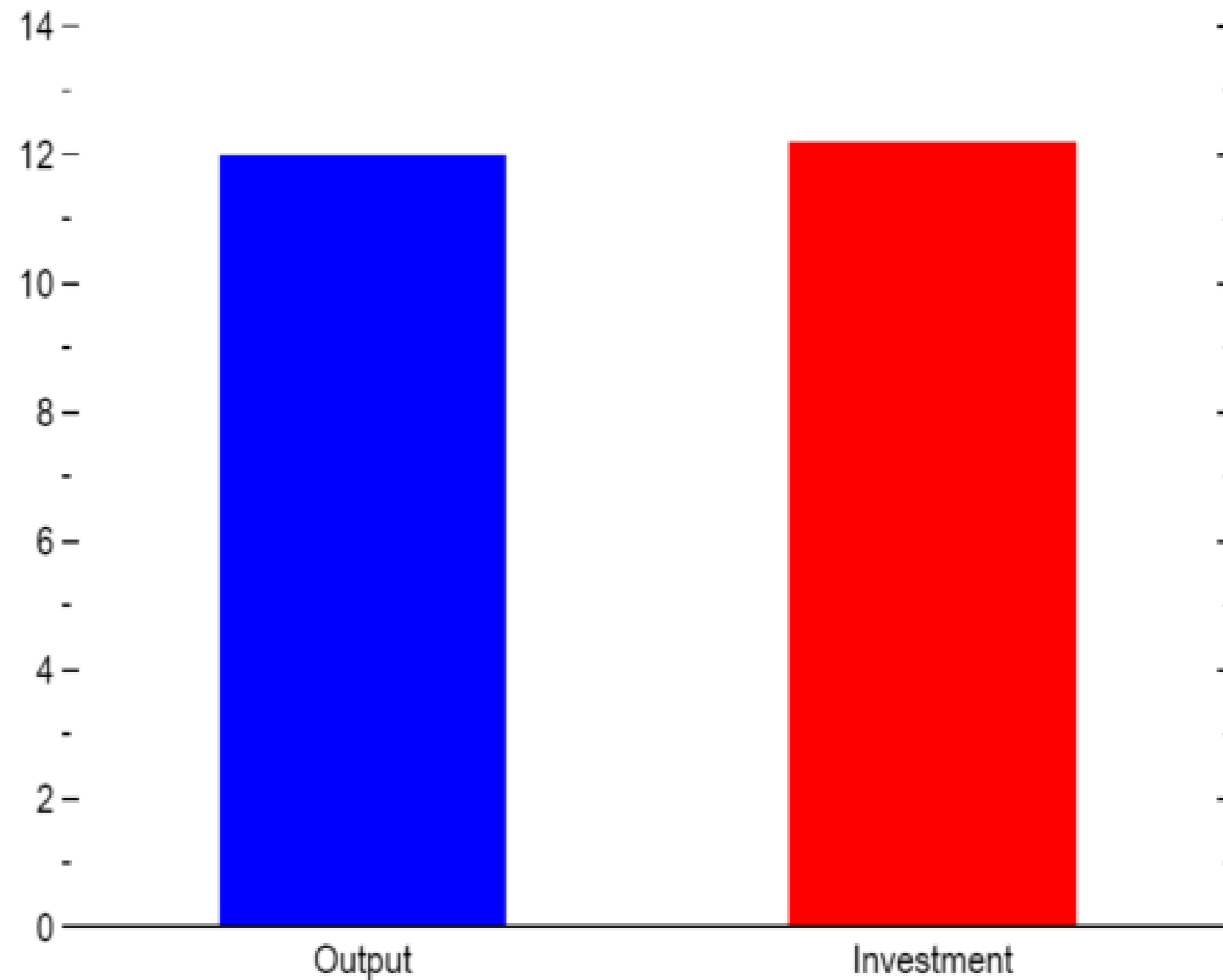


Source: IMF staff calculations. Bars represent the percent increase in aggregate output from a reduction in the corresponding friction at either the lower informality or higher informality benchmark calibration. The higher informality calibration is the benchmark calibration for the median economy. The lower informality calibration is constructed by reducing the entry regulation friction to its 25th percentile in the data. The size of the reforms is designed to be in line with a two standard deviation change in the reform indices.

1. "Governance" is modeled as a reduction in an implicit tax on formal firms' revenue. While conventional, this modeling choice ignores other potential gains from strengthening governance, such as lower costs of doing business in the informal sector, lower operational uncertainty, and reduced misallocation across firms in the formal sector—to the extent that these might suffer to different degrees from poor governance.

... and that some reform complementarities matter

Gain from Packaging Domestic Finance and Labor Market Reforms
(Additional percent gain from packaging reforms)



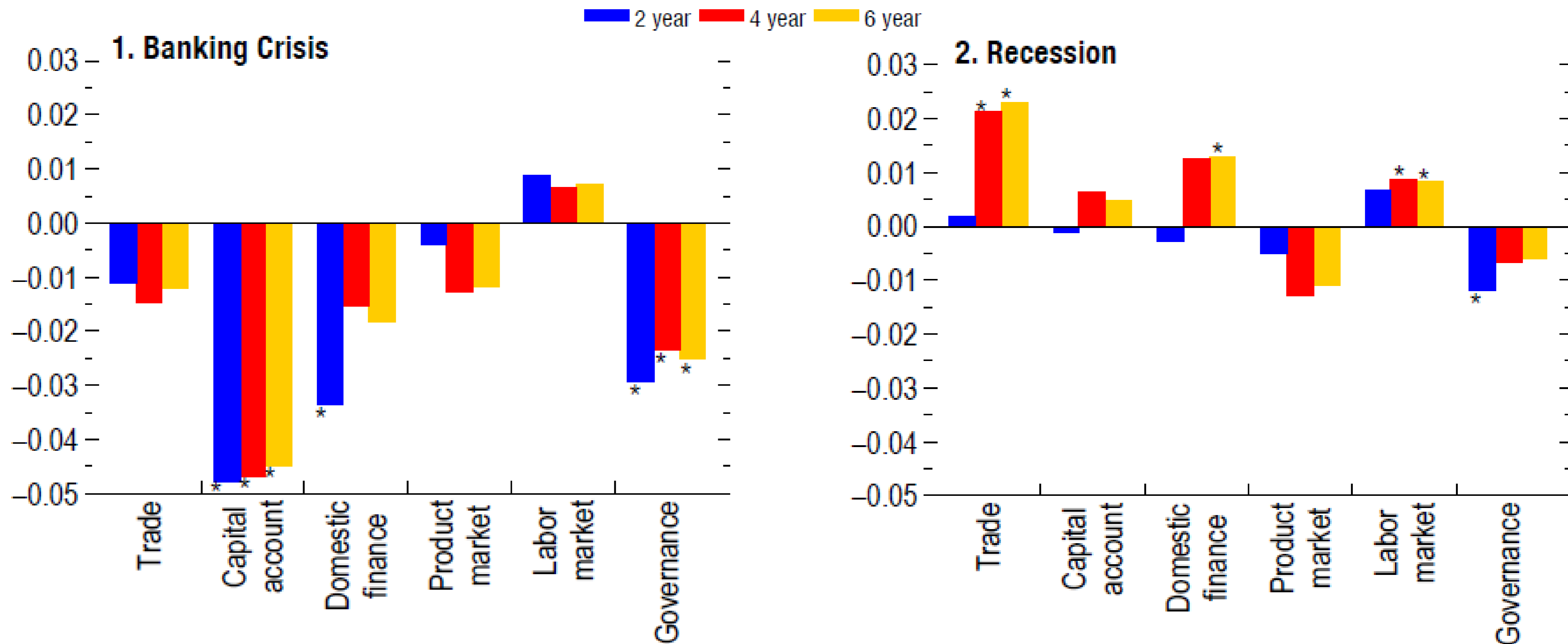
Source: IMF staff calculations. Bars represent the difference between the impact from a package combining both reforms and the sum of the impacts of each reform in isolation, in percent.

Policy implications

- Clear case for a structural reform push in EMDEs:
 - Need and scope for reform
 - Sizable reform payoffs in the medium term, even more so where informality is high
- But need to get timing right.....
 - (Some) reforms are best implemented in good times, yet they are often implemented during recessions
 - If implemented in bad times, (domestic finance and labor market) reforms need to be properly designed (delayed implementation, grandfathering) and/or—where possible—accompanied by counter-cyclical macro policy support
 - Reforms are also best implemented early in authorities' electoral mandate, partly because they take time to pay off
- And need to get sequencing and packaging right:
 - Governance and domestic finance reforms are often binding constraints on growth

Recessions increase the likelihood of reforms, but banking crises do not

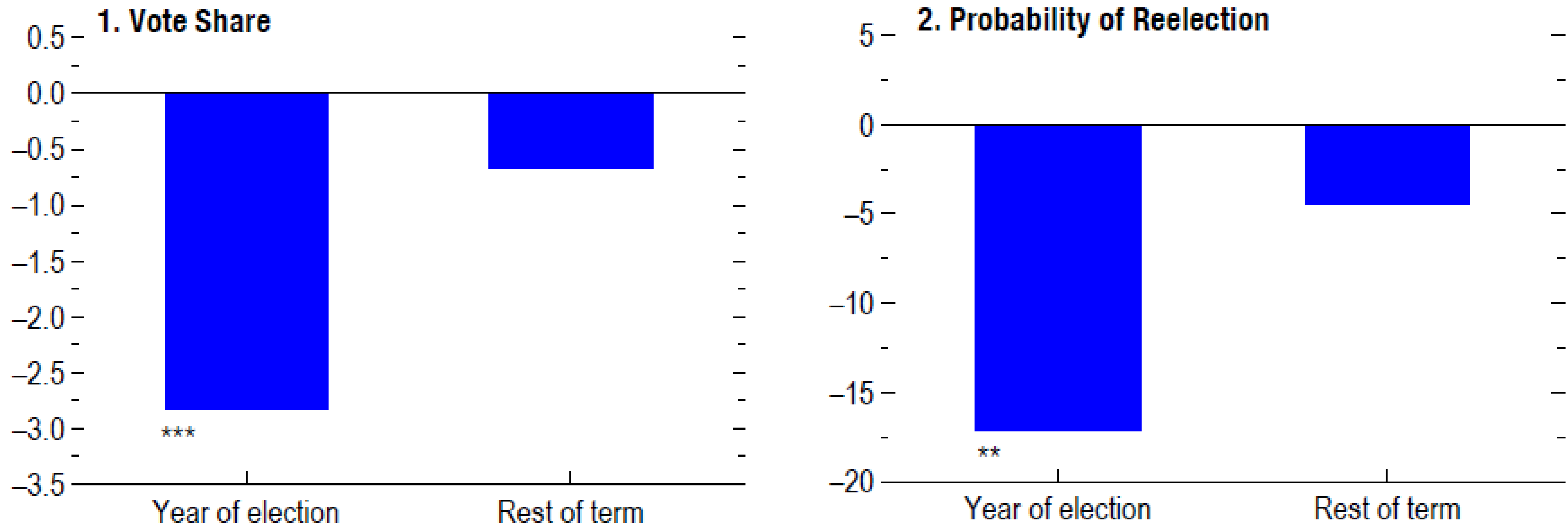
The Effect of Crises on the likelihood of Structural Reforms
(Reform indicator units on scale 0-1)



Source: IMF staff calculations. The figures report the effects of banking crises (panel 1) and economic recessions (panel 2) on structural reforms over 2-, 4-, and 6-year horizons. Bars with * denote statistical significance at least at 10 percent. Bars without * denote statistically insignificant results. Standard errors are computed via Monte Carlo simulations with 1,000 repetitions.

Reforms do not entail political costs except in election years

The Effect of Reform on Electoral Outcomes
(Percentage points)



Source: IMF staff calculations. The bars denote the effect of a major reform event—defined as a change in the broad regulation indicator of two standard deviations (of the sample distribution of annual changes in the regulation indicator)—on electoral outcomes. ** and *** denote statistical significance at the 5 and 1 percent confidence levels, respectively.



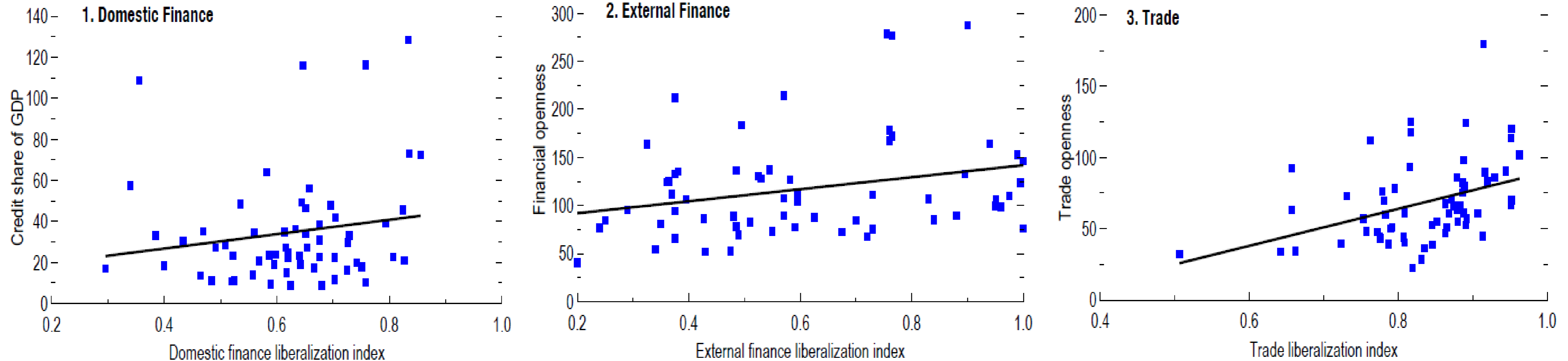
World Economic Outlook
International Monetary Fund

THE MACROECONOMIC EFFECTS OF STRUCTURAL REFORMS IN EMERGING AND DEVELOPING ECONOMIES

Gabriele Ciminelli, Romain Duval (lead author), Davide Furceri (lead author), Guzman Gonzalez-Torres Fernandez, Joao Jalles, Giovanni Melina and Cian Ruane, with contributions from Zidong An, and supported by Hites Ahir, Jun Ge, Yi Ji and Qiaoqiao Zhang.

Indicators correlate with outcome variables.

Reform Indicators and Related Outcome Variables (Percent of GDP)

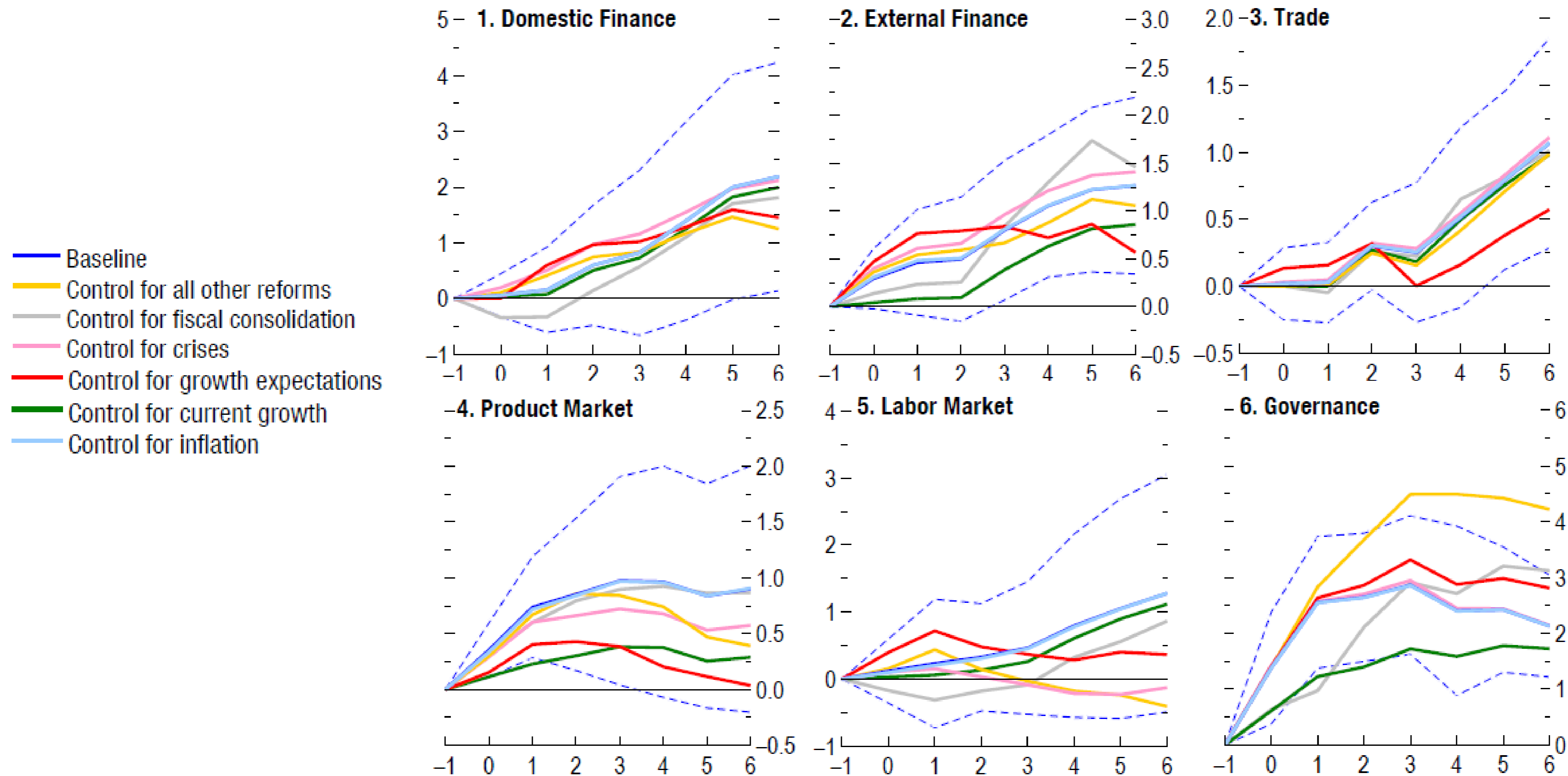


Sources: Alesina and others (forthcoming); World Bank World Development Indicators; Lane and Milesi-Ferretti (2017); and IMF staff calculations.

Note: Each index ranges from 0 to 1, with higher values denoting greater liberalization. Markers represent cross-sectional averages of emerging market and developing economies between 1990 and 2014. Credit share of GDP is the ratio between domestic credit to private sector divided by GDP. Financial openness is given by the sum of total assets and liabilities (Lane and Milesi-Ferretti, 2017) divided by GDP. Trade openness is the sum of exports and imports divided by GDP.

Average effects of reforms on output: Robustness checks

Average Effects of Reforms on Output: Robustness Checks
(Percent)



Sources: IMF staff calculations.

Note: X-axis in years; t = 0 is the year of the shock and dashed lines denote 90 percent confidence bands of the baseline results.