2. Online Annex. From Setbacks to Comebacks: Structural Reforms to Build Resilience and Prosperity

Annex 2.1. Measuring Policy Space in the Region

The policy space index is constructed by applying principal component analysis on normalized versions of the indicators listed in Annex Table 1.1. Principal component analysis converts several variables into a single series—the principal component—while retaining as much information as possible from all variables included in the analysis. All indicators in the policy space index are in annual frequency and sourced from the World Economic Outlook database for the years between 2000 and 2022, as available for countries in the Middle East and Central Asia. Growth and inflation enter the index as deviations from long-term averages, which are calculated using 10-year rolling averages so that for each year, the value of the long-term average is based on the preceding 10 years. Public debt is assessed relative to the IMF–World Bank Debt Sustainability Analysis benchmarks for emerging market economies and low-income countries, respectively. Variable loadings, correlations, and the index itself are based on scores from principal component 1. The underlying indicators are defined such that higher values mean more limited policy space; therefore, the index can be interpreted as measuring policy constraints. Annex Table 1.2 presents summary statistics by year.

Annex Table 1.1. Policy Space Index: Underlying Variables

Variable	Description	WEO Series Code
Public debt deviation	Public debt ratio deviation from Debt Sustainability Analysis benchmarks (70 percent for emerging markets and 55 percent for low-income countries) in percent of GDP	GGD_GDP
Public external debt to total debt ratio	Public external debt to total public debt ratio; deviation from Debt Sustainability Analysis benchmark for the ratio	DG_GDP, GGD_GDP
Exchange market pressure	Sum of the exchange rate deprecation (in percent) and reserve outflows (percent of base money)	EDNA, FAFAR, FALM
GDP growth deviation	Growth deviation from long-term average (percent) multiplied by -1	NGDP_R_PCH
Inflation deviation	Inflation deviation from long-term average	PCPI_PCH

Source: IMF World Economic Outlook database.
Note: WEO = World Economic Outlook.

Annex Table 1.2. Summary Statistics by Year

Year	N	Mean	SD	Min	Max
2010	22	-0.11	0.79	-2.04	1.20
2011	23	-0.01	1.18	-3.06	2.34
2012	23	-0.10	1.20	-2.83	3.90
2013	23	-0.18	0.85	-2.08	2.06
2014	25	0.08	0.80	-1.22	1.45
2015	25	0.56	0.93	-1.15	2.99
2016	26	0.42	0.71	-0.99	1.80
2017	26	0.45	0.90	-0.95	3.00
2018	26	0.41	1.10	-1.13	4.60
2019	26	0.52	1.23	-0.82	4.02
2020	26	1.33	1.84	-0.52	7.73
2021	24	0.39	1.75	-1.13	8.16
2022	24	0.17	0.94	-1.32	3.19

Annex 2.2. World Governance Indicators

The World Governance Indicators (WGI) project reports aggregate and individual governance indicators for over 200 countries and territories over the period 1996–2021 for six dimensions of governance (Figure 2.1).

Annex Figure 2.1. World Governance Indicators

(Index)
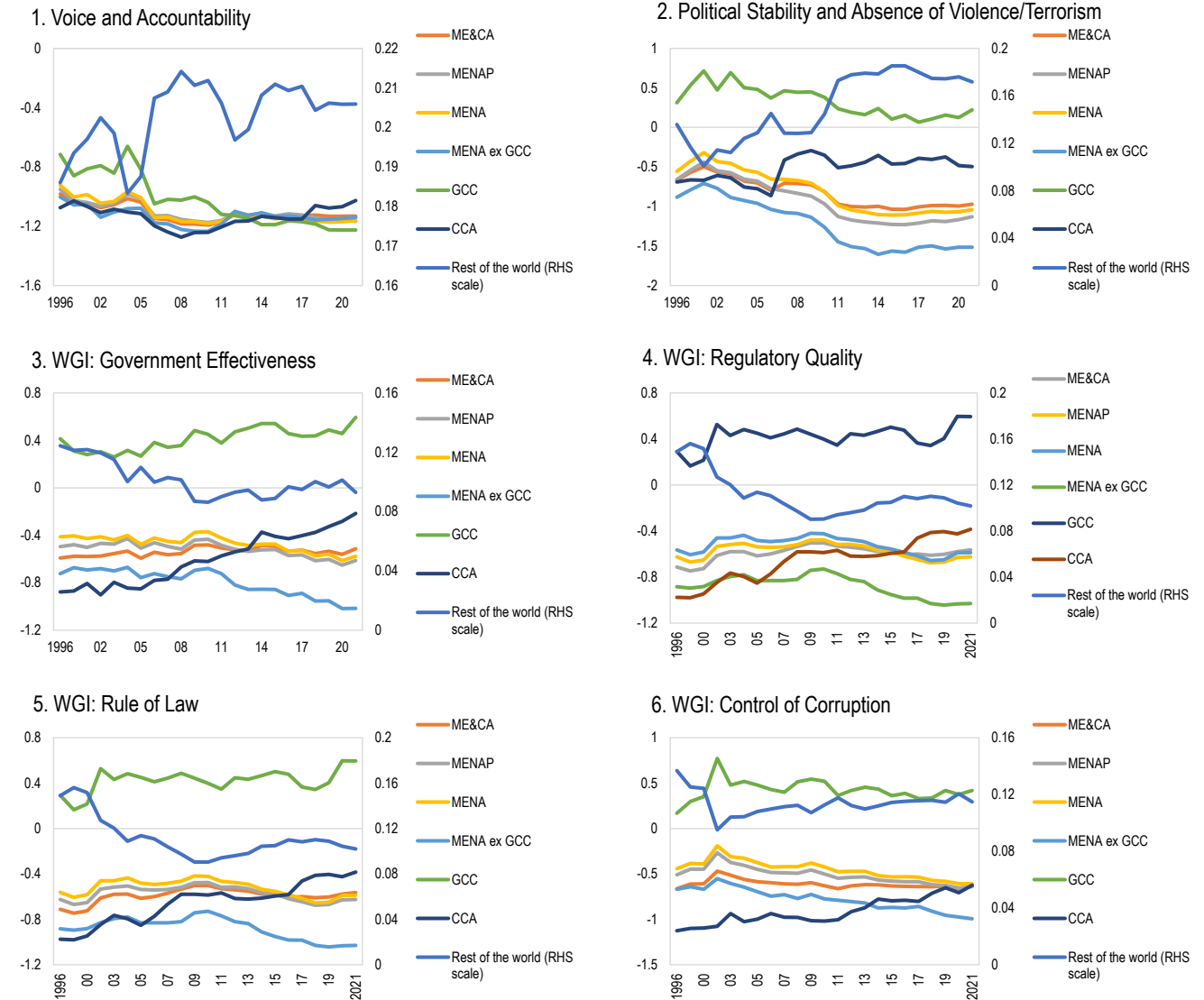
Source: World Bank World Governance Indicators

Annex 2.3. Structural Reform Indicator

2.3.1 Labor

Labor data comes from the Fraser Institute's Economic Freedom Database. The index is derived using the simple average of two components of the Economic Freedom Database—Hiring and Firing Regulations and Centralized Collective Bargaining (see Budina and others [2023] for more information).

2.3.2 External Sector

External sector data comes from the Fraser Institute's Economic Freedom Database. The index is computed as the simple average of four sub-indicators: (i) tariffs, which aim to measure to what extent tariffs can be a barrier to trade freely internationally (tariff revenues, tariff rate and volatility of tariffs); (ii) non-tariff trade barriers; (iii) black-market exchange rate, which aims at capturing the disparity between the official and the parallel (black-market) exchange rate; and (iv) control of the movement of capital and people, which encompasses a country's degree of financial openness, restrictions to visitors, and whether capital controls are in place.

2.3.3 Credit Market

Credit market data comes from the Fraser Institute's Economic Freedom Database. The credit market regulation index comprises three individual components: (i) ownership of banks, which captures the extent to which bank deposits are held in privately owned financial institutions; (ii) private sector credit, which measures the extent of government borrowing relative to private-sector borrowing (higher score for more private sector borrowing); and (iii) interest rate controls, where countries with market-determined interest rates, stable monetary policy, and low real-deposit and lending-rate spreads received higher ratings.

2.3.4 Regulatory Quality

Regulatory quality comes from the World Governance Indicators database. We use Regulatory Quality as a proxy for business regulations\regulatory quality data. This indicator measures the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development.

2.3.5 Governance

The governance index is computed as the simple average of the six components of the widely used World Governance Indicators (WGIs): (i) voice and accountability, which aims at measuring the citizens' perception of government transparency in each country (i.e., elections, freedom of speech); (ii) political stability and absence of violence/terrorism, which measures the likelihood of politically induced violence; (iii) government effectiveness, which measures the quality of public services, policy formulation and implementation, as well as the degree of independence from political pressures; (iv) regulatory quality, which captures the ability of governments to formulate and implement regulations that can promote private sector development; (v) rule of law, which captures the extent to which market participants feel confidence in the protection of property rights, the quality of contract enforcements, and the police force; and (vi) control of corruption, which aims at capturing perceptions on the level of corruption in a given country.

2.3.6 Gender

The Gender Legislation Index is derived from Cardarelli, Martin, and Lall (2022). The index is based on the World Bank's newly compiled Women, Business and the Law (WBL) database which contains 35 individual variables

on gender gaps in areas that include mobility, workplace and pay conditions, marriage, legislation on parental leave, entrepreneurship, and access to financial services. This index covers legislation that restricts women's mobility (including the right to travel outside their home and country, choose where to live, and obtain a passport) and their position within the household (including whether a woman can legally be the head of her household as well as legislation on domestic violence, divorce, and the right to remarry). We build the index following the WBL's methodology: we standardize each sub-indicator to vary between zero and one, take their unweighted average, and scale the result to 100, with a higher value pointing to less favorable conditions for female LFP and employment.

Annex 2.4. Calculating Non-oil Labor Productivity

Labor productivity is defined as GDP in constant USD prices per worker. Oil and non-oil GDP in constant local prices are available in the World Economic Outlook database. We adjust these figures using the implied PPP conversion rate (national currency per international dollar). Non-oil employment is proxied by the International Labour Organization modeled estimates of employment in mining and quarrying (ISIC Rev. 4 Code B), which includes the extraction of coal and ores, petroleum, and natural gas.

Annex Figure 4.1. Non-Oil Labor Productivity

(Thousands, constant PPP USD)
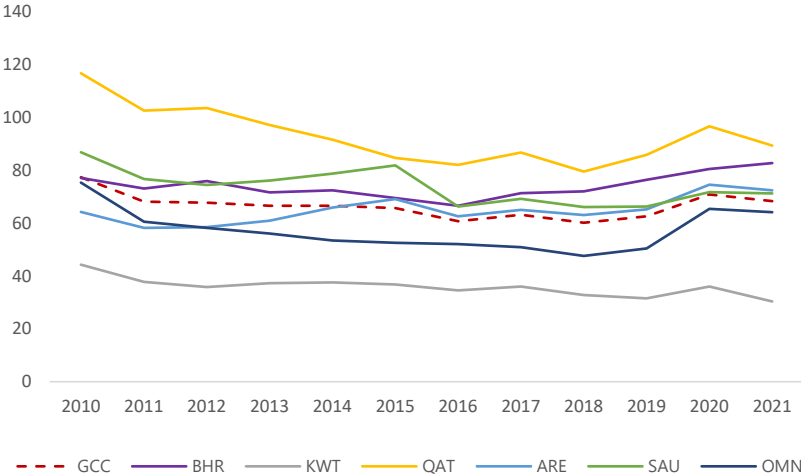
Source: International Labor Organization, World Economic Outlook database, Authors' estimates

Annex 2.5. Additional Case Studies

This annex discusses country cases of previous or ongoing large reform efforts in addition to those presented in Box 2.1.

Jordan: Trade and Private Sector Led Reforms (2000–04)[1]

Following the ascension of King Abdullah II to the Throne in 1999, Jordan embarked on a comprehensive reform initiative during the early 2000s. The primary focus of this endeavor was on trade liberalization and privatization measures. The drive for privatization was not only a means to expand private sector involvement but also stemmed from the need to address pervasive inefficiencies, corruption, and indebtedness in state-owned enterprises (SOEs). Supported by a series of IMF programs, this period witnessed an acceleration in the privatization process and a rapid integration of Jordan into the global economic landscape. Key milestones included the signing of free trade agreements with the United States (October 2000) and an Association Agreement with the European Union (signed in November 1997 and effective May 2002), along with Jordan's accession to the World Trade Organization (WTO) in April 2000. At the same time, the establishment of preferential market access schemes, such as through Qualified Industrial Zones and Special Economic Zones, added to a rapid improvement in export performance.

The launch of the Social and Economic Transformation Program in 2002 further bolstered Jordan's reform trajectory. This program contributed to the reinforcement of Jordan's reform initiatives by emphasizing private capital mobilization, human capital development, enhancement of essential government services, and the promotion of local community development and business outreach. Although structural unemployment remained high and reforms remained unfinished along different dimensions in the following years, they made room for a more dynamic private sector, and governance, business and credit market indicators saw a noticeable improvement in the early 2000s.

Jordan's Economic Modernization Vision 2025[2]

The government previously launched Vision 2025 in 2015—a decade-long national development plan. This plan comprised key pillars aimed at enhancing governance, the business environment, trade competitiveness, and social outcomes. Two pivotal areas within Jordan's Vision 2025 that underwent subsequent improvements are trade facilitation and labor market reforms. Trade facilitation efforts concentrated on enhancing trade infrastructure and logistics and addressing non-tariff barriers. Labor market reforms focused on upskilling public sector workers along with restructuring public institutions, reducing distortions between the public and private sectors, establishing a labor market information system, fostering higher female labor force participation, and enhancing vocational and workplace training programs. The plan also extended its reach to early childhood education, standards for primary and secondary schools, and coordination between vocational institutions, universities, and labor ministries to better address skills gaps. From 2016 to 2019, Jordan entered an IMF program, succeeded by another in 2020 to support its balance of payments and bolster reform efforts. During 2016–18, and in line with Vision 2025, the authorities formulated their Financial Inclusion Strategy and enacted the Secured Lending Law to enhance access to finance.

Jordan's post-COVID-19 recovery has been stable, with real GDP growing at an average of 2.4 percent over 2021–22. To support this recovery, the authorities launched Jordan's Economic Modernization Vision in mid-2022, which is expected to spur growth closer to 3 percent by 2024. This initiative aims to forge inclusive,

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[1] Sources: IMF country documents 2001–05; (Carnegie Middle East Center 2007).

[2] Sources: Jordan's IMF Article IV Staff Reports for 2016, 2019, and 2023.

sustainable growth, thereby creating job opportunities and ensuring a better quality of life for citizens. In line with the Modernization Vision, the authorities are undertaking important public sector administrative reforms, including digitalizing government services to improve efficiency. Continued focus on strengthening governance and transparency through further legislation and an adequately resourced Integrity and Anti-Corruption Commission are also critical pillars of the reform plan. Due to large structural gaps in the labor market—the unemployment rate was estimated at 22.9 percent in the fourth quarter of 2022—the authorities are also pursuing critical labor market reforms. These include supporting women's labor force participation by amending the labor law, reviewing and the adjusting labor legislation to improve flexibility of the labor market, incentives to hire youth, and encouraging the transition to formality. Finally, the modernization plan includes policies to improve the business environment through strengthening the competition regulatory and legal framework, reducing entry barriers for new business, and improving trade infrastructure.

Kazakhstan: Reforms to Stem Against High Volatility (2013–15)[3]

Kazakhstan improved public governance while implementing comprehensive business environment reforms. Despite political and economic turmoil following sanctions against Russia in 2014, lower oil prices, and weaker demand from China and the European Union, Kazakhstan made noteworthy progress on its anti-corruption strategy, monetary and exchange rate framework, and business environment between 2013 and 2015, helping to stabilize the country in a highly volatile environment.

Structural reforms focused on the business climate and bolstering public sector transparency, accountability, and efficiency. A draft anti-corruption strategy for 2015–25 and its action plan were published in 2014. Following the presidential election in early 2015, the authorities launched a wide-ranging reform program ("100 steps") to improve the efficiency of public administration, diversify the economy, and address governance challenges. In June 2015, Kazakhstan completed negotiations to become a formal member of the World Trade Organization. These reforms improved governance effectiveness and regulatory quality, pushing Kazakhstan from the third to the fourth quintile on the respective World Governance Indicator score distribution. However, while these reforms marked progress, many were incremental and incomplete, and the state footprint remains high.

Armenia: High-Level Anti-corruption Efforts to Facilitate Wide-Ranging Reforms (2017–20)[4]

Concurrent initiatives focusing on anti-corruption and business climate enhancements resulted in notable advancements within Armenia's governance landscape. Parliamentary elections in December 2018 were won on a platform of tackling corruption and reforming the economy. It triggered an extensive anti-corruption campaign to eliminate systemic corruption and foster greater transparency. The anti-corruption strategy for 2019–23 introduced reforms aiming at enhancing the effectiveness of courts, the prosecutor's office, and investigative bodies. In parallel, efforts were made to remove impediments to investment and competitiveness. In November 2017, Armenia signed a Comprehensive and Enhanced Partnership Agreement with the European Union designed in part to improve Armenia's investment climate and business environment. In January 2020, Armenia made audit and publication of state-owned enterprise (SOE) financial reports mandatory. These efforts contributed to an improvement in Armenia's level of voice and accountability and control of corruption in the same period, rising from below the median to the top 30 and 20 percent in the global sample, respectively. However, many reforms remain unfinished to date, including reforms to SOE accountability, fiscal oversight, and enforcement of corporate governance and financial accountability requirements.

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[3] Sources: IMF country documents 2012–16; OECD 2018.

[4] Sources: IMF country documents 2017–20, EBRD (2020).

Uzbekistan: High-Impact Economic Reforms Followed by a Deep Structural Reform Agenda (2017–Present)[5]

Uzbekistan embarked on an ambitious reform path in 2017, starting to liberalize its economy after decades of state control that favored large foreign exchange reserve accumulation, discouraged mobility of jobless workers, and was not welcoming to foreign investment. The growth model was supported by a range of distortive economic policies, including import substitution, foreign exchange restrictions, directed credits, and micromanaging SOEs and state banks. In late 2016, the newly elected president, Shavkat Mirziyoyev, launched an economic modernization program to reinvigorate economic growth. The first phase focused on economic liberalization and improving macroeconomic management with high-impact, broadly popular, and administratively workable priorities. FX liberalization came first, unifying the official and the parallel exchange rates at a heavily depreciated rate and eliminating all FX restrictions subject to IMF jurisdiction. Tax reform was the next priority, foremost to foster job creation by reducing the punishing tax burden on private firms and workers. Finally, the availability and quality of economic statistics improved substantially. Following these reforms, credit and investment surged, and the number of firms in the standard tax net increased five-fold through 2019. First steps were also taken against corruption.

The COVID-19 pandemic slowed reform implementation, but important progress was made in some key areas. For example, cotton and wheat prices were liberalized; corruption opportunities were reduced through improved online procurement, digitalization, and increased transparency; the social safety was net expanded substantially; and a start was made with privatization efforts, including a reduction in preferential lending and opening more activities to private sector participation while curbing SOE privileges. Incomes have improved over the past five years, but they remain below those of other emerging economies. The state maintains a large footprint in Uzbekistan's economy, and the informal sector remains large. Building on existing progress, a renewed push is needed to reduce the role of the state in the economy and create an environment conducive to private sector job creation by further opening markets and enhancing competition while improving governance and the rule of law. Following President Mirziyoyev's re-election in 2021, a new five-year development strategy was adopted in 2022 to continue with deeper economic and social reforms.

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[5] Sources: IMF country documents 2019-22. Data for Uzbekistan is not available for the structural reform indicators discussed in this chapter. Therefore, the econometric results presented above do not include the potential positive impact of structural reforms in Uzbekistan.

Annex 2.6. Estimations of the Impact of Structural Reforms on Outcome

6.1 Estimation Methodology

The sample consists of 27 countries in the ME&CA region[6] and spans the period from 2000 to 2021 at annual frequency.

The empirical framework uses the local projection method, developed by Jordà (2005), and is aligned with the SPR-RES Staff Discussion Note on structural reforms "Structural Reforms to Accelerate Growth, Ease Policy Trade-Offs, and Support the Green Transition in EMDEs" (see IMF, forthcoming). The baseline regression specification, following IMF (2019), takes the following form:

$$y_{i,t+k} - y_{i,t-1} = \beta_k R_{i,t} + \theta X_{i,t} + \alpha_i + \gamma_t + \epsilon_{i,t} \qquad (1.1)$$

where y_i,t is the log of output (or investment, employment, or labor productivity); t and i are the time and country dimensions, respectively; $k=0,1,2,\dots5$; R_i,t denotes the structural reform variable, defined as the change in the structural indicator; X_i,t is a set a of control variables, including lags of the dependent variable and past reforms; α_i denotes country fixed effects, included to control for unobserved cross-country heterogeneity; γ_t denotes percentage change in oil prices.

To examine how the responses to changes in the structural reform indicator vary with economic growth and the availability of policy space, equation (1.1) is modified as follows:

$$y_{i,t+k} - y_{i,t-1} = \beta_k^L F_{(z_{i,t})} R_{i,t} + \beta_k^H [1 - F(z_{i,t})] R_{i,t} + \theta X_{i,t} + \alpha_i + \gamma_t + \epsilon_{i,t} , \qquad (1.2)$$

with $F(z_{i,t}) = exp(-\gamma z_{i,t})/(1+exp(-\gamma z_{i,t}))$ and γ = 1.5, in which $z_{i,t}$ is an indicator of the conditioning variable, including, for example, growth to examine the effects under low growth or Policy Space index to examine the effects under limited policy space, normalized to have zero mean and unit variance.[7] $F(z_{i,t})$ and $1 - F(z_{i,t})$ can be interpreted as the probability of being in the "low" regime (e.g., when growth is low or policy space is limited) and a "high" one (for example, when growth is high or policy space is substantial), respectively, for country *i* at time *t*. Therefore, $\beta_k^L \; and \; \beta_k^H$ are the structural reform multipliers for countries in low and high regimes (in terms of the conditioning variable), respectively. Equation 1.1. and 1.2 are estimated for each *k=0,1,2,…5*. Impulse response functions are computed using the estimated coefficients β_k (or β_k^L and β_k^H) and the confidence bands associated with the estimated impulse-response functions are obtained using the estimated standard errors of the coefficients, based on robust standard errors clustered at the country-level.

To answer the question on sequencing, the equation is modified to include the first-generation reform index (an average of governance, external sector and regulatory quality reform indices) as the conditioning variable $z_{i,t}$, so as to examine whether the impulse responses from other reforms (such as credit market reforms) vary by the level of the first-generation structural development. For example, if impulse responses of growth from other reforms are larger in countries that have a higher first-generation structural development level, this implies that first-generation reform should be prioritized as it could lay a solid foundation for other reforms and enhance the gains from them.

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[6] Including Algeria, Armenia, Azerbaijan, Bahrain, Djibouti, Egypt, Georgia, Islamic Republic of Iran, Iraq, Jordan, Kazakhstan, Kuwait, Kyrgyz Republic, Lebanon, Libya, Mauritania, Morocco, Oman, Pakistan, Qatar, Saudi Arabia, Somalia, Sudan, Tajikistan, Tunisia, United Arab Emirates, and Yemen, based on data availability.

[7] Some of these conditioning variables are also included in X_i,t as control variables as they can be correlated with the dependent variable, for example, lagged growth and structural developments are already included in X_i,t as mentioned in previous paragraph.

This approach permits a direct test of whether the effect of reforms varies across different phases of the business cycle, such as slowdowns (for example, positive output growth below a given threshold), as well as different policy spaces. Second, compared with estimating structural vector autoregressions for each cycle (contraction or expansion), this approach allows the effect of reforms to change smoothly by considering the probability of a country under a specific regime (low or high)—instead of separating the sample into two regimes—to compute the impulse response functions, therefore making the response more stable and precise.

Annex Figure 6.1. Average Effects of Reforms in the Baseline
(Percent)

| Governance | External Sector | Credit Market | Regulatory Quality | Labor Market |

Effects on Investment
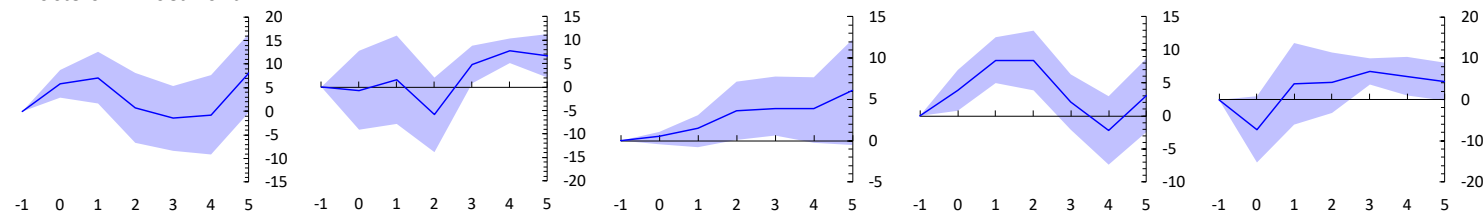
Effects on Employment
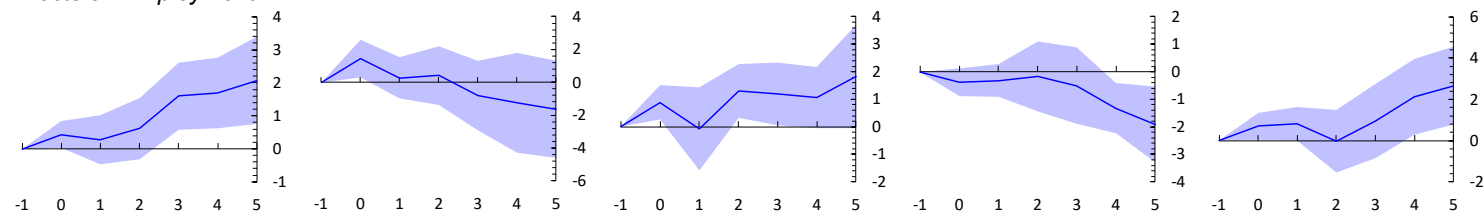
Effects on Labor Productivity
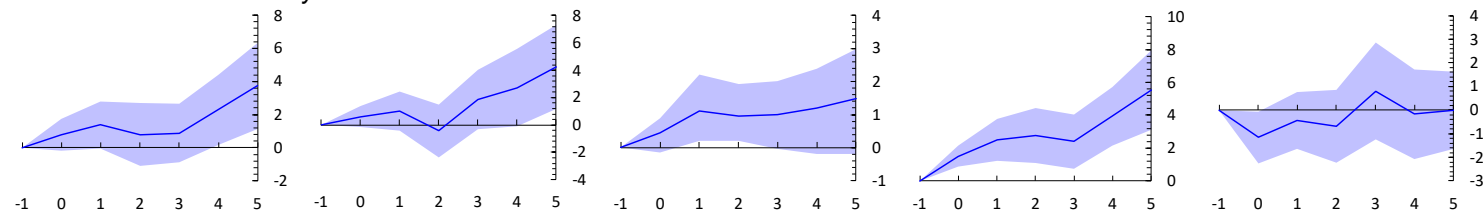
Sources: World Economic Outlook, World Bank, Fraser Institute, and IMF staff calculations.
Note: The scale of the x-axis is years, where t=0 is the first year of the reform is implemented. The lines denote the response to a major historical reform—defined as two standard deviations of the annual change in the structural index—and the shaded areas denote 90 percent confidence bands.

Annex Figure 6.2. Average Effects on Output of Governance Reforms under Weaker Governance versus under the Baseline
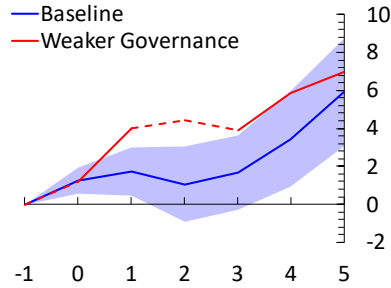
(Percent)

Sources: World Economic Outlook, World Bank, Fraser Institute, and IMF staff calculations.

Note: The scale of the x-axis is years, where t=0 is the first year of the reform is implemented. The blue lines denote the baseline (that is, sample-average) responses to a major historical reform—defined as two standard deviations of the annual change in the structural index—with the shaded areas denoting 90 percent confidence bands for the responses. The red lines denote the responses when governance is weaker where the solid (dashed) segments denote statistically significant (insignificant) responses at the 90 percent level.

Annex Figure 6.3. Average Effects of Reforms under Low Growth versus under the Baseline
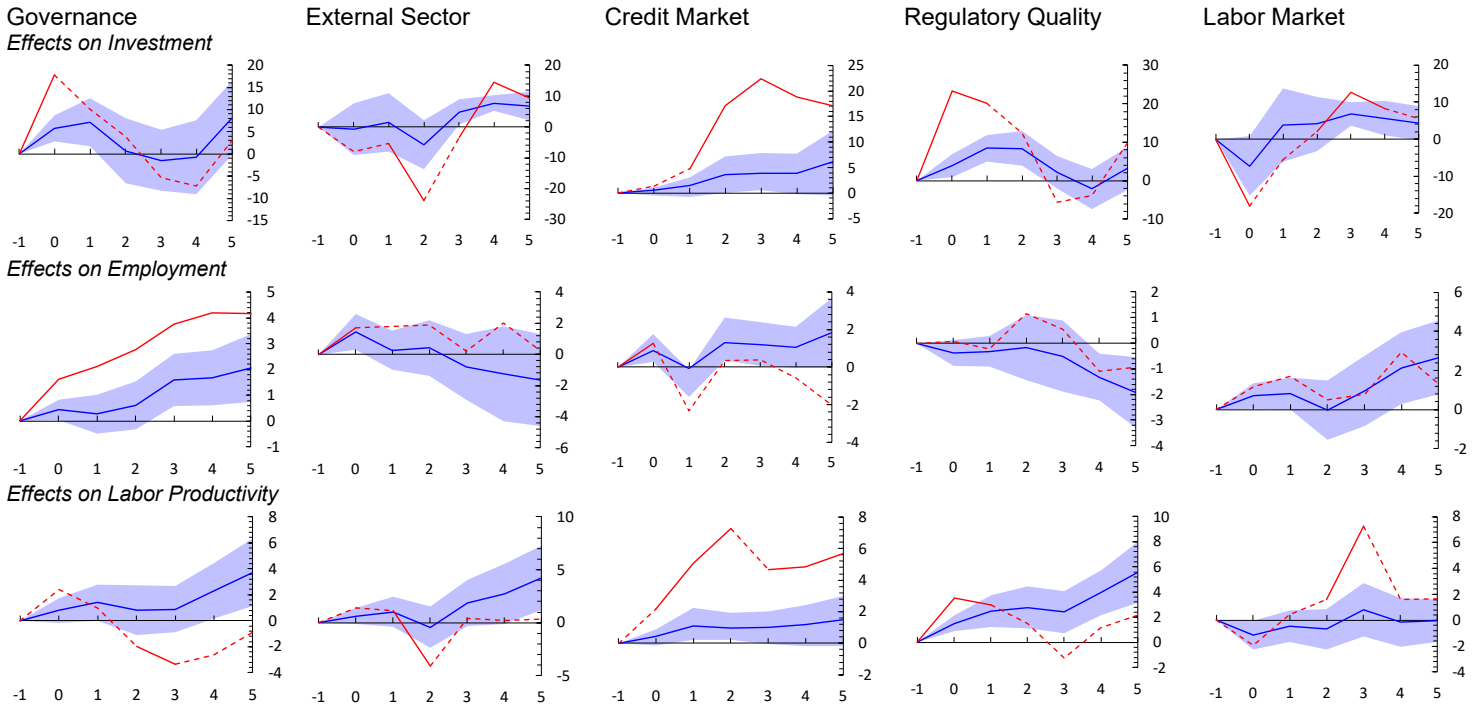
(Percent)

Sources: World Economic Outlook, World Bank, Fraser Institute, and IMF staff calculations.

Note: The scale of the x-axis is years, where t=0 is the first year of the reform is implemented. The blue lines denote the baseline (i.e., sample-average) responses to a major historical reform—defined as two standard deviations of the annual change in the structural index—with the shaded areas denoting 90 percent confidence bands for the responses. The red lines denote the responses when growth is low where the solid (dashed) segments denote statistically significant (insignificant) responses at the 90 percent level.

Annex Figure 6.4. Average Effects of Reforms under Limited Policy Space versus under the Baseline
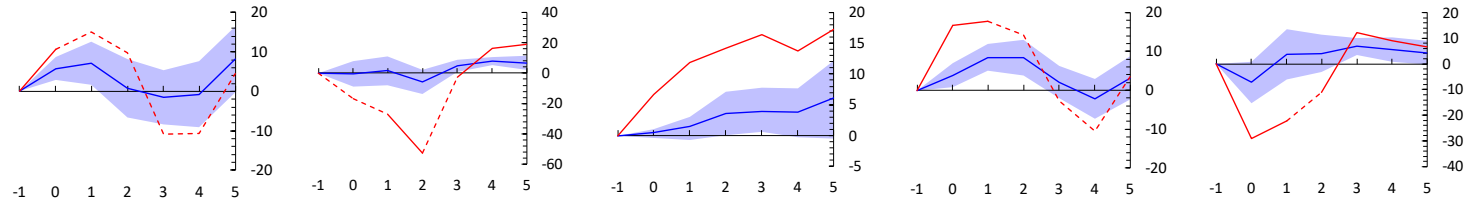
(Percent)

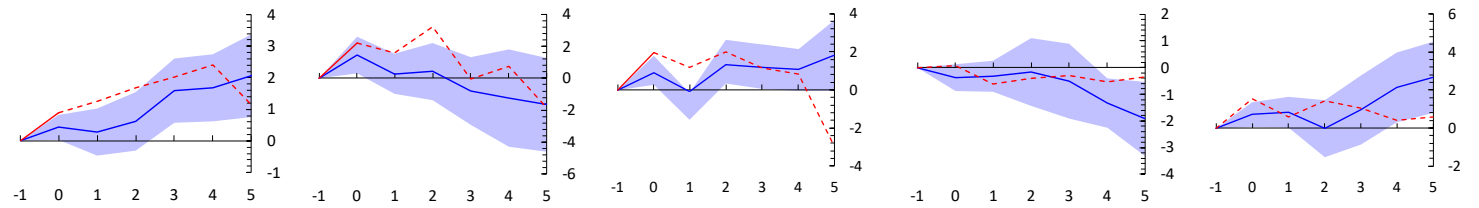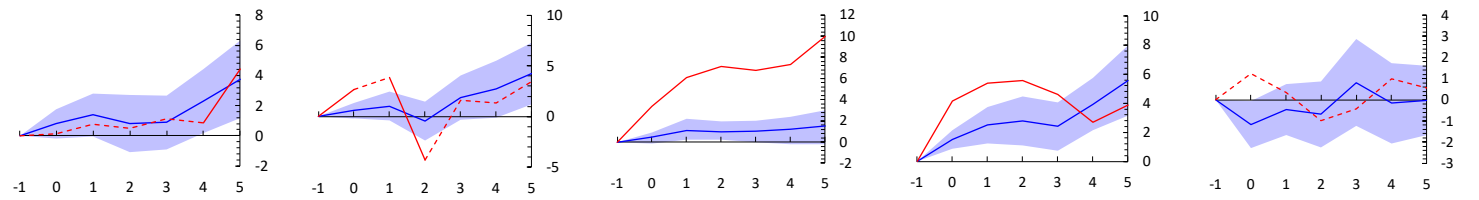| Governance | External Sector | Credit Market | Regulatory Quality | Labor Market |

Effects on Investment

Effects on Employment

Effects on Labor Productivity

Sources: World Economic Outlook, World Bank, Fraser Institute, and IMF staff calculations.

Note: The scale of the x-axis is years, where t=0 is the first year of the reform is implemented. The blue lines denote the baseline (i.e., sample-average) responses to a major historical reform—defined as two standard deviations of the annual change in the structural index—with the shaded areas denoting 90 percent confidence bands for the responses. The red lines denote the responses when policy space is limited where the solid (dashed) segments denote statistically significant (insignificant) responses at the 90 percent level.