

ANTONIO C. DAVID  
International Monetary Fund, United States

TAKUJI KOMATSUZAKI  
International Monetary Fund, United States

SAMUEL PIENKNAGURA  
International Monetary Fund, United States

# The Macroeconomic and Socioeconomic Effects of Structural Reforms in Latin America and the Caribbean

**ABSTRACT** This paper estimates the macroeconomic effects of market-oriented reforms in Latin America and the Caribbean using the IMF Structural Reform database. We find that large changes in the reform index have positive effects on GDP that exceed 2 percent after five years. Furthermore, reforms boost employment, investment, exports, and imports and reduce export concentration, in addition to favoring tradable sectors. The evidence on the effects of reforms on business confidence is mixed, and the effects on total factor productivity are positive, but less precisely estimated. Nonetheless, our results also indicate that the effects of reforms have not been uniform across different segments of the population. Our results are robust to the use of an instrumental variables approach that exploits regional waves of reform to deal with endogeneity concerns. These findings bring to the forefront the need to consider accompanying policies to ensure that reforms promote inclusive growth.

*JEL Codes:* E20, O11, O40

*Keywords:* Structural reforms, Latin America, macroeconomic effects

**E**conomic growth in Latin America and the Caribbean has been sluggish for a prolonged period. Labor and total factor productivity (TFP) growth have lagged those of other emerging markets and developing economies. This situation is, in part, linked to significant structural constraints, including inadequate infrastructure, high levels of informality, low levels of human capital, and weak governance (Bakker and others, 2020).

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To overcome stagnation, countries in the region have undertaken important efforts to liberalize key markets, particularly in the 1990s and 2000s. These efforts were followed by reform fatigue and, in some cases, reversals. Could this pattern be partly grounded in a perception by policymakers and the general public that reforms failed to deliver? Does the empirical evidence validate such perceptions regarding disappointing gains from past reforms? Or have reforms delivered positive outcomes, but not for all segments of the population?

This paper addresses these questions by estimating the effects of specific reforms—namely, trade, product market, labor market, and domestic financial liberalization—on key macroeconomic and social variables. A significant contribution of the paper to the literature on structural reforms in emerging market economies is to extend the analysis beyond the usual aggregates, such as GDP, and zoom in on key transmission channels through which reforms affect macroeconomic outcomes over the short to medium term, such as total investment, foreign direct investment, informality, business confidence, and sectoral effects. Moreover, the paper also studies the potential collateral damage of reforms, given that reforms with significant negative effects on inequality and poverty are unlikely to be sustainable.

Using the International Monetary Fund's structural reform database as first employed in Alesina and others (2020), we find that large changes in the index (toward liberalization) have positive effects on GDP and employment in Latin America and the Caribbean, which reach 2.4 percent and 1.7 percent after five years, respectively. Market-oriented reforms also increase TFP, but their effects are more imprecisely measured. Nonetheless, the results also suggest that reforms have had economically small but statistically significant adverse effects on inequality and poverty.

The positive effects of reforms on aggregate growth appear to operate through specific channels, namely, higher investment and de facto openness. Reforms boost investment, real exports, and real imports and reduce export concentration, in addition to favoring tradable sectors. The evidence on the effects of reforms on business confidence is more mixed, and there is no evidence that reforms significantly affect informality. There is also evidence of complementarities between reforms.

Ensuring that these findings are indeed caused by market-oriented reforms requires careful consideration of potential endogeneity issues. First, market-oriented liberalization is not exogenously given to countries; countries self-select to pursue reforms. For example, countries may choose to take reform actions in response to low growth and employment. Alternatively, countries

may have inherent differences that affect both the decision to pursue market-oriented liberalization and growth. Second, reform efforts may coincide with periods of commodity booms and busts, which is an important concern since our sample is skewed toward commodity exporters. Our baseline specifications partially deal with these potential sources of endogeneity by including lags of the commodity terms-of-trade index, past growth, and country fixed effects as control variables. However, other concerns remain, since the liberalization decision may be correlated with time-variant unobservable variables such as expectations of future growth, and countries that decide to liberalize may have higher growth prospects (Buera, Monge-Naranjo, and Primiceri, 2011).

To address these remaining concerns, we also implement an instrumental variables (IV) approach that exploits regional waves of reform. More precisely, we construct a distance-weighted index of reforms in nearby countries and use changes in the index as an instrument. A similar IV strategy has been used to study the causal effects of democratization on growth (Acemoglu and others, 2019) and the impact of fiscal austerity on social unrest (Ponticelli and Voth, 2020). In the specific case of episodes of liberalization and reform reversal, the exercise is grounded in the theoretical findings of Buera, Monge-Naranjo, and Primiceri (2011). Reassuringly, the findings from the IV approach corroborate our baseline ordinary least squares (OLS) results.

This paper is related to a long-standing literature on the state of the structural reform agenda in developing countries and its effects on growth (see Zettelmeyer, 2006, for a summary of the effects of reforms in Latin America and the Caribbean). It is closely linked to IMF (2019) and Alesina and others (2020), which study the effects of structural reforms on growth and informality in a large set of countries. We expand their analysis by zooming in on the channels through which reforms may affect growth, and focus exclusively on Latin America and the Caribbean.

As in Lora (2012) and IMF (2019), the analysis here unbundles the state of the reform agenda along different dimensions. Doing so allows us to study the differential effects of specific reform areas. In this regard, the paper is also related to Biljanovska and Sandri (2018), who study the effects of different reforms on TFP growth in Brazil. This paper broadens the focus to a larger set of countries and focuses on the dynamic response of macroeconomic variables following reform episodes. The effects of reforms on economic development are also studied in Bergoeing and others (2001), who compare the economic development path of Chile and Mexico in the 1980s and 1990s and argue that policy reforms implemented in Chile fostered faster productivity growth. The findings in Billmeier and Nannicini (2013) also provide support to the

link between reforms (liberalization) and growth, especially during the first wave of reforms in the 1980s. In addition, Prati, Onorato, and Papageorgiou (2013) find that while reforms are positively associated with higher growth on average, this link is highly heterogeneous and seems to be influenced by a country's institutions and distance from the technology frontier.

A related literature attempts to explain the drivers of reforms rather than their economic effects, which remains our main focus in this paper (Buera, Monge-Naranjo, and Primiceri, 2011; Dias Da Silva, Givone, and Sondermann, 2017; Prati, Onorato, and Papageorgiou, 2013; Duval, Furceri, and Miethe, 2021). The seminal work by Buera, Monge-Naranjo, and Primiceri (2011) explores how a country's own and its neighbors' past experiences influence policy choices through their effect on policymakers' beliefs. They find that the evolution of beliefs about the relative desirability of free markets can be a major driving force behind regime transitions (between market orientation and state intervention). Overall, from an empirical perspective, papers in the literature on the drivers of reforms also tend to find some evidence that crises are associated with subsequent reform upticks and that there is reform convergence (such that countries with tighter regulation are more prone to liberalize).

Our paper is structured as follows. The next section presents some stylized facts about reforms in Latin America and the Caribbean since the 1970s, including a discussion of public opinion surveys gauging support for reforms in the region. We then quantify the effects of reforms on GDP, employment, and TFP and assess whether the effects of reforms vary with the state of the economic cycle and whether there are complementarities between reforms. This section also looks at a number of transmission channels that might mediate the effects of reforms on GDP—such as total investment, foreign direct investment, informality, business confidence, external trade, and the shares of different sectors in the economy—and considers the effects of reforms on poverty and inequality. Subsequently we present the results of the IV strategy exploiting regional waves of reforms. The final section concludes.

## **Structural Reform Efforts in Latin America and the Caribbean Since the 1970s**

It is difficult to measure structural reform efforts consistently across countries and time. This paper follows the approach of IMF (2019) and Alesina and others (2020) by focusing on some specific aspects of reforms that aim to

liberalize certain markets. The analysis is mostly based on the IMF Structural Reform Database, which was updated up to 2018 for the trade liberalization component. The data set covers reforms implemented in ninety countries over the period 1973–2014, at an annual frequency.<sup>1</sup> Higher values of the index point to more liberalized and better regulated areas, but there are also several instances of reform reversals in the database.

Using these data, we analyze reforms implemented in four broad areas: (1) domestic finance, which includes six dimensions of domestic finance regulation (credit controls, interest rate controls, entry barriers, supervision, privatization, and security markets development); (2) trade, based on average tariff levels; (3) product market, which considers liberalization and regulation in two network sectors (telecommunications and electricity) covering three broad areas (privatization, entry barriers, and supervision and regulation); and (4) labor market, which provides a measure of employment protection legislation covering four areas (procedural requirements, firing costs, valid grounds for dismissal, and redress measures). IMF (2019) provides a description of the indicators and criteria used to build the reform indexes along these four dimensions.

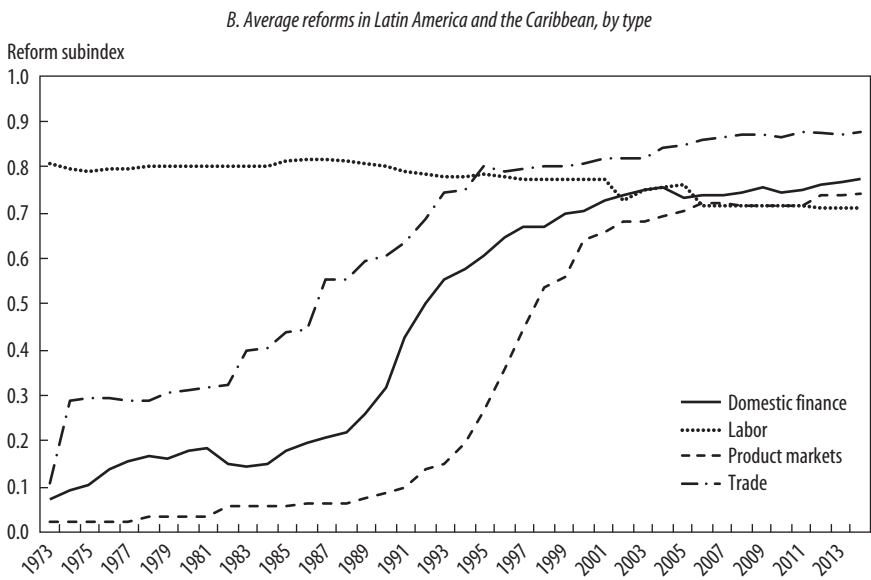
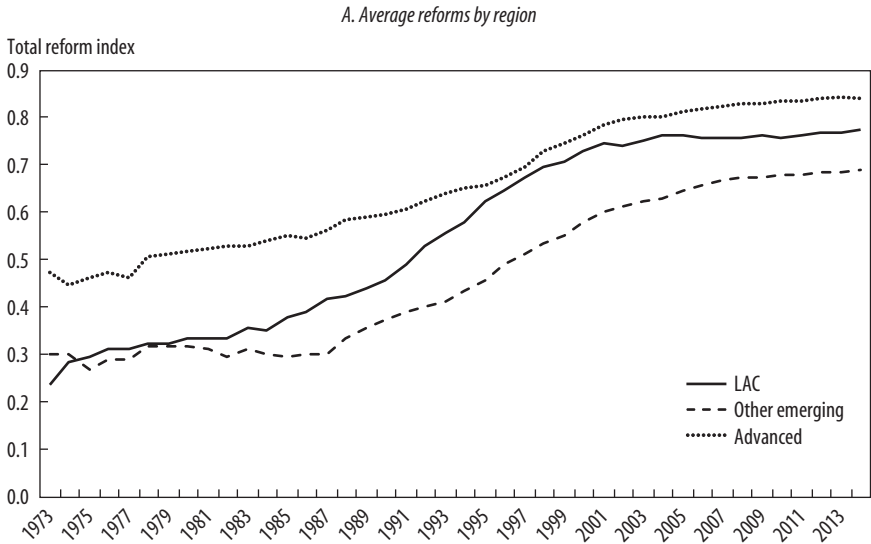
Figure 1 depicts an overall index of reforms in the region as the simple average of the four dimensions outlined above, normalized to take a value between zero and one, with one being the most liberalized and better regulated. Data show that the typical country in the region undertook substantial reforms in the 1990s and early 2000s, but reform impetus has stalled somewhat in more recent periods. Despite notable progress, the region lags advanced economies on the overall index and on some reform dimensions. With respect to specific reform areas, on average, countries in the region have taken steps to liberalize trade, product markets, and domestic finance over the 1990s and 2000s, while reforms to employment protection legislation have been less frequent.<sup>2</sup>

Regional averages mask significant heterogeneity across countries. As illustrated in figure 2, progress in terms of specific reform areas varies substantially

1. The sample includes sixty-eight emerging and developing economies, of which seventeen are in Latin America and the Caribbean.

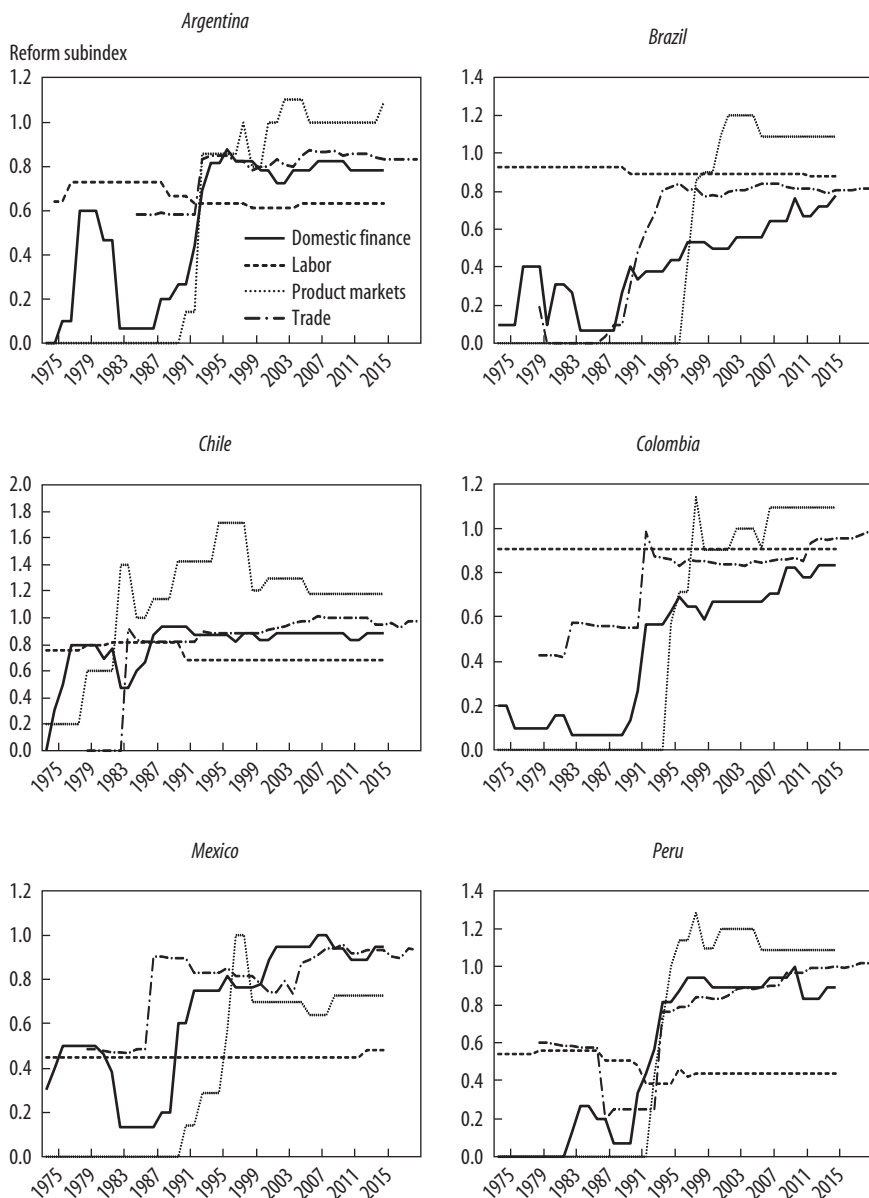
2. As explained in IMF (2019), because of the nature of the indicators, one cannot directly compare a country's regulatory stance across different areas. All comparisons need to be made relative to other countries. Thus increases in the indexes for the different areas point to steps taken toward liberalization, but it is not possible to claim, for example, that trade is more liberalized than labor markets in a given country just by directly comparing the levels of these indicators. For this reason, we turn to ratios relative to the United States next.

**FIGURE 1. Trends in the Structural Reform Index**



Source: Authors' calculations, based on IMF data.  
 Note: LAC, Latin America and Caribbean.

**FIGURE 2. Ratios Relative to the United States for Different Reform Areas**



Source: Authors' calculations, based on IMF data.

across some of the largest economies in Latin America and the Caribbean. The figure depicts the ratios of specific reform indexes in a given country relative to the United States, hence indicating whether the country is more or less liberalized in one particular area. For example, Brazil still has ground to cover in terms of trade and domestic financial liberalization, while Mexico lags in the areas of labor and product market reforms. Moreover, several countries still seem to have particularly stringent employment protection legislation, including Argentina, Chile, Mexico, and Peru.

What drives the implementation of reforms? Buera, Monge-Naranjo, and Primiceri (2011) use a learning model fitted to a panel of countries over the period 1950–2001 to show that the evolution of beliefs about the relative desirability of free markets can be a major driving force behind transitions between market-oriented regimes and regimes based on state intervention. In their model, policymakers have initial priors about the relative growth prospects of different regimes and use Bayes' theorem to update these priors with the arrival of new information from all countries in the world. A country will decide to pursue market-oriented policies if the perceived net impact of these policies on GDP growth exceeds their political cost.

Dias Da Silva, Givone, and Sondermann (2017) find that reforms are more likely during deep recessions and when the unemployment rate is high, based on a sample of forty countries in the Organization for Economic Cooperation and Development (OECD) and the European Union (EU). Distance from the frontier is also an important empirical determinant of reforms. The presence of an IMF-supported program or other forms of external conditionality also facilitates reforms, but there is no clear link between fiscal policies and reforms. Prati, Onorato, and Papageorgiou (2013) also find some evidence that severe growth downturns are associated with subsequent reform upticks, based on a larger sample of countries.

These findings are broadly confirmed by Duval, Furceri, and Miethe (2021) for product and labor market reforms in a sample of advanced economies, using Bayesian model averaging techniques. They find evidence to support the hypothesis that economic crises induce reforms and also conclude that there is reform convergence (that is, countries with tighter regulation are more prone to liberalize). Reforms are more likely when other countries also undertake them and when there is external pressure to implement them (such as during IMF-supported programs).

In contrast, Ciminelli and others (2019), based on a broad sample of countries, find that reforms are often reversed during periods of low growth. The



effects of economic downturns on reforms also tend to vary depending on the reform area (IMF, 2019). Recessions foster trade, labor market, and domestic financial liberalization, but banking crises are linked to reversals in domestic and external financial liberalization.

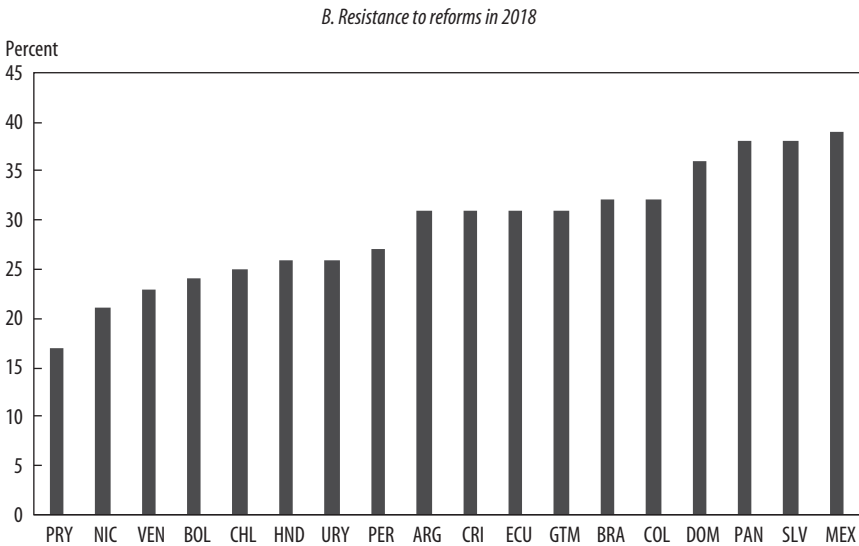
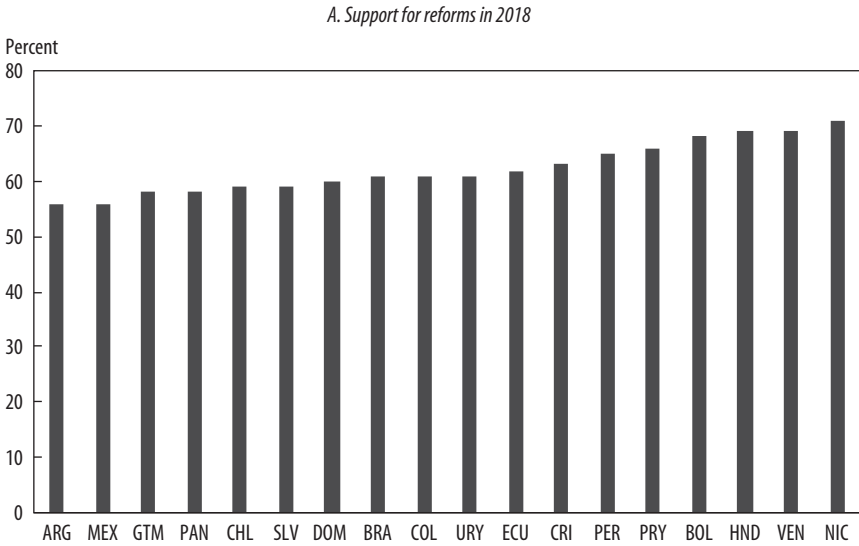
The impetus for reform has declined in several countries in Latin America and the Caribbean since the 2000s. To explore whether this trend reflects a perception by the general public and policymakers that reforms failed to deliver, we follow Biljanovska and Sandri (2018) and use information from the *Latinobarómetro* public opinion surveys over several years to gauge support for reforms in the region. Overall support for reforms is proxied by the share of survey respondents who express support for the market system by indicating whether they agree or strongly agree with the statement that the market economy is the only system with which the country can become developed. Figure 3 shows that there is broad support for market liberalization across countries in the region (panel A). In several countries, however, as many as a quarter to a third of respondents expressed skepticism of reforms, as proxied by the share of respondents who disagree or strongly disagree with the above statement (panel B). With regard to specific reform areas, the share of respondents supporting trade liberalization is generally low across the region, especially in Central America and Mexico (panel C). Support for finance and product market reforms (proxied by the share of respondents supporting innovation and productivity, following Biljanovska and Sandri, 2018) is higher than support for trade integration across the region, but it is particularly high in South American countries and Costa Rica.

Thus, while there is, in general, broad support for reforms across countries in the region, opinion surveys also suggest that a significant share of the population remains skeptical regarding the benefit of reforms, particularly in areas such as trade liberalization. In that context, an empirical assessment of the economic effects of reforms becomes particularly relevant. We turn to this issue in the next section.

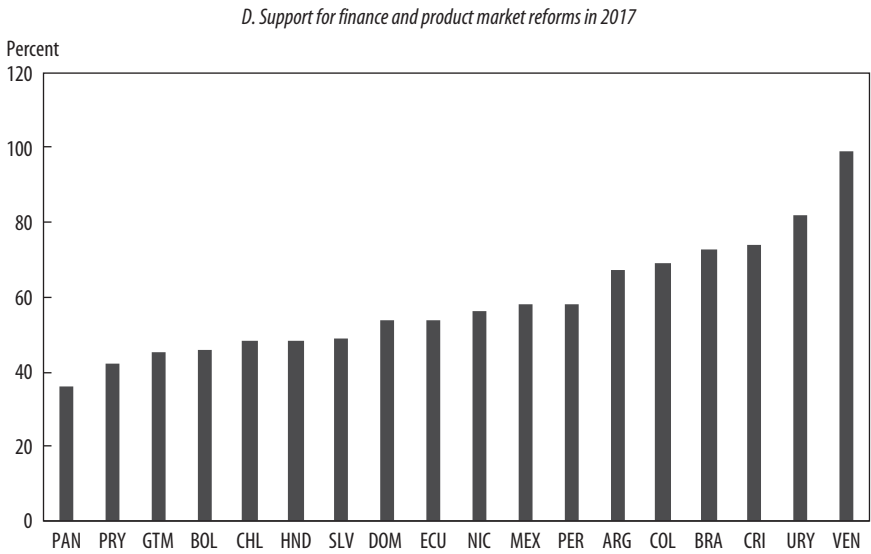
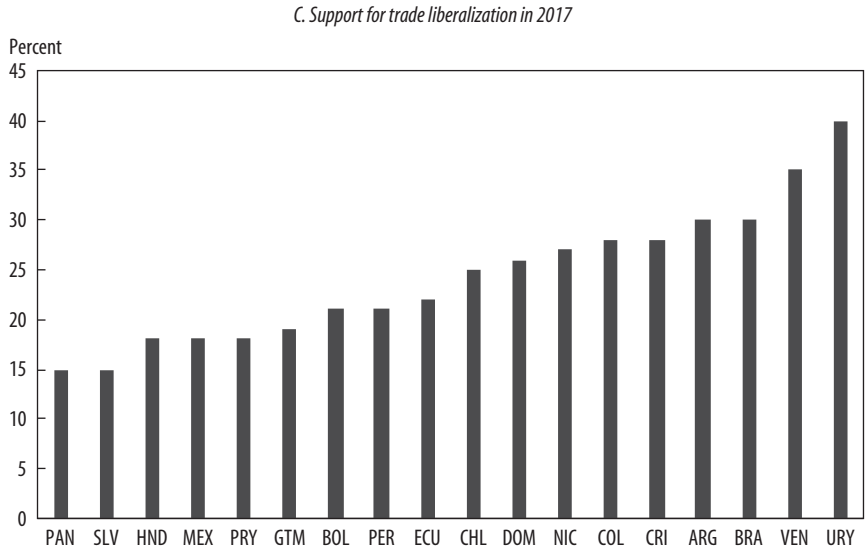
## **Quantifying the Effects of Structural Reforms**

This section studies the effects of reforms on real GDP, employment, and total factor productivity (TFP) over the medium term for the seventeen Latin American and Caribbean countries in the data set using the local projection method. This procedure does not constrain the shape of the impulse response

**FIGURE 3. Support for Reforms**



**FIGURE 3. Support for Reforms (Continued)**



Source: Authors' calculations, based on Latinobarómetro (several years).

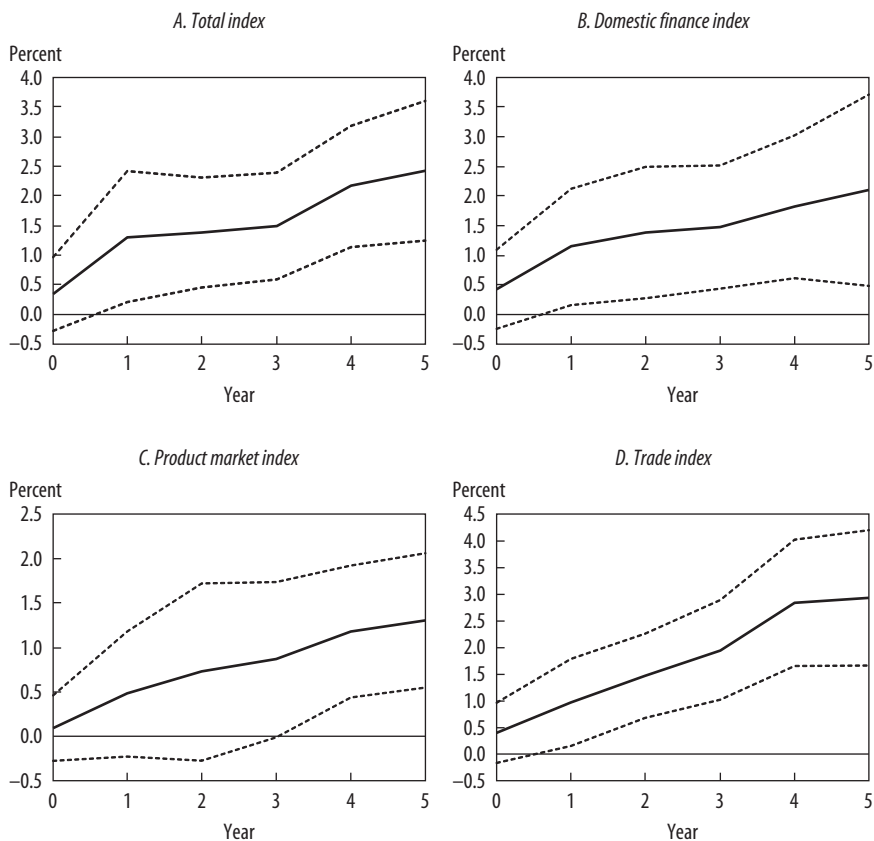
functions and is therefore less sensitive to misspecification than estimates of vector autoregression (VAR) models (Jordà and Taylor, 2016). The benchmark specification at an annual frequency is as follows:

$$(1) \quad y_{i,t+h} - y_{i,t-1} = \alpha_i^h + \gamma_i^h + \beta^h \Delta SR_{i,t} + \delta \mathbf{X}_{i,t} + \varepsilon_{i,t+h},$$

where  $y$  denotes the variable of interest (real GDP, employment, or TFP in this section, while subsequent sections will focus on other dependent variables, such as investment, informality, and inequality);  $\Delta SR_{i,t}$  denotes the change in the structural reform index; and  $h$  denotes the time horizons considered. The vector  $\mathbf{X}_{i,t}$  denotes a set of control variables, which includes lagged values of the dependent variable and of the reform index, as well as changes in the commodity terms-of-trade index constructed by Gruss and Kebhaj (2019) and its lags, which were included because terms of trade are an important driver of the business cycle in emerging market economies (Fernández, González, and Rodríguez, 2018). The specification also includes time ( $\gamma_i^h$ ) and country ( $\alpha_i^h$ ) fixed effects to capture common shocks and time-invariant country features, respectively.<sup>3</sup> We present impulse responses for large changes in the reform indexes (two standard deviations) in the figures below. The appendix provides definitions and sources for the main variables used in the analysis.

While the local projection method provides a flexible framework to estimate the dynamic effects of reforms, the approach by itself does not solve endogeneity issues arising from reverse causality and omitted variables. In that context, our main identification assumption in the paper relies on a timing restriction that reforms take time to implement and typically are not caused by movements in the dependent variable of interest within the same year. Later in the paper, we address endogeneity concerns by implementing an instrumental variables approach that exploits liberalization episodes in nearby countries as a potential source of exogenous variation. Regarding omitted variables, as discussed above, our regressions include country and year fixed effects that allow us to control for time-invariant country-specific factors and common shocks (across countries in the sample), respectively. In addition, omitted variables bias is further attenuated by the inclusion in all regressions of two lags of the dependent variable, as well as lags of the reform indexes and the commodity terms-of-trade variable.

3. For specifications that consider specific reforms (rather than the total reform index), we also add as controls lagged values of the changes in the other reform indexes to control for complementarities.

**FIGURE 4. Effects of Reforms on GDP**

Source: Authors' calculations, based on IMF data.

Note: The dashed lines show the 90 percent confidence interval for Driscoll-Kraay standard errors.

Figure 4 shows the effects of large changes in the reform index on real GDP. Reforms in the region have positive effects on GDP that reach 2.4 percent after five years (panel A). This estimated magnitude of the effects of reforms is in line with the average findings of the IMF (2019) for a broader set of emerging markets and developing economies.

We also consider specifications for reforms in specific areas, in which, in addition to the control variables discussed in equation 1, we add lagged changes of the other reform indicators to control for possible complementarities across reforms. Domestic finance reforms present a similar impulse

response to the overall reform index, while product market reforms have positive effects on GDP that tend to take longer to materialize and become statistically significant only after two years. The effects of trade reforms on GDP are somewhat larger than the ones obtained for the overall index, reaching close to 3 percent after five years. The effects of labor market reforms on GDP for the sample of countries are not statistically significant and are not reported, to save space.<sup>4</sup>

Figure 5 presents the effects of reforms on employment (defined as the log of employment in thousands of people, from the World Development Indicators database). Reforms also tend to boost employment, with large changes in the total reform index being associated with increases in employment of 1.7 percent after five years, even if such increases tend to take time to materialize. Product market reforms, in particular, are linked to statistically and economically significant increases in employment one year after implementation.

We now turn to evidence on the effects of reforms on TFP. We take the TFP measure directly from Feenstra, Inklaar, and Timmer (2015). The impulse responses depicted in figure 6 show that reforms have a positive effect on TFP of about 1 percent, which is imprecisely measured for the total reform index (the confidence interval is wide) and only marginally significant at the 10 percent level at the five-year horizon. Nevertheless, when we focus on the trade reform index, the positive effects are statistically significant after two years, reaching about 1 percent after five years.

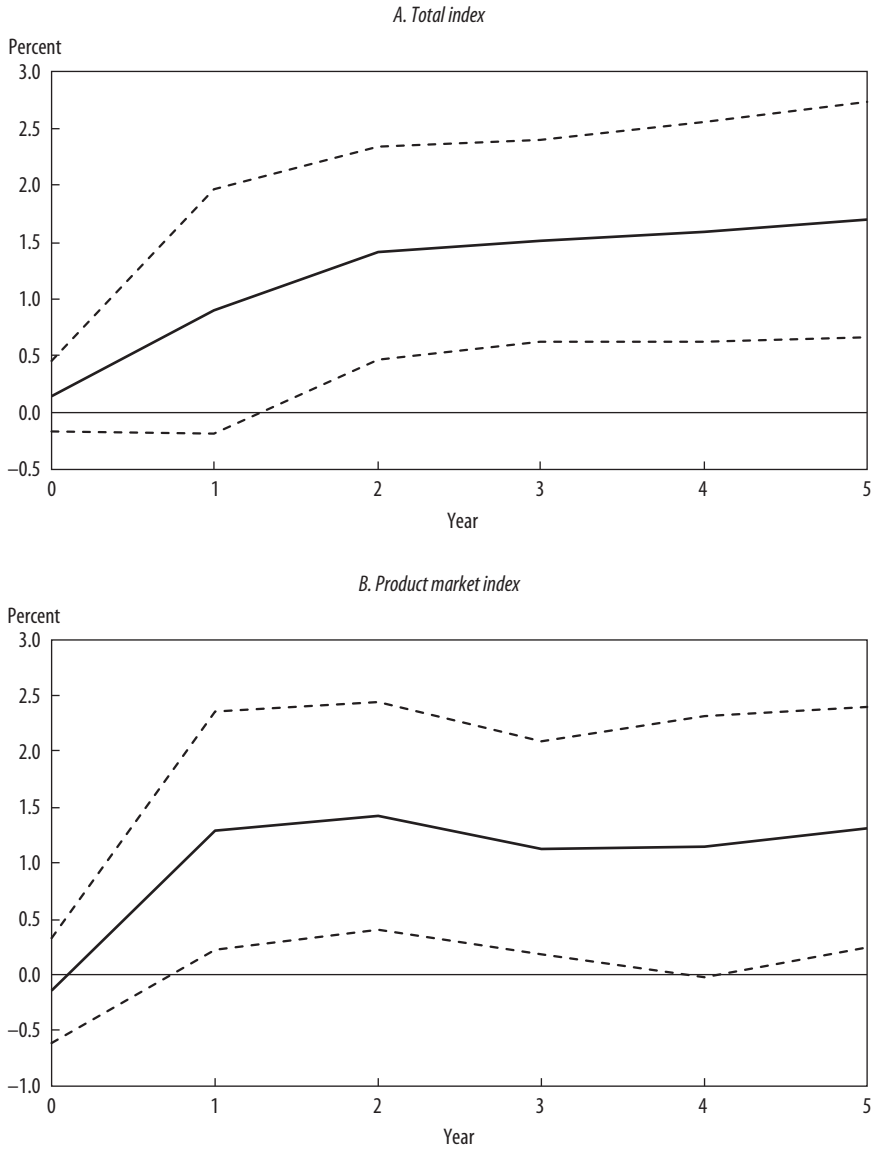
Overall, we find that reforms that move toward greater liberalization can have positive effects on output and employment for countries in Latin America and the Caribbean, but these benefits tend to take time to materialize. There is also evidence of positive effects in terms of TFP, but these effects are less precisely estimated.

### *Do Initial Conditions Matter?*

We examine whether the baseline results change depending on conditions prevailing at the time of reform implementation. One of the main advantages of the local projection method is its flexibility in dealing with nonlinearities and state dependency. The typical state-dependent specification will take the

4. There are only twenty-five instances of nonzero changes for the labor reform indicator in Latin America and the Caribbean.

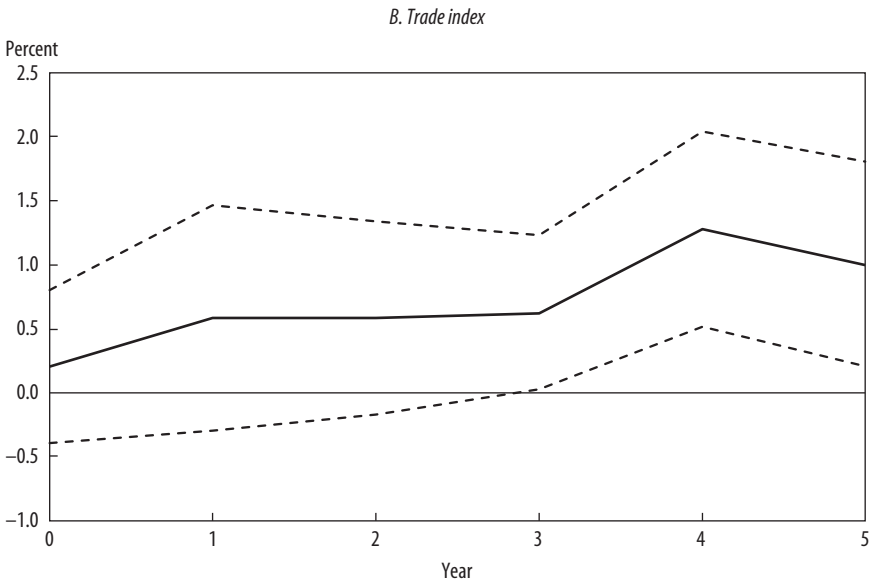
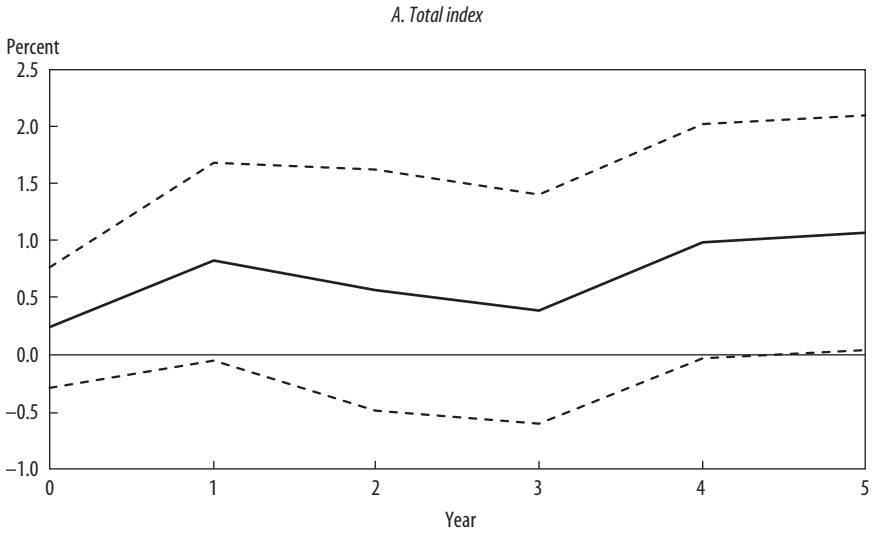
**FIGURE 5. Effects of Reforms on Employment**



Source: Authors' calculations, based on World Development Indicators data.

Note: The dashed lines show the 90 percent confidence interval for Driscoll-Kraay standard errors.

**FIGURE 6. Effects of Reforms on Total Factor Productivity**



Source: Authors' calculations, based on IMF data.  
 Note: The dashed lines show the 90 percent confidence interval for Driscoll-Kraay standard errors.



following form, with  $S_{i,t-1}$  being an indicator variable taking the value of zero or one depending on the state dependency being considered:

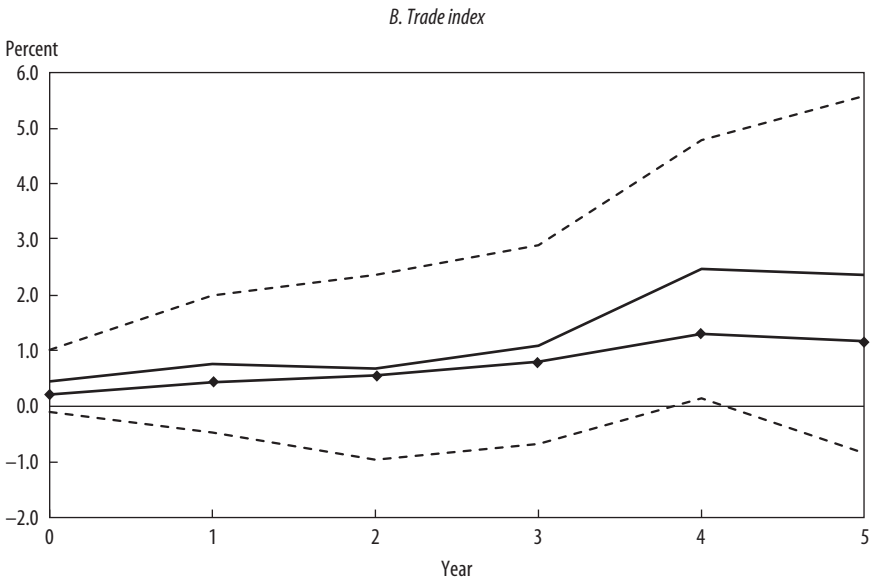
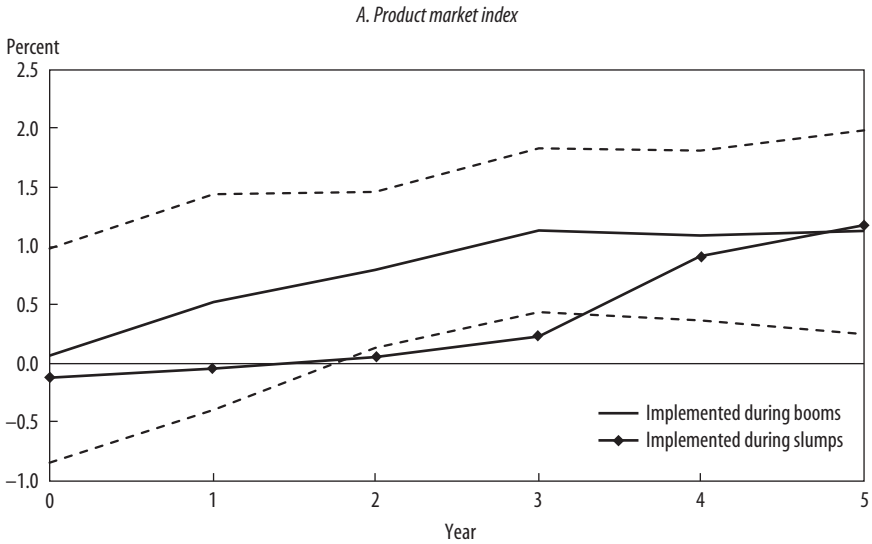
$$(2) \quad y_{i,t+h} - y_{i,t-1} = S_{i,t-1} \left( \alpha_{high,i}^h + \gamma_{high,t}^h + \beta_{high}^h \Delta SR_{i,t} + \delta_{high} \mathbf{X}_{it} \right) \\ + \left( 1 - S_{i,t-1} \right) \left( \alpha_{low,i}^h + \gamma_{low,t}^h + \beta_{low}^h \Delta SR_{i,t} + \delta_{low} \mathbf{X}_{it} \right) + \varepsilon_{i,t+h}.$$

We begin by analyzing whether the effects of reforms change depending on whether they were implemented in periods of economic expansion (boom) or contraction (slump). These periods were identified such that boom periods are years in which the output gap is positive (above trend GDP, which is estimated using the Hodrick-Prescott filter) and slump periods are years in which the output gap is negative.

For our sample of Latin American and Caribbean economies, the effects do not vary much according to the state of the economy for the total reform index, but the results do differ for some specific reforms. In particular, for product market and trade reforms, the effects on GDP are somewhat larger when they are implemented in boom times (figure 7). In the case of product market reforms, the difference disappears at the end of the five-year horizon. This is somewhat different from the general findings of IMF (2019) for a large sample of emerging and developing economies. That study found a marked contrast in the effects of reforms on GDP when the reforms were implemented in booms rather than recessions.

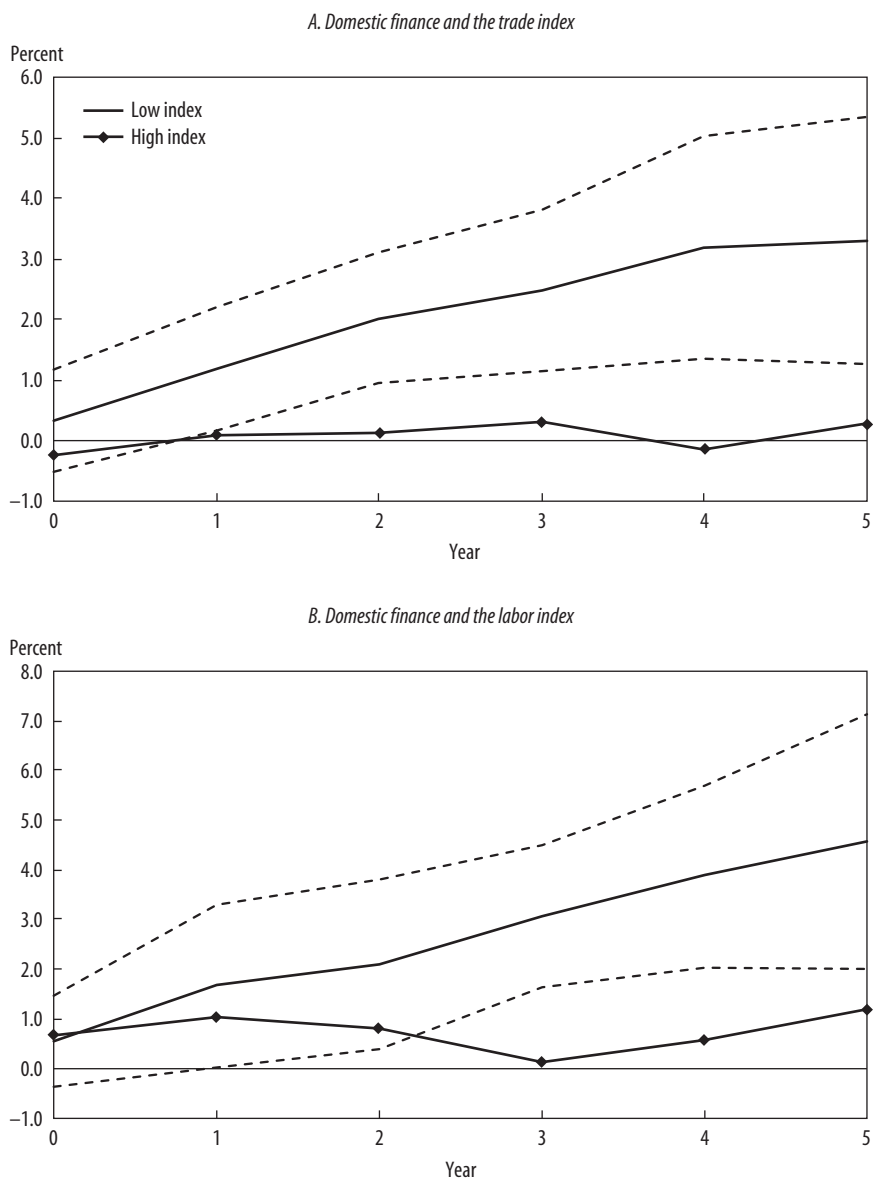
We also use the state-dependent specification outlined above to explore the role of possible complementarities between the different reform areas. To do so, we condition the impulse responses for a given reform (say, domestic finance) on whether the level of the reform index for other areas (trade, product market, and labor) is above or below the median for our sample of countries in the year before the implementation of the reform of interest. Figure 8 depicts the results of this exercise for the effects of domestic finance reforms on GDP, conditioned on the level of trade liberalization and on the level of employment protection liberalization. The impulse responses in panel A show that domestic finance reforms in the region have a positive effect on GDP, even when they are implemented at times when the economy is relatively more closed (that is, conditioning on lower levels of the trade liberalization index). Moreover, domestic finance reforms also have a positive effect on GDP even when labor markets are relatively rigid (panel B). Taken together, these results indicate that the positive payoffs of domestic finance reforms are

**FIGURE 7. Effects of Reforms on GDP Depending on State of the Economy**



Source: Authors' calculations, based on IMF data.  
 Note: The dashed lines show the 90 percent confidence interval for Driscoll-Kraay standard errors for reforms implemented during boom periods.

**FIGURE 8. Effects of Domestic Finance Reforms on GDP, Conditioned on the Level of Liberalization**



Source: Authors' calculations, based on IMF data.

Note: The dashed lines show the 90 percent confidence interval for Driscoll-Kraay standard errors for the low index.

not precluded by the presence of significant distortions in other areas (namely, trade and labor markets).

Similarly, as illustrated in figure 9, the effects of trade liberalization on GDP are positive even when employment protection legislation is relatively more rigid. The effects of product market reforms are also positive and significant even when implemented in periods of rigid employment protection legislation.

### *Inspecting the Mechanisms: Investment, FDI, Informality, and Confidence*

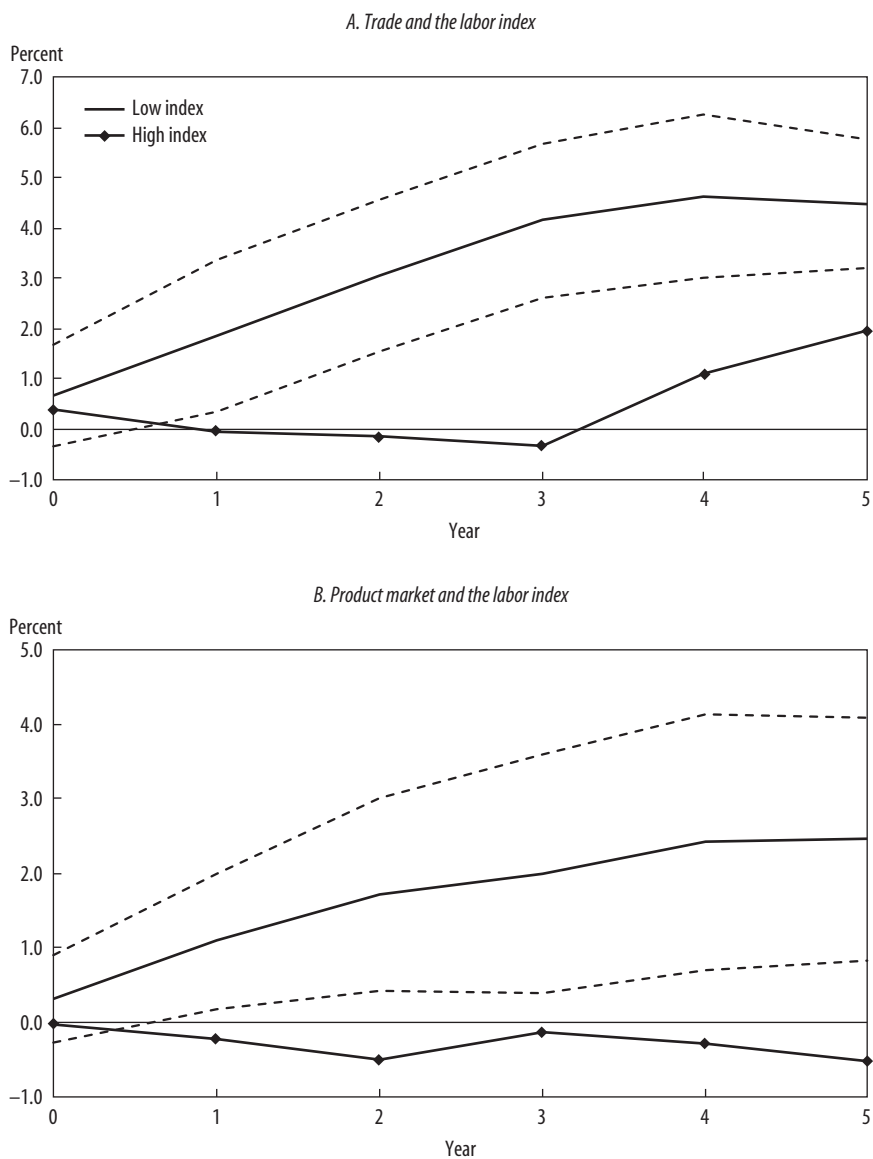
This section considers the empirical effects of reforms on investment, foreign direct investment (FDI), informality, and business confidence indicators using a similar specification to equation 1. The purpose is to identify the mechanisms through which reforms affect GDP and employment. These channels have not received much attention in the literature.

Figure 10 presents the results of the effects of reforms on total investment (in log real terms) and FDI (as a share of GDP). Large changes in the total structural reform index increase total investment by over 3.6 percent in a five-year period. The effects of domestic finance reforms on investment are particularly apparent, leading to increases that exceed 4 percent after two years, but over the medium term the confidence interval widens and the effects are no longer statistically significant in this case.

Reforms also boost FDI, although the effects tend to be economically small and only marginally significant from a statistical point of view. In the case of product market reforms, the effects are statistically significant but remain economically small: a two-standard-deviation change in the reform index is linked to an increase in FDI of a little more than 0.2 percent of GDP (and a peak increase of less than 0.4 percent of GDP).

Latin American and Caribbean economies are marked by high levels of informality, which has important macroeconomic implications, including with regard to the adjustment to shocks (David, Roldos, and Pienknagura, 2020). Therefore, the effects of reforms on informality are particularly important from a policy perspective in the region. Figure 11 depicts how the informality rate, defined as the share of active workers not contributing to social security, responds to changes in the structural reform index. Changes in the total reform index are associated with a decrease in informality, but it is not statistically significant over the medium term. Nevertheless, when we consider product market reforms more specifically, the effects become statistically significant, though still economically small, with large reforms reducing the informality

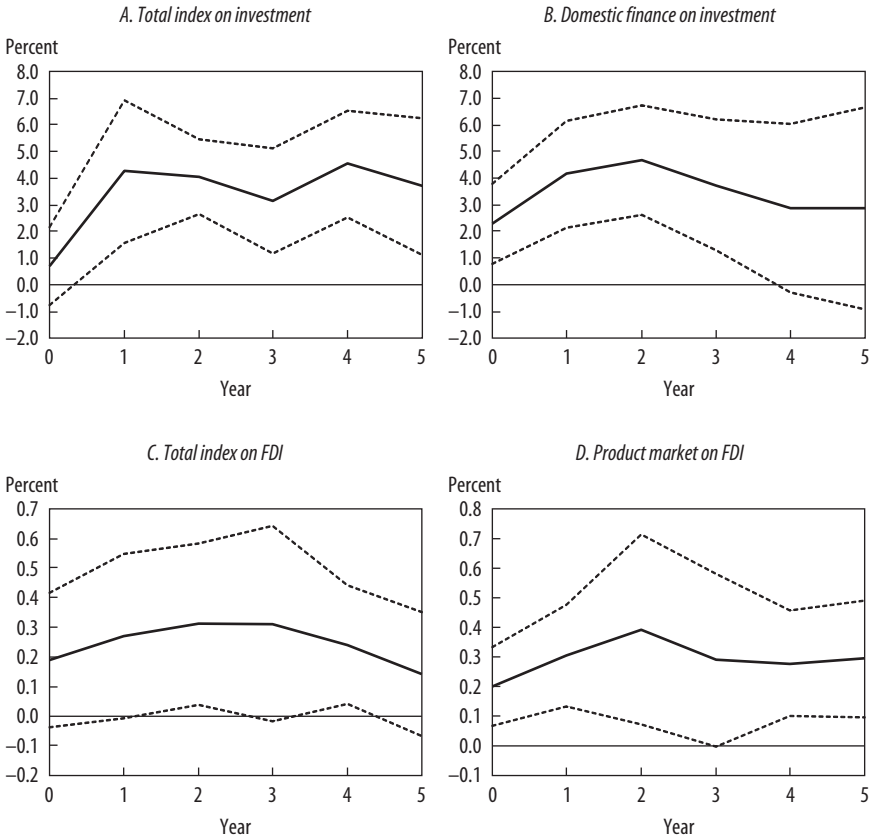
**FIGURE 9. Effects of Trade and Product Market Reforms on GDP, Conditioned on Labor Market Liberalization**



Source: Authors' calculations, based on IMF data.

Note: The dashed lines show the 90 percent confidence interval for Driscoll-Kraay standard errors for the low index.

**FIGURE 10. Effects of Structural Reforms on Investment and FDI**

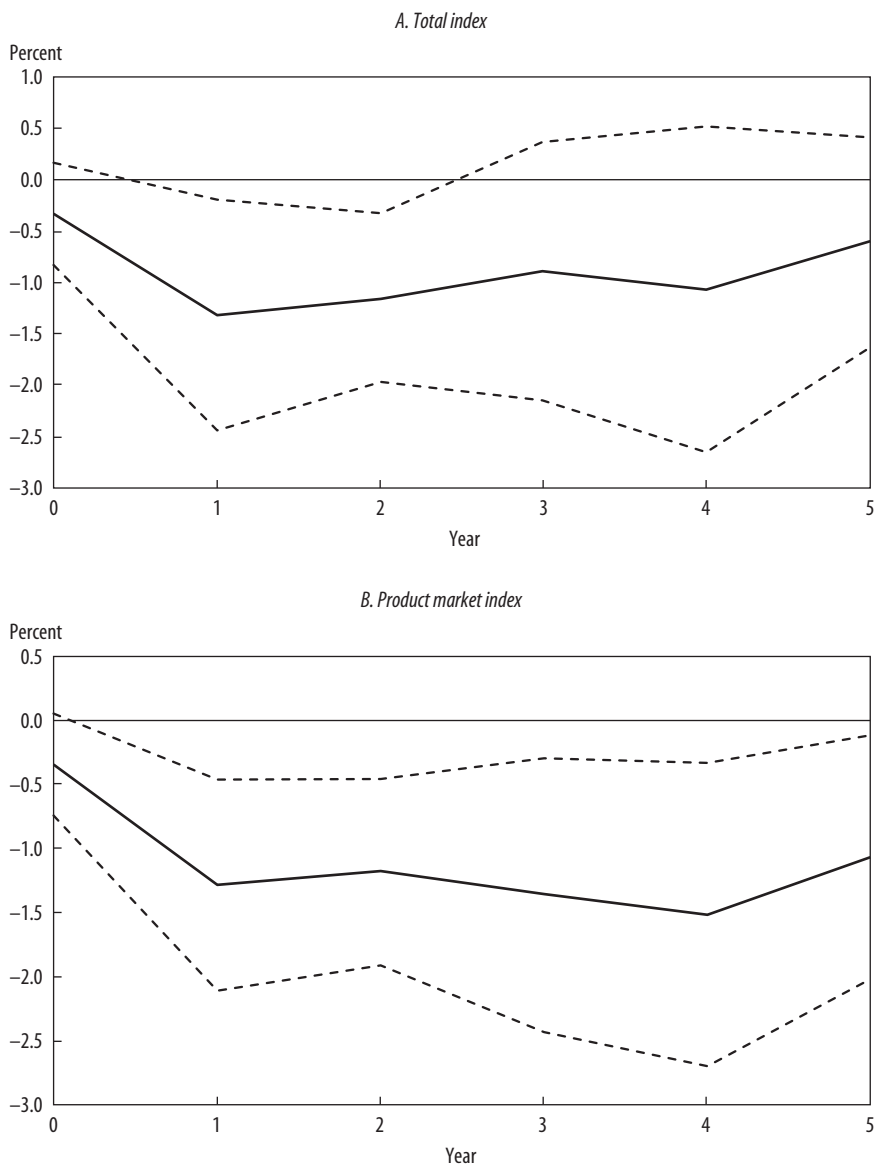


Source: Authors' calculations, based on IMF data.  
 Note: The dashed lines show the 90 percent confidence interval for Driscoll-Kraay standard errors.

rate by about one percentage point over five years. IMF (2019) also finds that large reforms lead to a reduction in informality rates of the same magnitude (about 1 percent over a five-year horizon) for a broader set of countries.

Policymakers frequently claim that reforms have important effects on business confidence, arguing that the boost in confidence associated with reforms could even offset the fiscal costs linked to their implementation. To tackle this issue, we estimate impulse responses for an index of business confidence from Haver Analytics for a sample of fourteen countries, including both advanced economies and emerging markets. We do not restrict ourselves to the sample

**FIGURE 11. Effects of Structural Reforms on the Informality Rate**



Source: Authors' calculations, based on IMF data.

Note: The dashed lines show the 90 percent confidence interval for Driscoll-Kraay standard errors.

of Latin American and Caribbean economies in this case owing to the limited data availability for the business confidence indicators (the index is available in a comparable manner only for Brazil, Chile, Mexico, and Peru).

Figure 12 presents impulse responses for changes in the total reform index and in the employment protection index. Overall, the effects of large reforms on business confidence are positive, but not statistically significant. When focusing on reforms to job protection legislation, we find positive effects on confidence that take time to materialize, becoming apparent only two years after the changes in the reform index occur (there are forty-three changes in the labor reform index over the sample considered). Thus the data do not seem to support the view that reforms lead to substantial immediate improvements in business confidence. Effects can be positive and significant, but they seem to take time to materialize.

### *Structural Reforms and External Trade*

We now turn to the effects of reforms on external trade. Overall, reforms boost growth in real exports over the medium term (figure 13), and, naturally, the effects of trade liberalization are particularly prominent, even if other reforms such as product market liberalization (not shown) also increase real exports. Reforms increase real imports by comparable magnitudes. These conclusions also hold when we consider the ratios of exports and imports to GDP rather than the real variables, suggesting that the growth accelerations of exports and imports following reforms are larger than the acceleration of GDP growth.

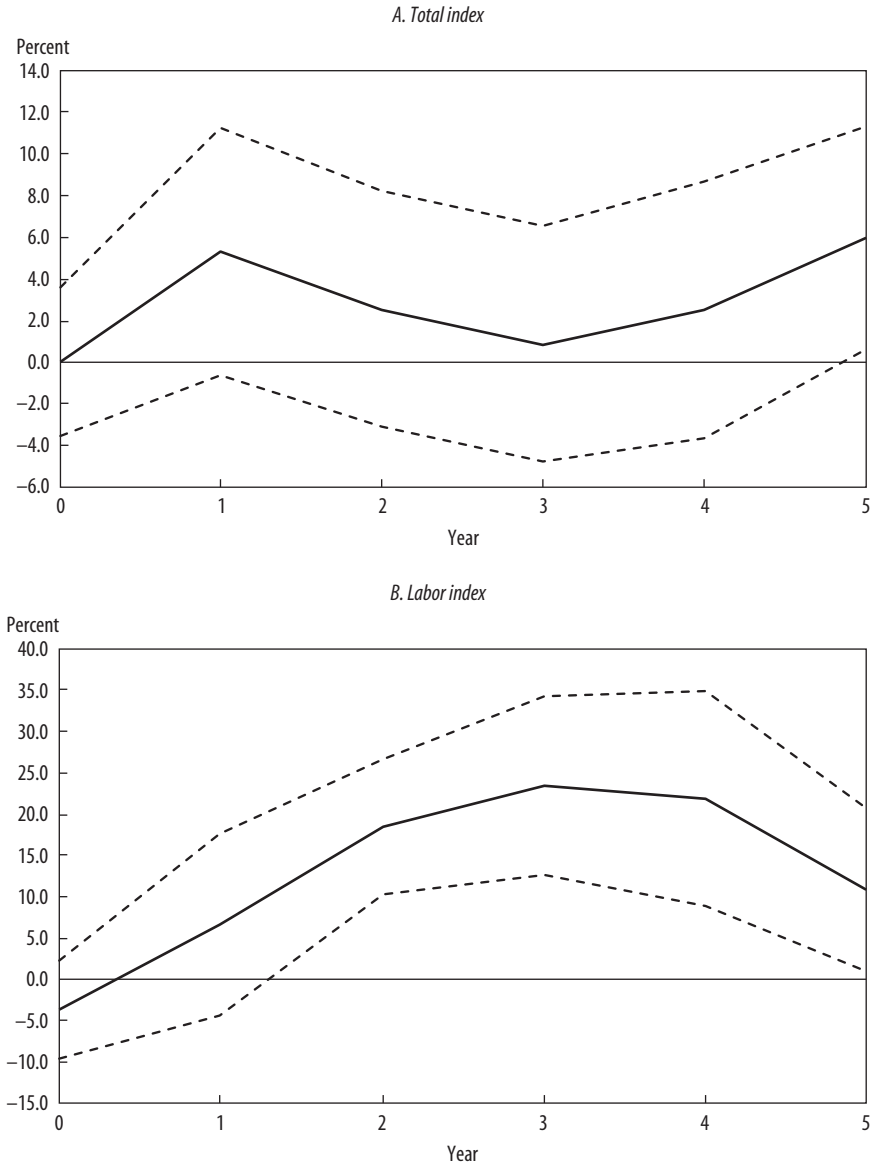
Reforms also appear to contribute to export diversification (figure 14). The Theil index for exports (a measure of concentration) declines after reforms, in particular after trade liberalization. This supports an argument frequently advanced in the international trade literature that high tariffs introduce an anti-export bias in some sectors, which liberalization appears to remove.

### *The Sectoral Effects of Reforms*

Liberalization could disproportionately affect specific sectors relative to others if the reforms relax important distortions or constraints on those sectors. The results show that changes in the aggregate reform index lead to increased real value added in manufacturing and agriculture (figure 15). In contrast, the effects of reforms on real value added in services are not statistically different from zero (figure 16). This suggests that reforms tend to favor tradable sectors.



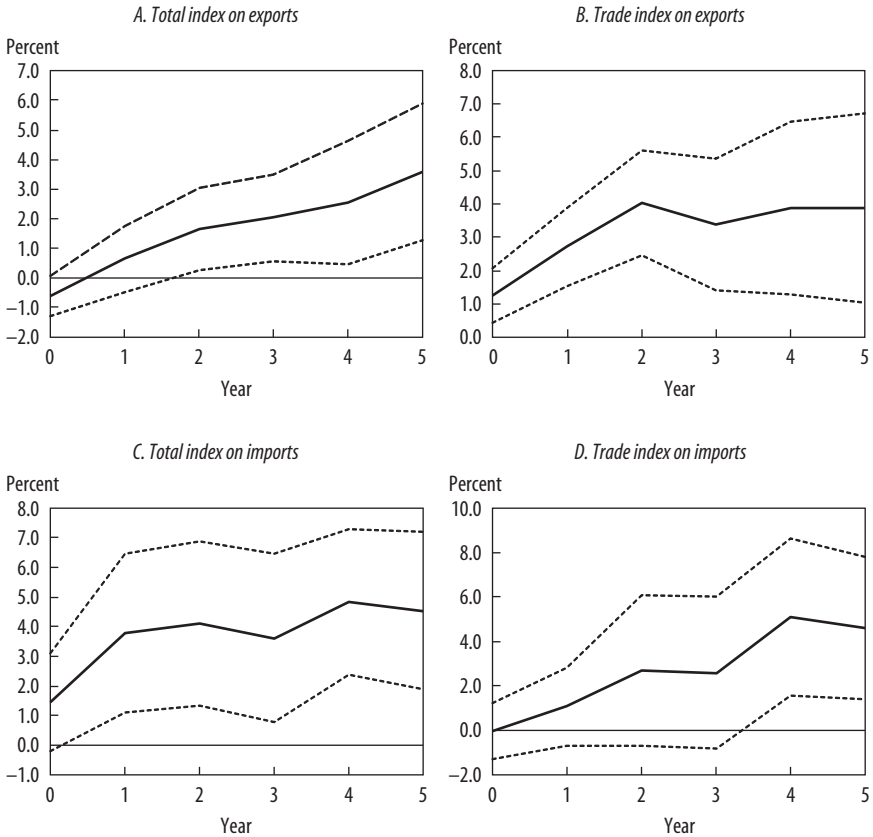
**FIGURE 12. Effects of Structural Reforms on Business Confidence: Fourteen Economies**



Source: Authors' calculations, based on data from Haver Analytics.

Note: The dashed lines show the 90 percent confidence interval for Driscoll-Kraay standard errors.

**FIGURE 13. Effects of Structural Reforms on Exports and Imports**

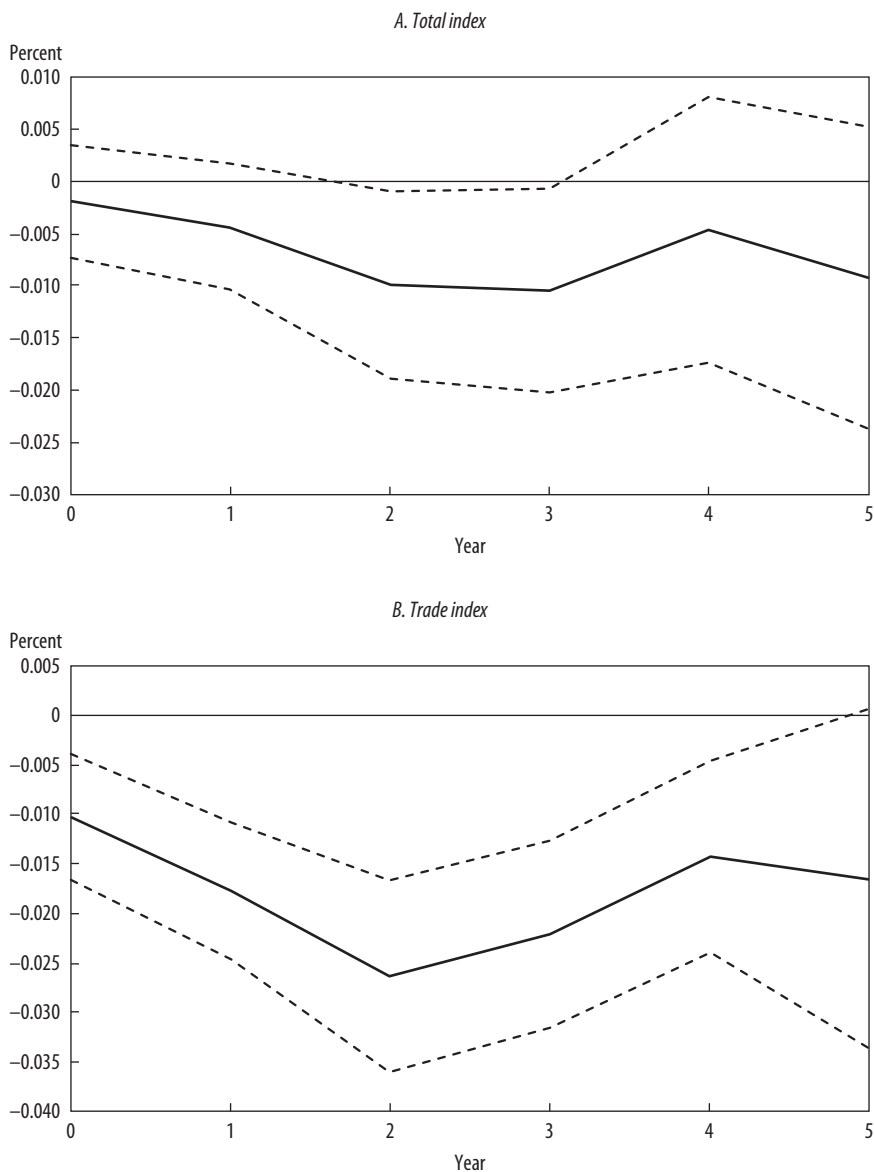


Source: Authors' calculations, based on IMF data.  
 Note: The dashed lines show the 90 percent confidence interval for Driscoll-Kraay standard errors.

As with GDP, the effects on manufacturing and agriculture value added tend to be significantly different from zero about two to three years after the reforms are implemented.

When we consider specific reform subindexes, it appears that each sector is affected by different reform clusters. Manufacturing value added increases after trade and product market reforms, while agriculture and services value added tend to increase following domestic finance and trade liberalization (figure 17).

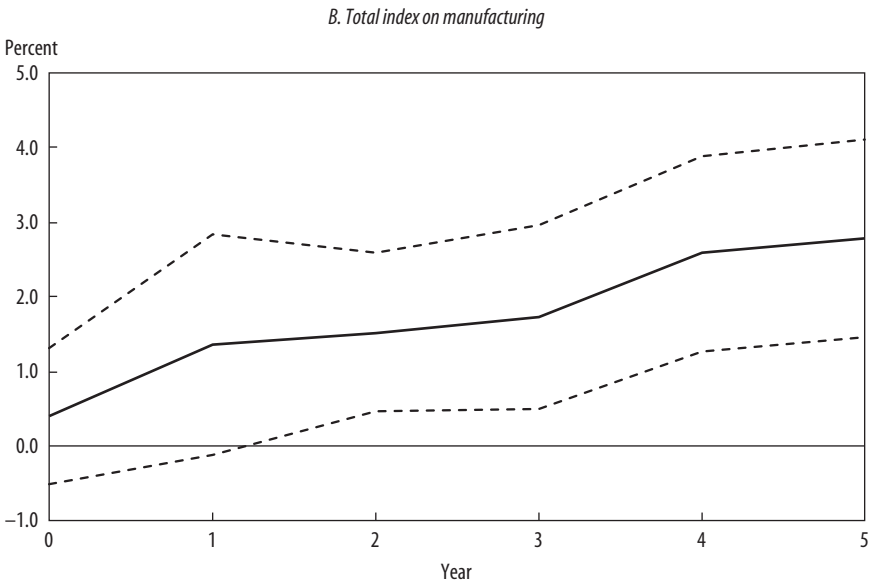
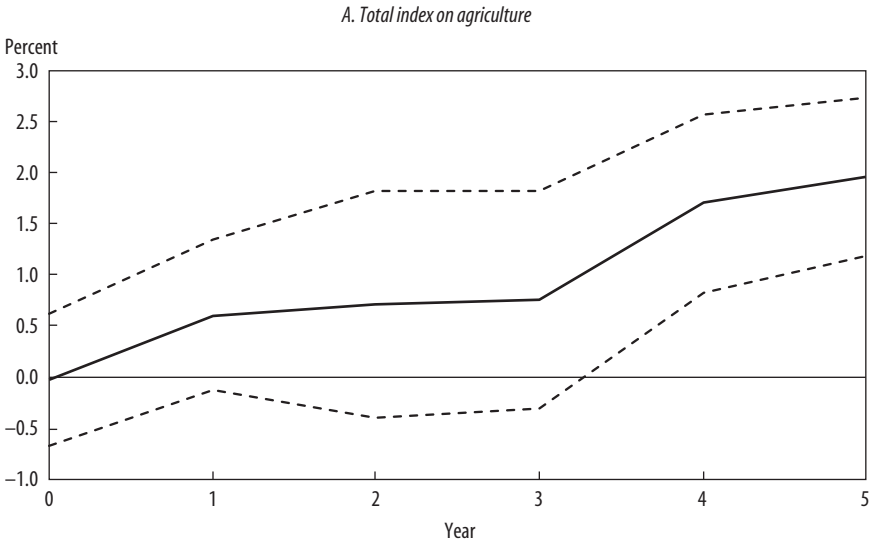
**FIGURE 14. Effects of Structural Reforms on Export Concentration: Theil Index**



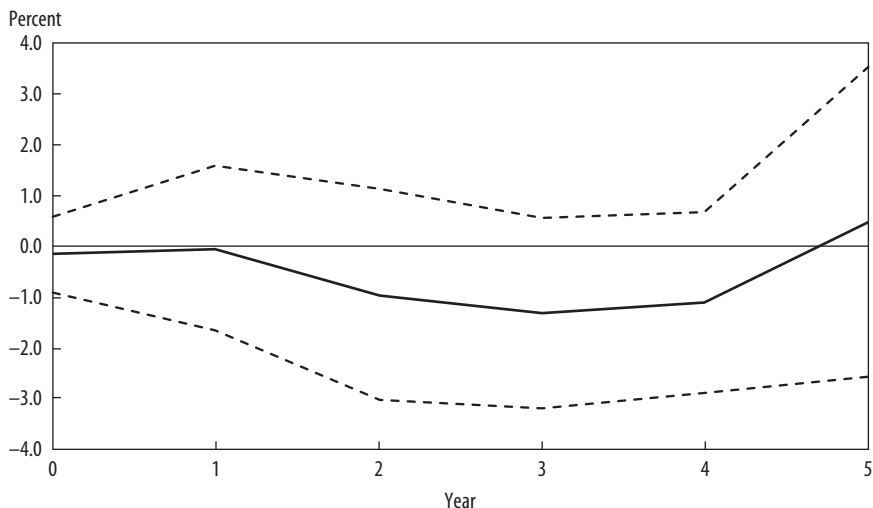
Source: Authors' calculations, based on IMF data.

Note: The dashed lines show the 90 percent confidence interval for Driscoll-Kraay standard errors.

**FIGURE 15. Effects of Structural Reforms on Agriculture and Manufacturing Value Added**



Source: Authors' calculations, based on IMF data.  
 Note: The dashed lines show the 90 percent confidence interval for Driscoll-Kraay standard errors.

**FIGURE 16. Effects of Aggregate Structural Reforms on Services Value Added**

Source: Authors' calculations, based on IMF data.

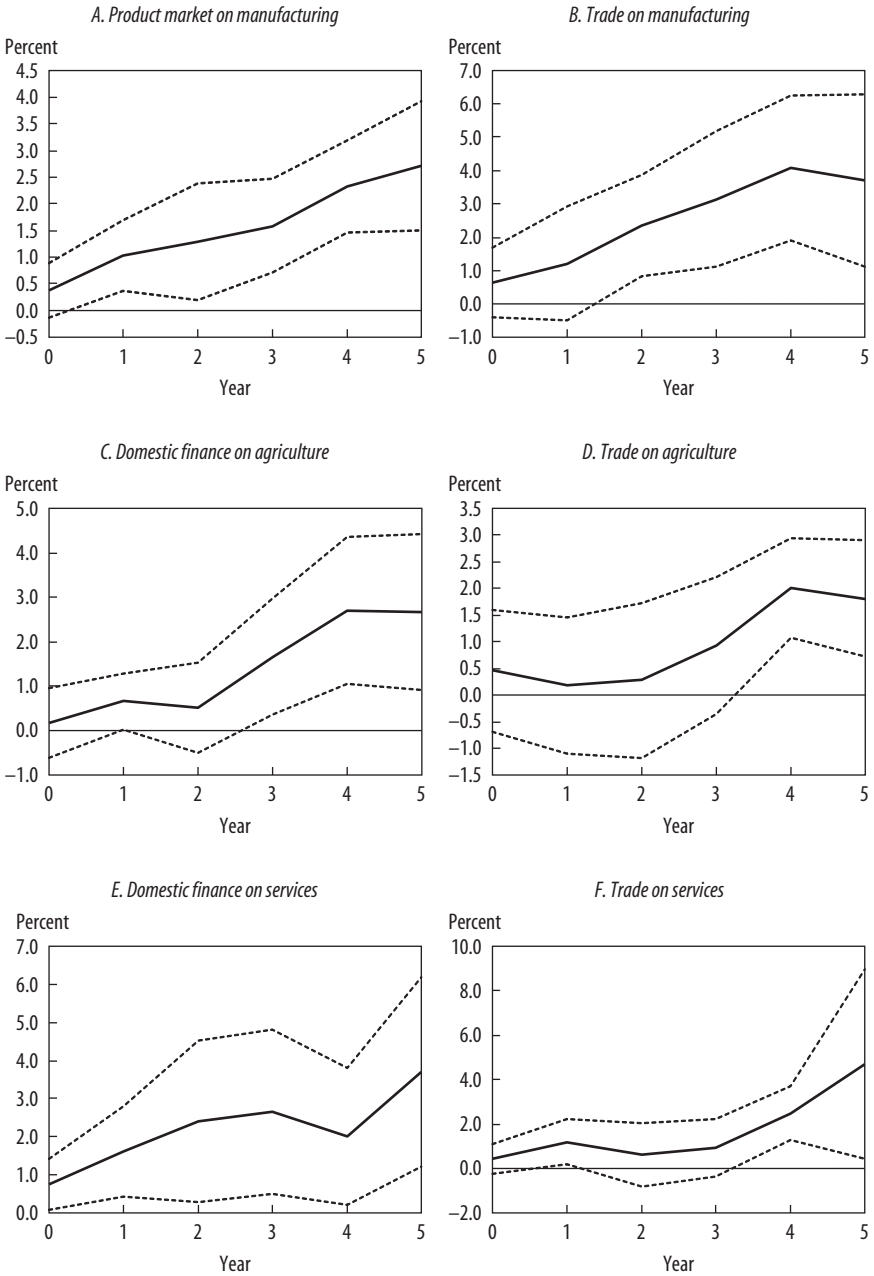
Note: The dashed lines show the 90 percent confidence interval for Driscoll-Kraay standard errors.

### *Collateral Damage? The Effects of Reforms on Poverty and Inequality*

Reforms are likely to affect different segments of society in distinct ways, which may partly explain resistance to reforms and subsequent reversals. This section examines whether market-oriented reforms might have deleterious effects over the short to medium term on inequality and poverty indicators in our sample of Latin American and Caribbean countries, using the same econometric framework outlined in previous sections. To measure the effects on the poverty rate, we use data on the poverty headcount ratio at USD 3.20 a day (2011 purchasing power parity) from the World Development Indicators database. To assess the effects on inequality, we use the Gini index from the same source.

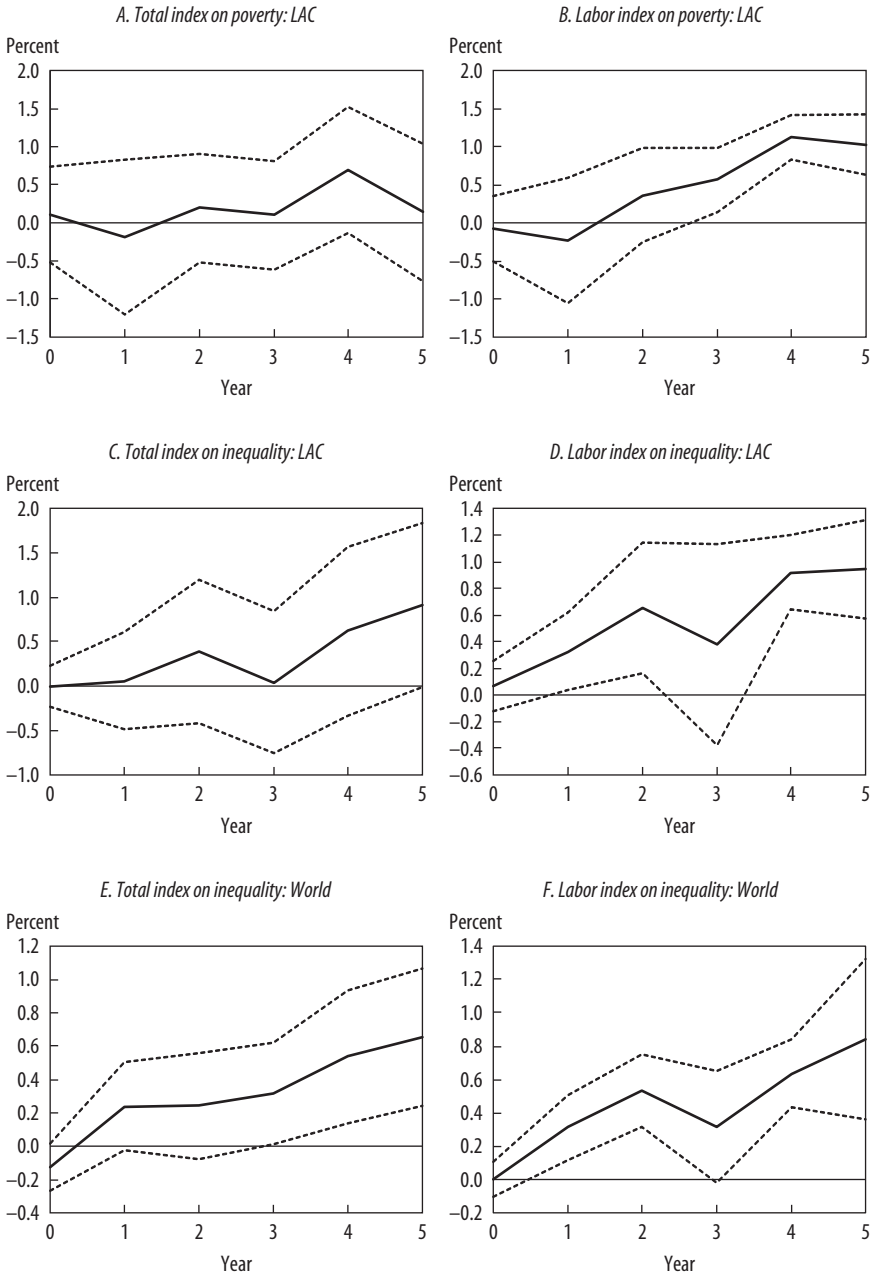
As illustrated in figure 18, we do not find statistically significant effects for the total reform index on poverty and inequality in our sample of countries. Nevertheless, reforms to job protection legislation are associated with statistically significant increases in both poverty and inequality indicators over the medium term. These effects appear to be economically small. Large changes in the employment protection reform index lead to increases in poverty rates of about one percentage point over five years. Similarly, inequality increases by

**FIGURE 17. Sectoral Effects of Structural Reforms**



Source: Authors' calculations, based on IMF data.  
 Note: The dashed lines show the 90 percent confidence interval for Driscoll-Kraay standard errors.

**FIGURE 18. Effects of Structural Reforms on Poverty and Inequality**



Source: Authors' calculations, based on World Development Indicators data.

Note: The dashed lines show the 90 percent confidence interval for Driscoll-Kraay standard errors. LAC: Latin America and the Caribbean.

about 1 percent over the same period. The last two panels of the figure reproduce the inequality regressions for the full sample of countries and confirm some of the results obtained for Latin America and the Caribbean. In the case of total reforms, the deleterious effects on inequality are now statistically significant, but remain of similar magnitude to the ones reported for Latin America and the Caribbean over the medium term.

Furceri and Rehman (2020) also report that reforms can be linked to increases in the Gini index when reforming countries have low intergenerational mobility and uneven access to opportunities, although the coefficients reported by these authors are smaller than our results for employment protection reforms. Nevertheless, they argue that for countries with high mobility and broad access to opportunities, the correlation between reforms and inequality tends to be insignificant or negative.

These results underscore the need to consider policy instruments to mitigate the potential negative effects of reforms, including measures to enhance access to opportunities. They strengthen the case for accompanying job protection liberalization with measures that protect workers, such as extending unemployment insurance schemes, as discussed in Duval and Loungani (2019).

### **Addressing Endogeneity Concerns**

The results presented thus far have been interpreted as a causal relationship running from changes in the structural reform index to the specific variable of interest, but this interpretation is subject to caveats. One concern is that episodes of liberalization or reform reversals may be caused by past economic performance. For example, reforms may be implemented to revamp growth in countries experiencing a persistent economic slump. If this were the case, our results for the effect of liberalization on GDP could be picking up the persistence of growth. While this is partly captured in our baseline specification by including past growth as a control variable, there may be nonlinearities that we are unable to capture. Countries may also opt to liberalize key input markets in anticipation of higher growth (Buera, Monge-Naranjo, and Primiceri, 2011), which would also contaminate the causal interpretation of our results.

To address potential endogeneity concerns, we implement a panel instrumental variables (IV) strategy whereby we exploit the timing of liberalization and reform reversals across countries. More specifically, we instrument changes in the reform index in country  $i$  with current and past episodes of



changes in the reform index in nearby countries. This identification strategy (namely, identification through regional waves) has also been used to study the causal effects of democratization on growth (Acemoglu and others, 2019) and the impact of fiscal austerity on social unrest (Ponticelli and Voth, 2020). In the specific case of episodes of liberalization and reform reversals, the exercise is grounded in the theoretical findings of Buera, Monge-Naranjo, and Primiceri (2011), who show that the adoption of liberalization policies by neighboring countries affects the belief of policymakers about the desirability of reforms.

The validity of the strategy rests on two assumptions: that regional waves are not affected by regional economic conditions (rather, they reflect regional demand for reforms that is unrelated to economic conditions) and that regional reform waves affect economic performance only through their impact on a country's adoption of reforms. While carefully assessing the validity of these assumptions goes beyond the scope of this paper, there is some evidence that regional waves do not respond exclusively to regional economic conditions. For example, Bonhomme and Maresa (2015) find that transitions to democracy are correlated at the regional level, even after controlling for GDP. In the case of structural reforms, Birdsall, de la Torre, and Valencia Caicedo (2010) argue that the wave seen in Latin America in the 1990s reflected the international view that "economic prosperity could only be obtained by harnessing the power of markets" (p. 7).<sup>5</sup>

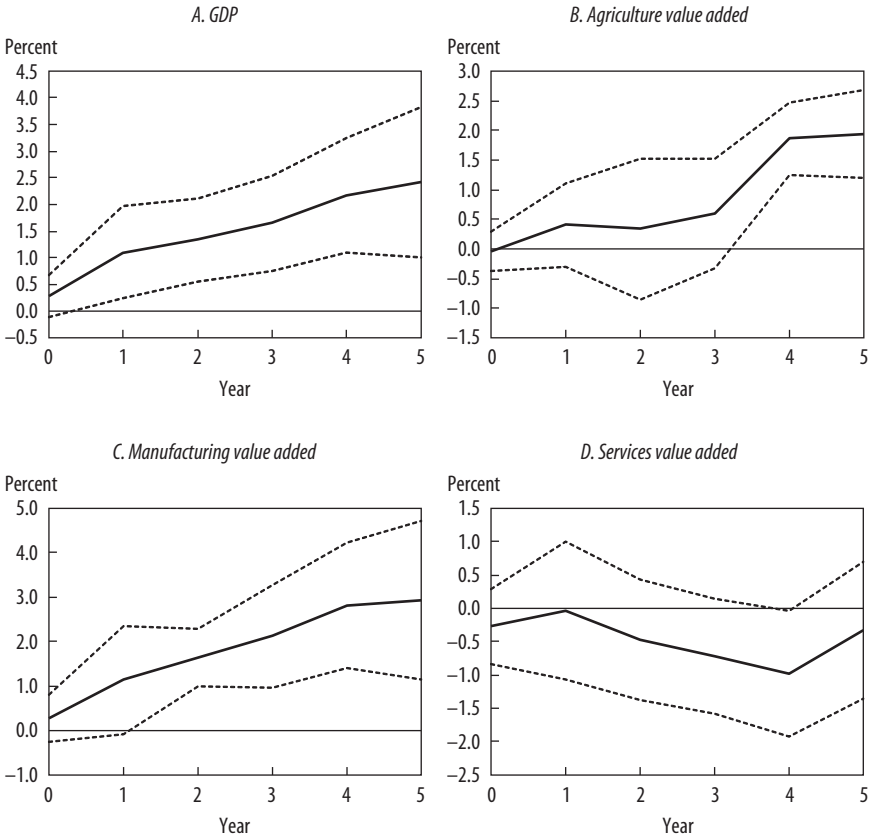
With this in mind, the empirical exercise presented in this section constructs a variable of changes in the reform index in nearby countries, as follows:

$$(3) \quad \Delta SR_{i,t}^{-i,W} = \sum_{j \in W_{-i}} \frac{1/\log(Dist_{i,j})}{\sum_{k \in W_{-i}} [1/\log(Dist_{i,k})]} \Delta SR_{j,t},$$

where  $W_{-i}$  is the set of all countries for which we have data on the reform index excluding country  $i$ ,  $\Delta SR_{i,t}$  is the change in structural reform index, and  $Dist_{i,j}$  is the bilateral population-weighted distance between country  $i$  and country  $j$ , as presented in the CEPII GeoDist data set. Once we construct the variable, we follow an IV strategy where  $\Delta SR_{i,t}$  is instrumented using  $\Delta SR_{i,t}^{-i,W}$  and its lagged values.<sup>5</sup>

5. In the IV exercise, we include two lags.

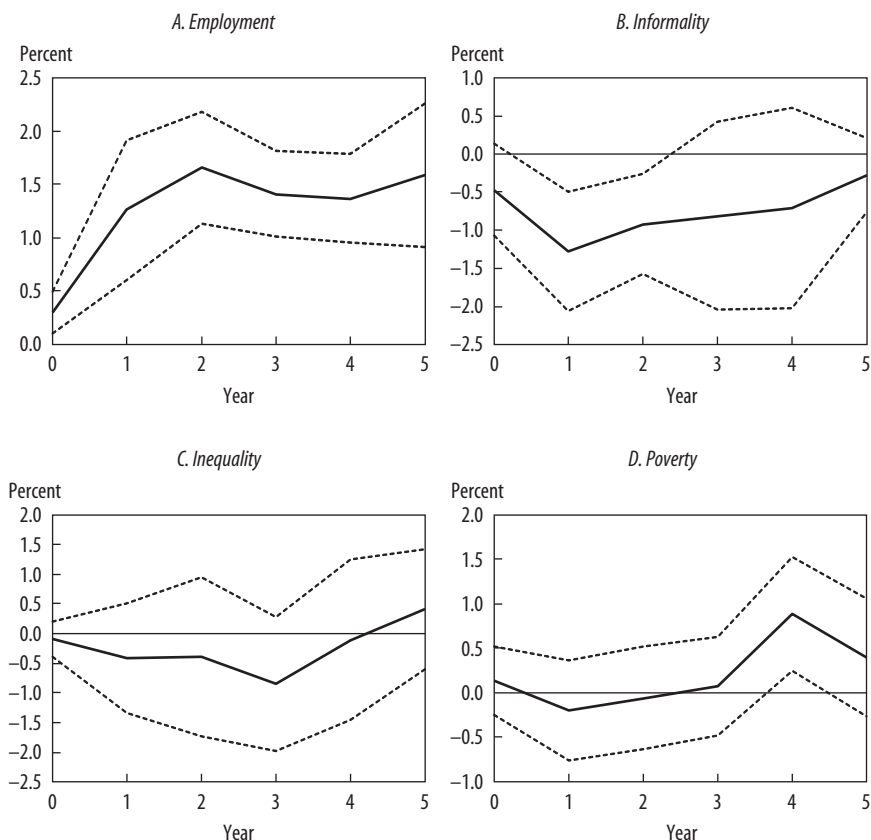
**FIGURE 19. Effects of Structural Reforms: IV Approach**



Source: Authors' calculations, based on IMF data.  
 Note: The dashed lines show the 90 percent confidence interval for Driscoll-Kraay standard errors.

The results, shown in figures 19 to 22, provide partial support to the causal interpretation of our findings.<sup>6</sup> Changes in the structural reform index associated with similar changes in nearby countries result in a gradual and statistically significant increase in GDP, employment, and trade outcomes. Informal employment decreases temporarily, and poverty appears to rise toward the end of the

6. The hypothesis of weak instruments is rejected. The Cragg-Donald  $F$  statistic for the first stage is 517.7, while the Kleibergen-Paap  $F$  statistic is 43.4. Both cases exceed the Stock-Yogo critical values.

**FIGURE 20. Effects of Structural Reforms on Employment and Social Indicators: IV Approach**

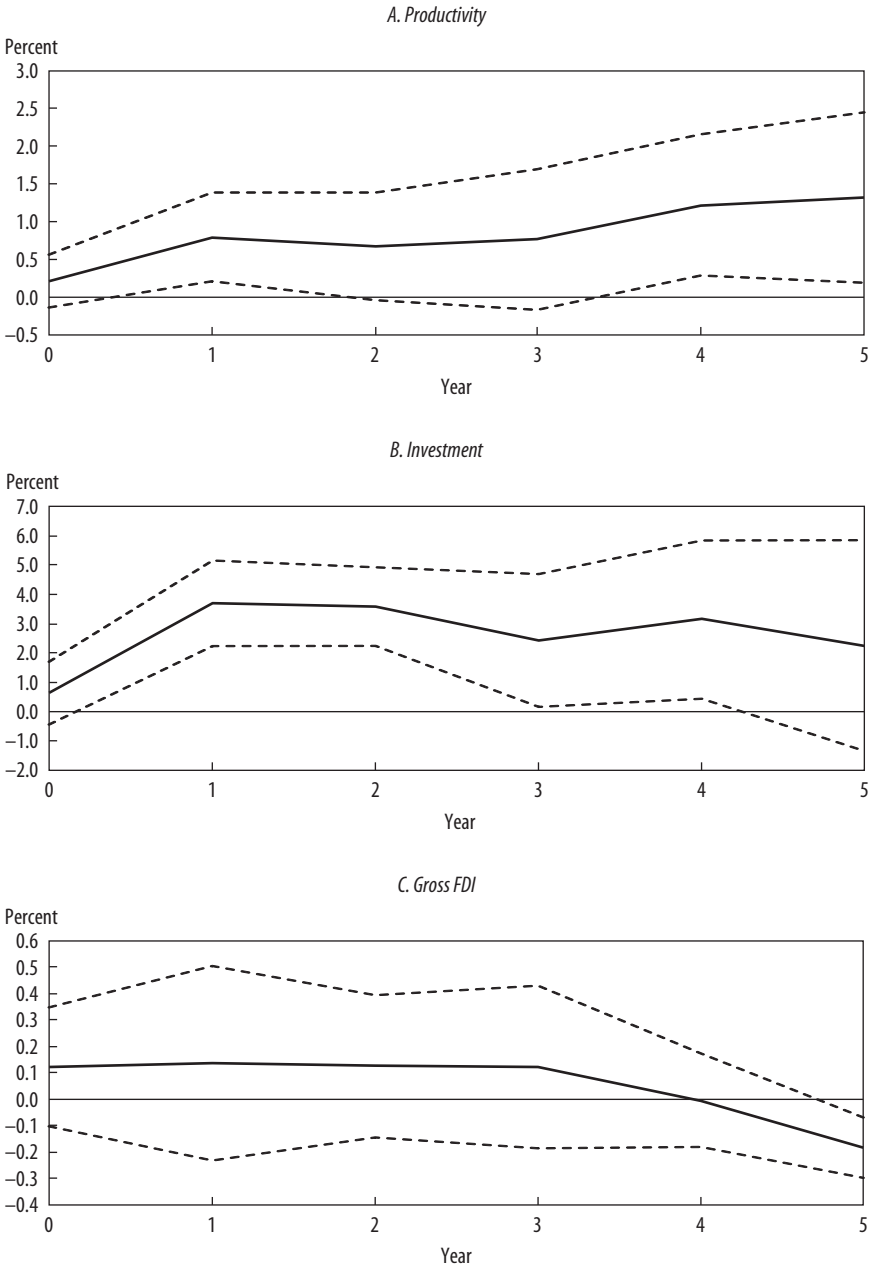
Source: Authors' calculations, based on IMF data.

Note: The dashed lines show the 90 percent confidence interval for Driscoll-Kraay standard errors.

window of analysis. As in the baseline results, the increase in GDP following episodes of liberalization appears to be driven by a surge in investment (demand dimension) and an increase in agricultural and manufacturing value added (sectoral dimension).

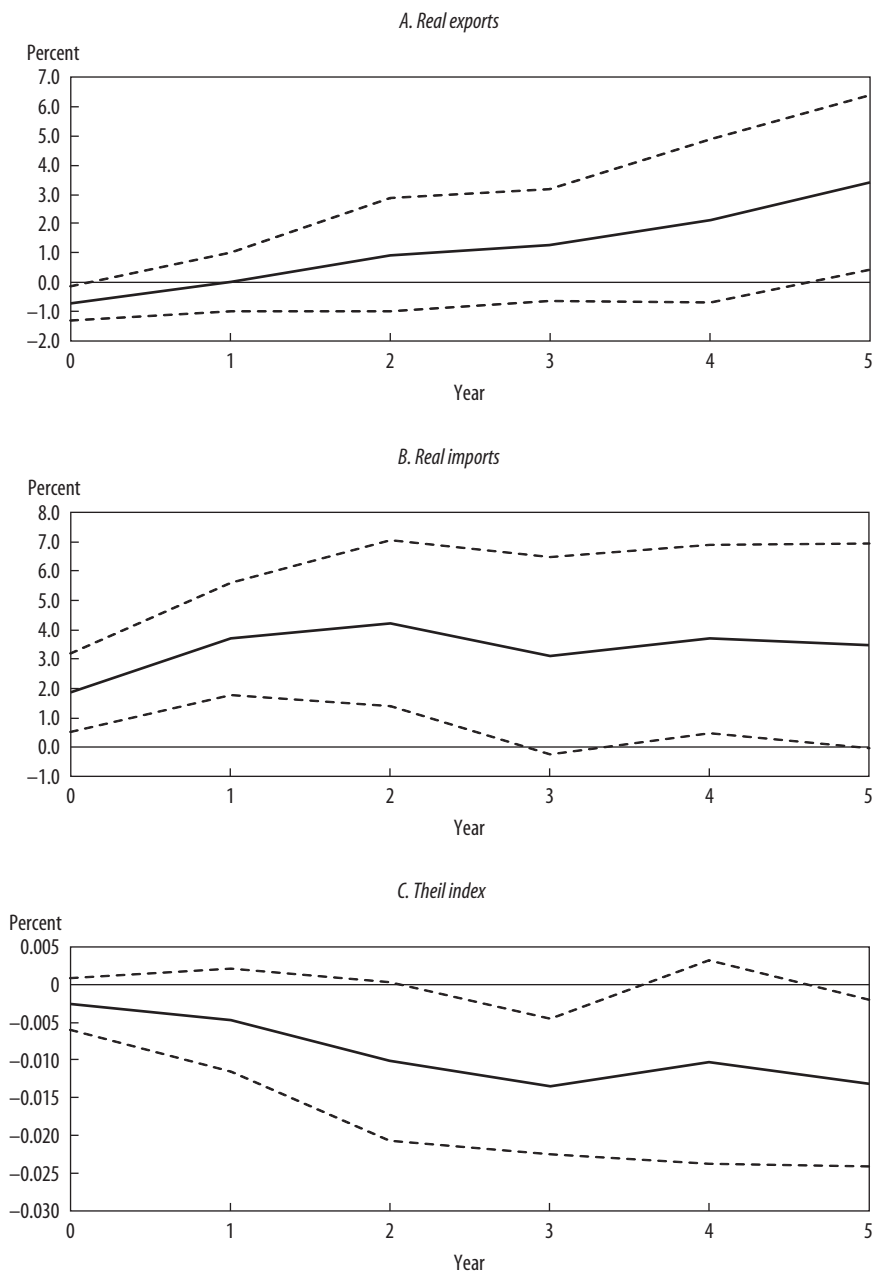
The IV estimates are similar in magnitude to the baseline exercise, but the significance of the results varies depending on the outcome of interest. For example, the IV approach shows that productivity increases following an increase in the structural reform index, but this increase takes four years to materialize (in the sense of statistical significance). The baseline exercise

**FIGURE 21 . Effects of Structural Reforms on Productivity and Investment: IV Approach**



Source: Authors' calculations, based on IMF data.  
 Note: The dashed lines show the 90 percent confidence interval for Driscoll-Kraay standard errors.

**FIGURE 22. Effects of Structural Reforms on Trade Outcomes: IV Approach**



Source: Authors' calculations, based on IMF data.

Note: The dashed lines show the 90 percent confidence interval for Driscoll-Kraay standard errors.

shows that TFP increases after liberalization, but the effect is (marginally) statistically significant after five years. For real exports, we get the opposite pattern: the impact of changes in the structural reform index in the IV exercise is significant only five years after the change, while in the baseline exercise we get statistical significance after two years.

## Conclusion

Throughout this paper, we have provided evidence suggesting that structural reforms have had broadly positive macroeconomic effects on a number of dimensions in countries in Latin America and the Caribbean. Nevertheless, reforms in some areas remain highly controversial in the region. Despite the potentially positive effects of trade, product market, and financial market reforms documented in this paper, there is still significant resistance from the public in the region toward reform efforts in these areas, in particular as far as trade liberalization is concerned. This could be explained by a number of factors considered in the political economy literature, including uncertainty regarding the winners and losers from reform (Alesina and Drazen, 1991; Fernández and Rodrik, 1991).

Another potential obstacle could stem from concerns about the reforms' effects on electoral outcomes and their associated political costs. Alesina and others (2020) find that timing matters in this regard. If reforms are implemented early in the political cycle, they are less likely to entail electoral costs. In fact, empirically, reforms are only associated with electoral costs if they are implemented the year before the election. Overall economic conditions also matter. Reforms implemented in periods of strong economic activity typically are not penalized by the electorate.

The paper also discussed evidence that the effects of reforms are not uniform across segments of the population. In that context, the adoption of policies to mitigate the adverse effects of reforms is crucial and will help to foster sustainability. For example, when discussing reforms to liberalize labor markets, Duval and Loungani (2019) highlight the importance of strengthening unemployment insurance and other social benefits at the same time to guarantee adequate protection of workers. The tax system could also be used to redistribute some of the gains from reform. In most countries in the region, there is scope to increase the role of progressive (nonlinear) personal income taxes in the tax structure, while enhancing redistributive policies on the expenditure side.

## Appendix: Data Sources and Definitions

*Business confidence*: Log of index number. A value over 100 is optimistic.

Source: Haver Analytics.

*Commodity terms of trade*: Log of commodity terms-of-trade index. Source:

Gruss and Kebhaj (2019).

*Employment*: Log of employment (in thousands of people). Source: World Economic Outlook database.

*Export concentration*: Theil entropy index. Source: Authors' calculations, based on the Standard International Trade Classification (SITC), Revision 2.

*Foreign direct investment*: FDI inflows, percent of GDP in U.S. dollars. Source: IMF Financial Flows Analytics (FFA) database.

*Inequality index*: Gini index (World Bank estimate). Source: World Development Indicators.

*Informality rate*: Share of active workers not contributing to social security.

Source: IDB Social Security Information System (SIMS) database.

*Poverty rate*: Poverty headcount ratio at USD 3.20 a day (2011 purchasing power parity). Source: World Development Indicators.

*Real exports and imports*: Exports and imports of goods and services, in 2010 U.S. dollars. Source: World Development Indicators.

*Real GDP*: Log of real GDP (in billions of local currency units). Source: World Economic Outlook database.

*Real investment*: Log of real gross capital formation (in billions of local currency units). Source: World Economic Outlook database.

*Real sectoral value added*: Sectoral value added, in constant 2010 U.S. dollars. Source: World Development Indicators

*Structural reform index*:. See main text. Source: Alesina and others (2020) and authors' calculations.

*Total factor productivity*: TFP at constant national prices (2011 = 1). Source: Feenstra, Inklaar, and Timmer (2015).

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