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Asymmetric Labor Market Responses to External Demand Fluctuations: Evidence from Latin America

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Abstract

This paper examines how external demand fluctuations transmit asymmetrically to labor market outcomes in Latin America — a region where structural informality and institutional rigidity shape the margins of employment adjustment. Using a balanced panel of 16 countries from 2001 to 2019, we estimate asymmetric impulse-response functions via local projections with long differences, disaggregating labor market responses by employment category following the ICSE-93 classification. Results reveal a fundamental asymmetry: wage employment does not respond to positive external demand episodes but contracts significantly during negative ones, while self-employment exhibits a countercyclical pattern — declining during expansions and expanding as a buffer during downturns. Unemployment plays a minimal role in the adjustment process. Subgroup analyses document substantial heterogeneity within the region: economies with more efficient labor markets and higher trade openness adjust faster and through salaried employment margins, while less efficient and more closed economies rely predominantly on self-employment, with more persistent effects. These findings highlight labor market duality and institutional rigidity as the primary conditioners of asymmetric employment adjustment to external demand fluctuations in Latin America, with implications for the design of policies aimed at building more resilient and inclusive labor markets.

Key words: External Demand Fluctuations, Latin America, Labor Market Adjustment, Informality, Local Projections, Asymmetry.

JEL Codes: E24, E26, F16, J23, C33

1. Introduction

In Latin America, unemployment increased by 0.8% after the Great Recession and by 2.5% following the pandemic (CEPAL, 2021, 2010). Although Latin America adopted fiscal and monetary measures, they were insufficient to mitigate the negative effects, revealing deep structural weaknesses in labor markets (Busso et al., 2021; Celasun et al., 2015; De Gregorio, 2013). These vulnerabilities are not merely cyclical: they reflect the interaction between labor market regulation, structural informality, and external demand exposure; three factors that jointly shape how employment adjusts when global conditions deteriorate.

Growing economic interdependence means that developing countries' structural dependence on external demand increases their labor market vulnerability to external demand fluctuations (Jacho et al., 2024; Österholm and Zettelmeyer, 2008; Valenzuela, 2024). In Latin America, countries with labor markets characterized by high levels of informality and limited social protection coverage are particularly vulnerable to external demand fluctuations (Leyva and Urrutia, 2020). Indeed, the high levels of labor informality in these economies are linked to rigid formal labor regulations, high dismissal costs, elevated minimum wages, and extensive bureaucratic procedures. However, enforcement of these regulations is limited, leading to labor market segmentation—where only a minority of workers have access to protected formal employment, while informality without labor guarantees prevails (Leyva and Urrutia, 2020). This duality means that, in the face of adverse external demand conditions, formal firms adjust slowly due to legal constraints, while the burden of adjustment falls primarily on informal employment (Kugler et al., 2023). In sum, rigid labor markets amplify the transmission of external demand fluctuations into employment outcomes. One related

adjustment margin is self-employment, which may absorb workers displaced from salaried employment when formal job opportunities are limited (Aristizabal-Ramirez et al., 2024; Benguria et al., 2024; Lei et al., 2023).

In Latin America, informal employment accounts for over 50% of total employment on average (International Labor Organization, 2018a). Kugler et al., (2023) showed that informality acts as a buffer in recessions: workers move from formal to informal jobs, containing unemployment but worsening job quality. Overall, the region is characterized by chronically high informality, weak enforcement of labor regulations, and a strong dependence on external factors. This was evident in the commodity supercycle, when South American growth strongly correlated with labor market dynamics (Villca and Torres-García, 2023). The lack of productive diversification in Latin America also contributes to greater economic volatility and limits the potential for sectoral employment reallocation in response to external demand fluctuations, which, in turn, pushes workers toward informal subsistence (Hafner, 2021; Kluge, 2018; Schipke, 2015).

In Central America, recessions in the United States negatively affect formal employment and economic activity due to high dependence on exports, remittances, and tourism-related services. As a result, Latin America's structural characteristics intensify the transmission of global economic cycles to the region. However, Leyva and Urrutia (2020) found that economic activity is more volatile than labor market indicators because informality acts as a buffer, mitigating increases in unemployment and dampening fluctuations in consumption. Moreover, this transmission is not homogeneous within the region: countries differ in their degree of trade openness and labor market

flexibility, which conditions both the speed and the margins of adjustment to external demand fluctuations.

Despite their importance, few theories or empirical studies rigorously examine external demand's impact on employment in Latin America and the Caribbean. The literature tends to focus on sector-specific or country-specific approaches, and there is a lack of empirical evidence that systematically analyzes the asymmetric response of the regional labor market to external demand fluctuations (Valenzuela, 2024; Connolly, 2022). Existing work typically treats Latin America as a homogeneous block, masking the substantial heterogeneity in institutional conditions and external exposure that shapes labor market responses within the region.

In this context, the aim of this study is to provide empirical evidence on how the Latin American labor market responds to external demand fluctuations, while also contributing to a better understanding of labor dynamics in the region. Specifically, we analyze the asymmetric effects of positive and negative external demand episodes on the labor market in Latin America and the Caribbean, using a panel of 16 countries from 2001 to 2019. External demand conditions are measured as the GDP growth of the United States, China, and the EU, weighted by each Latin American country's bilateral exports to these economies. This measure is treated as exogenous to domestic labor market outcomes, given that growth dynamics in these major economies are not driven by labor market conditions in Latin America (Canova, 2005). Using Local Projections, we estimate effects on employees, employers, own-account workers, contributing family workers, unemployment, and labor force. Moreover, to account for possible heterogeneity in employment responses to external demand fluctuations, we conduct estimations for (1) the full sample, and three subgroups based on:

(2) geographic area (South America vs. Central America); (3) labor market efficiency; and (4) the level of trade openness.

The findings suggest that positive external demand episodes are not associated with an increase in employees; instead, the adjustment occurs mainly through self-employment. In contrast, negative episodes lead to a reduction in employees and adjustments in self-employment. In both cases, the main adjustment mechanism operates through self-employment —whether own-account workers, employers, or contributing family workers. These findings highlight labor market rigidities and self-employment as key adjustment margins, with unemployment playing a limited role. The speed and composition of adjustment also vary across regions and according to labor market efficiency and trade openness. This paper contributes to the literature by providing systematic evidence on asymmetric labor market responses to external demand fluctuations using a disaggregated employment classification based on ICSE-93, documenting heterogeneity within Latin America across institutional and structural dimensions, and applying a methodologically robust framework suited to the small-sample constraints of the regional panel.

The remainder of the paper is organized as follows. Section 2 reviews the literature on labor market duality, institutional adjustment margins, and the role of trade openness in shaping employment responses to external demand conditions. Section 3 describes the data and construction of the external demand measure. Section 4 presents the local projections methodology and the asymmetric specification. Section 5 reports the main results, Section 6 summarizes the robustness checks, with complete Wild Cluster Bootstrap results reported in the annexes, Section 7 discusses the findings and their policy implications, and Section 8 concludes.

2. Literature Review

2.1. External Demand and Employment in Latin America

From a macroeconomic perspective, a country's economic growth can be driven by both internal and external components of aggregate demand. In developing economies with nominal rigidities and underused factors, demand increases directly raise output (Schaal and Taschereau-Dumouchel, 2016). Domestic demand consists of private consumption, investment, and government spending, while external demand is primarily determined by net exports—whose dynamics depend on both the economic activity of trading partners and external competitiveness, reflected in variables such as the real exchange rate and terms of trade (Zestos et al., 2021). Developing countries rely heavily on external demand, given weak domestic demand and export specialization in primary or low–value-added goods (Hafner, 2021; Schipke, 2015). This structure restricts the development of more technologically dynamic sectors and limits sustained economic growth. Lack of export diversification raises exposure to external demand fluctuations and hinders productivity, innovation, and human capital gains needed for long-term growth (Agosin, 2009).

Latin America's dependence on external demand makes it particularly vulnerable to fluctuations in trading-partner growth, export volumes, or terms-of-trade shifts (Baffes and Kabundi, 2021; Fernández and Calva, 2010), with structural roots linked to persistent macroeconomic and institutional weaknesses. Several countries in the region exhibit low productive diversification and high export concentration, limiting their capacity to adapt to declines in external demand or changes in the terms of trade (Carrasco and Tovar-García, 2021; Valdecantos and Abeles, 2016). Low systemic productivity, limited technological sophistication, and logistical constraints hinder competitive integration into global markets, exacerbating exposure to external demand fluctuations

(Barrot et al., 2018; Lu et al., 2024). Taken together, external dependence and structural fragility leave the region particularly exposed to fluctuations in external demand conditions (De Almeida et al., 2024).

Fluctuations in external demand affect not only economic growth but also labor markets (Moreira and Najberg, 2000). Increases in output driven by external demand tend to raise labor demand, particularly in tradable sectors. From a production linkage perspective, employment responds to external demand fluctuations through direct, indirect, and induced effects. The direct effect is reflected in increased employment in the export sectors; the indirect effect occurs through production linkages with related sectors. The induced effect arises when rising incomes in the benefiting sectors lead to higher aggregate consumption, amplifying the overall employment impact (Barros and Guilhoto, 2014; Durán Lima and Castresana, 2016). However, developing economies often exhibit a marked inelasticity between employment and output—a phenomenon known as jobless growth—meaning that economic growth does not necessarily translate into proportional employment gains (Haider et al., 2023; Prachowny, 1993). Trade improvements do correlate with higher employment and diversification, especially in agriculture and services (Gnangnon, 2020), though the debate on the magnitude and distribution of these effects remains open.

Recent evidence for Mexico provides a direct illustration of this transmission mechanism. Estefan (2026) exploits variation in local exposure to shifts in U.S. demand and shows that demand expansions increase employment in Mexico's export manufacturing sector while reducing unemployment and inactivity, rather than raising wages. However, these gains do not spill over to other sources of formal employment and are accompanied by increased informality in

nonmanufacturing activities. These findings illustrate that the labor market effects of external demand depend not only on the magnitude of the external impulse but also on the productive structure through which it is transmitted, with export-oriented sectors responding more directly while spillovers to the rest of the economy may remain limited.

An additional mechanism shaping the transmission of external fluctuations operates through labor market segmentation. Lambert et al. (2020) develop a small open-economy model with formal and informal sectors and show that informality can act as a shock absorber over the business cycle: adjustment along the formal–informal margin limits movements along the employment–unemployment margin. Consistent with this mechanism, they document that informality is countercyclical and that unemployment tends to respond less strongly to output fluctuations in economies with higher informality. This implies that external demand fluctuations may generate substantial labor reallocation without producing proportionate changes in unemployment. Although our employment-status variables do not directly identify formality, this mechanism motivates examining multiple margins of labor market adjustment rather than focusing exclusively on aggregate employment or unemployment.

2.2. Productive and Labor Duality in Latin America

Developing-country labor markets face persistent structural limits on generating quality jobs and integrating workers into productive sectors. Lewis (1954) described this reality as productive duality, characterized by the coexistence of a modern, high-productivity sector and a traditional, low-productivity sector marked by labor surplus and low wages — a duality that persists over time, perpetuating inequalities rather than declining with growth (Kesar and Bhattacharya, 2020). In Latin

America, this *duality* takes on specific and persistent characteristics. Prebisch (1963) noted uneven technological progress, benefiting few modern sectors while much of the economy stagnates. Pinto (1970) argued that productivity in traditional sectors remains low due to structural constraints, preventing sectoral convergence and perpetuating underemployment. This segmentation not only persists but has intensified in recent decades. Figal Garone et al. (2020) document that firms at the 90th percentile produce almost seven times more than those at the 10th, even within the same sector.

Hart (1973) helped establish the modern analysis of informality by documenting income-generating activities outside standard wage employment. While subsequent structuralist approaches to Latin American labor markets have often associated wage employment with the formal segment and self-employment with the informal segment, the two classifications are not equivalent. Employment status and formality capture distinct dimensions of labor market participation: salaried workers may be informally employed, while self-employed workers may operate formally. Labor informality persists as a structural feature, especially in contexts of high initial inequality, and its origins lie not in individual choices or regulatory burdens alone, but in the historical and structural conditions of labor markets (Gutiérrez-Romero, 2021). This informality is reinforced by a productive structure concentrated in low value-added sectors with limited technological sophistication, where the absorption of technological progress is constrained by deficits in human capital, infrastructure, and institutional capacity (Fuentes and Mies, 2021).

In Latin America, the labor structure reflects the region's productive duality. Figueroa (1994) emphasized the segmentation between wage employment and self-employment as an important

feature of this structure. Although self-employment is frequently associated with informality and low-productivity activities in the region, it should not be treated as synonymous with informal employment. Occupational segmentation reflects a combination of structural exclusion, historical inequality, weak labor institutions, and heterogeneous incentives that shape workers' and firms' choices between different employment arrangements (Gutiérrez-Romero, 2021; Solís et al., 2019; Ulyssea, 2018). Eslava et al. (2021) showed that approximately two-thirds of Latin America's labor force is concentrated in small units—self-employment and microenterprises—while only 18% work in large firms, compared to 56% in the United States. Additionally, Eslava et al. (2025) found that self-employment in the region remains strongly tied to low-productivity activities, as most microenterprises in developing countries fail to evolve into formal, productive units. This evidence points to labor market duality as a persistent structural condition, rooted in productive inequality and reinforced by institutional limitations — one that shapes employment and income trajectories while weakening the labor market's capacity to benefit from rising external demand.

The informal sector is itself heterogeneous. Maloney (2004) challenges the traditional view of informality as merely a disadvantaged residual of segmented labor markets and argues that, particularly among microentrepreneurs and self-employed workers, informal activity may also reflect voluntary occupational choice and the value workers place on autonomy, flexibility, and other non-wage job attributes. This does not imply that informal workers are necessarily better off, but rather that informality cannot be interpreted exclusively as the outcome of exclusion from formal employment.

More recent evidence reinforces this heterogeneous view. Giosa Zuazua & Fernández Massi (2020) identify a 'new informality', referring to workers operating informally within formal structures through subcontracting, while Otero-Cortés (2022) shows that some workers in Brazil self-select into informality in response to non-wage costs of formality, preferences for labor flexibility, and individual comparative advantages. Taken together, this literature suggests that informality may arise both from exclusion and from occupational choice, depending on workers' constraints, incentives, and employment opportunities. Overall, the region faces a deeply segmented economic structure in which a modern pole—technologically more advanced but limited in size—coexists with a large traditional sector marked by low productivity and persistent informality.

The dual nature of Latin America's labor market is deeply shaped by its institutional framework. According to North (1990), institutions encompass both formal and informal rules that shape the incentives and constraints guiding individual decisions. In Latin America, labor institutions are characterized by uneven coverage, limited enforcement capacity, and rigid regulations that discourage formalization (Solís et al., 2019). Ulyssea (2018) provides a firm-level foundation for this mechanism by showing that informality can arise along two distinct margins: firms may remain unregistered, or registered firms may hire workers off the books. Importantly, these margins need not respond in the same way to policy changes, implying that regulation and enforcement shape formalization incentives at both the firm and worker levels rather than through a single formal–informal divide. Thus, labor regulations and their enforcement contribute to a segmented system in which firms and workers face different incentives and constraints regarding formalization.

David et al. (2020) highlight that regulatory constraints, along with the lack of social protection and unemployment insurance, make self-employment and informality the only viable alternatives for many workers. Such shortcomings hinder upward mobility, worsened by low human capital (Schneider and Karcher, 2010). Therefore, institutional conditions both reflect development asymmetries and reproduce labor market segmentation. This duality has direct implications for how external demand fluctuations transmit to employment outcomes: when external conditions improve, rigid formal labor regulations limit the capacity to create new salaried jobs, while self-employment absorbs the adjustment during downturns. The degree to which this mechanism operates depends critically on the institutional setting and the intensity of trade-related competitive pressures faced by each economy (Gambetti and Messina, 2018; Saavedra and Torero, 2004).

2.3. Labor Market Adjustment to External Demand Fluctuations

Latin America's labor market structure shapes responses to external demand fluctuations. Jiménez (2012) argues that, given the region's characteristics, these effects should not be analyzed in aggregate terms but by distinguishing between types of labor force participation. This view is also consistent with Lambert et al. (2020), whose theoretical framework shows that the presence of alternative employment margins can dampen adjustment through unemployment, allowing shocks to be absorbed through reallocations within the labor market. Specifically, adjustment occurs not only through unemployment but also through self-employment, which in Latin America often serves as a subsistence mechanism in the absence of formal employment opportunities (Leyva and Urrutia, 2020). Navarro (2009) showed that in recessions salaried jobs fall more than total employment, underscoring informality as an adjustment mechanism. Quantitatively, Bosch and Maloney (2008) estimate that a 1% GDP drop reduces formal jobs by 0.5% and raises informal jobs by 0.2%. These transitions between labor market segments are not random: during expansion phases, workers tend

to shift toward salaried employment, whereas in contraction phases, they return to self-employment or informal jobs—a pattern especially pronounced among vulnerable groups such as women, youth, and low-skilled workers (Bosch and Esteban-Pretel, 2012; Ulyssea, 2020).

Related evidence from trade shocks further illustrates the importance of considering multiple margins of labor market adjustment. Dix-Carneiro and Kovak (2019), studying Brazil's trade liberalization, show that trade-induced changes in local labor demand generate adjustment through earnings, sectoral reallocation, non-employment, and transitions between formal and informal employment. Importantly, adjustment evolves over time: harder-hit regions initially experience increases in non-employment, while in the longer run informal employment becomes a more important margin of absorption, with suggestive evidence of increased self-employment among workers with limited traditional employment opportunities. Although trade liberalization represents a different external disturbance from the external demand fluctuations studied here, their evidence demonstrates that focusing exclusively on unemployment or aggregate employment can obscure substantial reallocation across labor market states.

In response to positive external demand episodes, employment outcomes are often shaped by limited productive diversification, logistical constraints, and the effects of currency appreciation (Kandil, 2011). In such contexts, firms adjust on the intensive margin—increasing existing labor use—rather than new hiring, given rigid rules and high non-wage costs (Gambetti and Messina, 2018). These characteristics weaken the transmission of positive external fluctuations to employment and, in some cases, may contribute to inflationary pressures (Kandil, 2011). In contrast, negative external demand episodes—such as slowdowns in China, the United States, or Europe—reduce regional

activity given export dependence (Erten, 2012). Many countries in the region follow procyclical macroeconomic policies, which constrain their ability to implement countercyclical measures during economic downturns (Vegh and Vuletin, 2014), thus limiting the fiscal space for active labor market interventions (Calderón et al., 2004).

At the firm level, wage rigidity limits cost reductions, making layoffs the main adjustment mechanism—raising unemployment and prolonging the effects of negative external demand episodes (Loría and Salas, 2022; Kandil, 2011). Informal workers, lacking access to unemployment insurance or safety nets, face greater vulnerability during downturns (Kose et al., 2023). From a microeconomic perspective, exit costs are typically lower than entry costs, making it easier—both in terms of time and resources—to scale down production than to expand it (Arango and Melo, 2006). As a result, labor market adjustments tend to be faster during recessions, while employment gains during expansions are more gradual. This asymmetry between the speed of adjustment during contractions versus expansions is further conditioned by each economy's degree of labor market flexibility and trade openness: more flexible and open economies tend to exhibit faster salaried-employment responses, while less flexible and more closed economies rely predominantly on self-employment margins (Saavedra and Torero, 2004; Carrasco and Tovar-García, 2021).

However, empirical evidence on the effects of external demand fluctuations across different labor conditions—whether general or differentiated by sign—is scarce. Nevertheless, asymmetric employment responses over the business cycle have been documented. In Ecuador, unemployment reacts more strongly during recessions than during expansions (Latorre, 2009). In Mexico, Briceño and Alanez (2003) showed that the decrease in unemployment during expansions is smaller than the

increase during downturns. More recent findings for Mexico indicate that unemployment is statistically related to output only during contractions (Loría and Salas, 2022). A similar pattern has been observed in Chile (Gonzalez, 2023). Kose et al. (2023) reported that in emerging economies, self-employment tends to rise by an average of 0.7% during recessions and decline by 0.4% during expansions. These findings stress the need to account for occupational heterogeneity in analyzing employment effects of external demand fluctuations.

Taken together, the literature suggests several expectations for the empirical analysis. First, positive and negative external demand episodes need not generate symmetric changes in salaried employment: hiring frictions and adjustment costs may weaken or delay employment creation during expansions while allowing faster employment contraction when external demand deteriorates (Arango and Melo, 2006; Gambetti and Messina, 2018). Second, adverse external conditions may be absorbed through multiple labor market margins, including own-account work and labor force participation, thereby limiting the adjustment observed through unemployment alone (Dix-Carneiro and Kovak, 2019; Lambert et al., 2020). Third, these responses should vary with labor market institutions: more efficient labor markets are expected to facilitate faster adjustment through salaried employment, whereas less efficient markets may rely more heavily on alternative employment margins (Saavedra and Torero, 2004; Ulyssea, 2018). Finally, stronger integration with international markets should accelerate the transmission of external demand conditions to domestic labor demand, while less open economies may exhibit slower and more persistent adjustment (Carrasco and Tovar-García, 2021; Estefan, 2026). The empirical analysis therefore evaluates not only whether labor market responses are asymmetric, but also the margins through which adjustment occurs and how these vary across institutional and structural environments.

3. Data

We use a balanced annual panel from 2001–2019 covering 16 Latin American and Caribbean countries. The sample comprises Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Ecuador, El Salvador, Guatemala, Mexico, Nicaragua, Panama, Paraguay, Peru, the Dominican Republic, and Uruguay. The panel consists of 304 observations (T=19, N=16). To account for possible heterogeneity in employment responses to external demand fluctuations, we conduct estimations for (1) the full sample, and three subgroups based on: (2) geographic area (South America vs. Central America); (3) labor market efficiency; and (4) trade openness.

3.1. Labor Market Variables

The labor market variables were constructed based on the *International Classification of Status in Employment* (ICSE-93). This classification divides employment into two broad groups: employees and self-employed workers. The latter is further broken down into three subcategories: employers, own-account workers, and contributing family workers[1]. Therefore, we analyze four employment-related variables: employees and the three categories of self-employed workers—employers, own-account workers, and contributing family workers. We also examine unemployment and labor force participation as supplementary variables. All variables are expressed as shares of the working-age population, allowing more accurate cross-country and time comparisons unaffected by participation-rate changes. All variables were obtained from the International Labour Organization

[1] Employees are those workers who have explicit or implicit employment contracts for which they receive a remuneration. Self-employed workers are those whose income depends directly on the profits generated from the goods and services they produce. Employers are self-employed workers who continuously hire one or more persons to work for them. Own-account workers are self-employed individuals who do not employ others on a continuous basis. Contributing family workers are own-account workers who work in a business operated by a related person living in the same household (International Labor Organization, 2018b).

(ILO). Importantly, the ICSE-93 classification captures status in employment rather than employment formality. Accordingly, employees should not be interpreted as synonymous with formal workers, nor should self-employed workers be interpreted as synonymous with informal workers. Throughout the empirical analysis, we therefore interpret these variables strictly as employment-status categories. Informality is discussed as a related structural characteristic of Latin American labor markets, but it is not directly measured by our employment-status variables.

3.2. Control Variables

To account for macroeconomic, structural, demographic, institutional, human capital, and external factors—beyond partner countries' growth—we incorporate a set of control variables. Real per capita GDP growth (2015 US$) reflects cyclical labor demand, as higher growth tends to increase employment (Porras-arena and Martín-román, 2023). Agriculture's value added (% of GDP) proxies structural composition, since agrarian economies typically display less labor-intensive growth (Porras-arena and Martín-román, 2023). Net migration shifts labor supply, with emigration shrinking the workforce and participation (Xiang and Ghazanchyan, 2025). All three variables are obtained from the World Bank. Demographic conditions are captured by the under-15 dependency ratio—defined as the number of individuals under age 15 relative to total employment—provided by the ILO, which signals high youth dependency likely to depress labor force participation. Institutional conditions are measured through a labor market regulation index from the Fraser Institute, encompassing hiring regulations, minimum wages, severance costs, maximum working hours, and mandatory military service; stricter rules often dampen formal job creation and raise informality (David et al., 2020). Human capital is proxied by the average years of schooling from the United Nations Development Programme (UNDP), since more education correlates with higher

participation and lower unemployment and informality (Kugler, 2019). External conditions are further captured by the commodity terms-of-trade index compiled by the International Monetary Fund (IMF), as booms spur job growth while busts weaken labor markets (Balakrishnan et al., 2021). Finally, in the unemployment specifications we control for the economy's informality rate and the consumer price index (CPI), both from the World Bank, while in the labor force participation specifications we add the adolescent fertility rate and the share of urban population, also from the World Bank, reflecting the roles of informality, price stability, early motherhood, and urban opportunities.

3.3. Construction of the External Demand Variable

The external demand variable was constructed following a methodology similar to that proposed by Österholm & Zettelmeyer (2008). This measure is treated as exogenous to domestic labor market outcomes, given that growth dynamics in the United States, China, and the European Union are not driven by labor market conditions in Latin American economies (Canova, 2005). We do not claim to identify structural disturbances in the sense of sign or magnitude restrictions; rather, we exploit variation in external demand conditions to estimate asymmetric employment responses across occupation categories. Specifically, we compute a weighted average of real GDP growth in the United States, China, and the European Union, using each partner's share in the export basket as weights. International trade data are from the UN Comtrade database. To obtain a zero-centered series that distinguishes positive from negative external demand episodes, we demean the measure by subtracting its country-specific historical average. The construction proceeds as follows:

$$P_{jit} = \frac{EXP_{jit}}{EXP_{it}} \qquad (1)$$

Where P_{jit} represents the export weight in year t for country i directed to country j (United States, China, and the European Union). EXP_{jit} denotes the total value of goods and services exported from country i to country j in year t. EXP_{it} is the total exports of goods and services from country i in year t. Thus, the weight reflects the relative importance of each of the three external demand reference countries in the export composition of Latin American economies. Subsequently, the weights were normalized to sum to one.

$$\Phi_{jit} = \frac{P_{jit}}{\sum_{j=1}^{j=3} P_{jit}} \quad (2)$$

We then computed the weighted average of real GDP growth (in constant 2015 US dollars) for the United States, China, and the European Union.

$$\psi_{jit} = \sum_{j=1}^{j=3} \Phi_{jit} \cdot \Delta y_{jt} \quad (3)$$

Finally, to distinguish between positive and negative external demand episodes on the labor market, we subtracted the country-specific historical mean of external demand growth. This adjustment centers the series around zero, allowing us to define positive (negative) episodes as those where external demand exceeds (falls below) the country's historical average.

$$\mu_i = E(\psi_{jit}) \quad (4)$$

$$s_{it} = \psi_{jit} - \mu_i \quad (5)$$

4. Methodology

4.1. Local Projections

We use the local projections approach proposed by Jordà (2005), a method that allows for the dynamic estimation of the effects of external demand fluctuations over time without imposing strong restrictions on the model's dynamics. In our analysis, the external demand variable is treated as exogenous, following Canova (2005), as it is constructed using the real GDP growth of systemic economies such as the United States, China, and the European Union. These economies are not subject to feedback effects from labor market dynamics in Latin American countries, thereby minimizing the risk of reverse endogeneity bias. Local projections consist of a sequence of regressions in which the dependent variable, shifted forward by a given number of periods, is modeled as a function of the external demand variable and a set of control variables, including lags of both endogenous and exogenous variables. The functional form of the local projections is shown below:

$$y_{it+h} = \alpha_{ih} + \nu_{th} + \beta_h s_{it} + \lambda_h X_{it} + \sum_{i=1}^{p} \gamma_h y_{t-i} + \sum_{j=1}^{q} \vartheta_h s_{t-i} + u_{it+h} \qquad (6)$$

Where, y denotes the dependent variable, α_i captures individual fixed effects, ν_t refers to time fixed effects, s represents the exogenous external demand measure, X r is a vector of control variables, and u denotes the error term. The model also includes lags of both the dependent and the exogenous variable. Local projections offer several advantages: (1) they can be estimated using Ordinary Least Squares (OLS); (2) they are more robust than Vector Autoregressive (VAR) models in the presence of misspecification; and (3) they allow for simpler analytical and individual inference (Jordà and Taylor, 2024). Their flexibility to accommodate nonlinear specifications — such as the asymmetries examined here — is the main reason they are adopted in this study (Jordà and Taylor, 2024).

We can estimate the model using either variables in levels or in first differences. Since several of the dependent variables may exhibit unit roots, estimating the model in levels could lead to spurious relationships. However, an alternative approach that is asymptotically equivalent to estimation in levels involves the use of long differences (Jordà and Taylor, 2024). Piger & Stockwell (2023) show that, regardless of unit root presence, long differences are among the most effective strategies for reducing small-sample bias. This methodology involves estimating a regression where the dependent variable is defined as the difference between its value at horizon h and its first lag, while including as controls the differences of the lags of the explanatory variables. The formal specification is presented in Equation 7.

$$y_{it+h} - y_{it-1} = \alpha_{ih} + \nu_{th} + \beta_h s_{it} + \lambda_h X_{it} + \sum_{i=1}^{p} \gamma_h \Delta y_{t-i} + \sum_{j=1}^{q} \vartheta_h s_{t-i} + u_{it+h} \quad (7)$$

4.2. Asymmetric Adaptation of Local Projections

According to Caravello & Martinez-Bruera (2024), nonlinearities may arise depending on either the sign or the magnitude of the external demand variation. This study focuses on identifying asymmetries based on the variable's sign. A key point is that, as long as the variable driving the asymmetry is exogenous, the resulting impulse response functions retain asymptotic validity and yield consistent estimates (Gonçalves et al., 2022). The asymmetric specification follows the approach proposed by Blot et al. (2024):

$$y_{it+h} - y_{it-1} = \alpha_{ih} + \nu_{th} + \beta_1^h (s_{it} * D_{it}^+) + \beta_2^h (s_{it} * D_{it}^-) + \lambda'_h X_{it} + \sum_{i=1}^{p} \gamma_h \Delta y_{t-i} + \sum_{j=1}^{q} \vartheta_h s_{t-i} + u_{it+h} \quad (8)$$

Where β_1^h, captures the response of the dependent variable to a positive external demand episode, while β_2^h represents the response to a negative episode. D_{it}^+ is a binary variable that takes the value of 1 when external demand growth exceeds the historical average, and 0 otherwise. Conversely, D_{it}^- equals 1 when external demand falls below the average, and 0 otherwise.

4.3. Estimation, Inference, and Subgroup Analysis

To assess the presence of unit roots in the control variables, we applied the Levin, Lin, and Chu (LLC) test, which is suitable for balanced panels without clear dominance between the cross-sectional and time dimensions (Barbieri, 2005). Control variables found to contain unit roots were differenced. Unit-root testing was not required for the dependent variables because these enter the local-projection specifications in long differences. To account for heteroskedasticity, serial correlation, and cross-sectional dependence, we use Driscoll & Kraay (1998) standard errors, following (Hoechle, 2007). All specifications additionally include country and time fixed effects.

To examine heterogeneity in the transmission of external demand fluctuations, we estimate the specifications for the full sample and for three alternative country groupings based on geographic region, labor market efficiency, and trade openness. The geographic comparison captures broad differences in economic structure, institutional coverage, and external exposure across the region (David et al., 2019). Labor market efficiency is used to assess whether institutional and regulatory differences condition the margins and speed of labor market adjustment, while trade openness

captures heterogeneity in countries' exposure and responsiveness to external conditions. For the latter two dimensions, countries are classified according to whether their average value over the analysis period lies above or below the sample median. Annexes 1 and 2 describe the underlying indicators and report the corresponding country classifications.

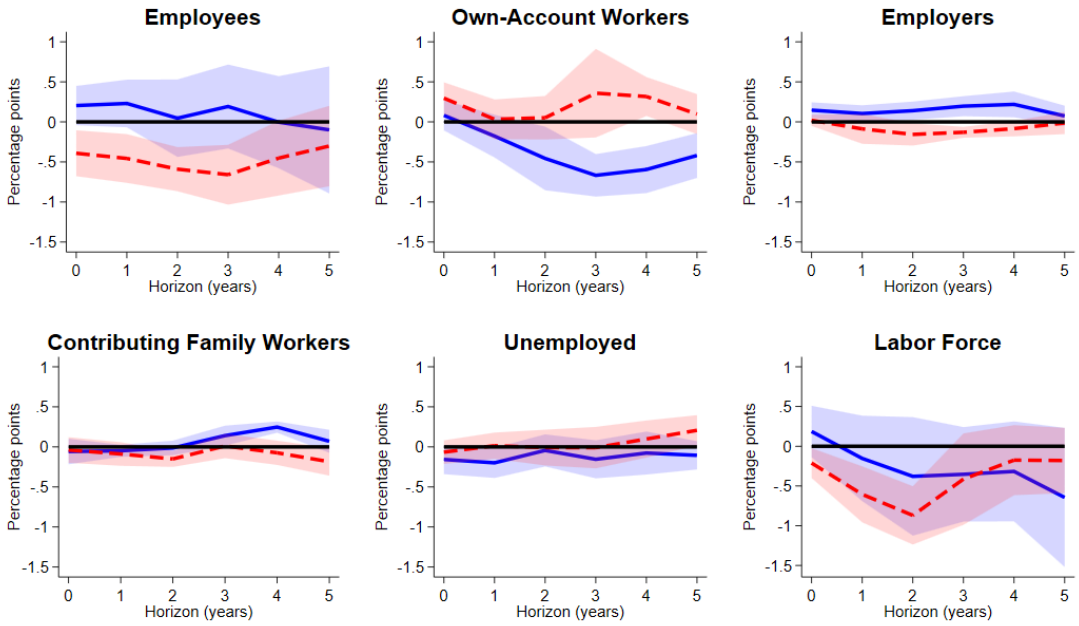
All subgroup specifications are estimated using the same local-projection framework and include country and time fixed effects. Driscoll–Kraay standard errors are retained to account for cross-sectional dependence, consistent with comparable panel applications (Cakal-Velagic and Silajdzic, 2024; Karşılı and Erkut, 2022; Khan, 2012). Given the limited number of country clusters, we additionally assess the robustness of inference using the Wild Cluster Bootstrap. Complete results are reported in Annex 3.

5. Results

5.1. Full Sample Results

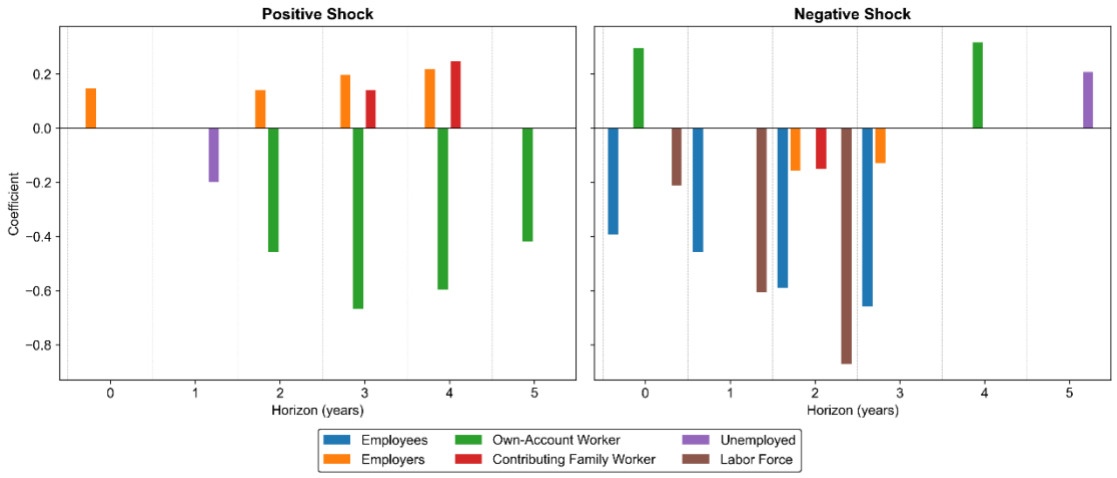
The results are analyzed using impulse response functions (IRF), which reflect the cumulative reaction of the different employment categories to both positive and negative external demand episodes. Figure 1 presents the IRF for different employment categories in response to both positive and negative external demand episodes. Figure 2 displays the statistically significant coefficients associated with these responses. As shown, employees respond only to negative external demand episodes. In contrast, own-account employment exhibits a countercyclical pattern, with stronger responses to positive episodes. Employers and contributing family workers react procyclically, although with limited magnitudes due to their small share in total employment. Unemployment shows a delayed reaction and only in response to negative episodes. Meanwhile, labor force participation does not respond to positive episodes but declines in the face of negative ones.

Figure 1. IRF by employment categories: full sample



Note: The solid blue line represents the response to a positive external demand episode, while the dashed red line represents the response to a negative external demand episode. Shaded areas indicate 90% confidence intervals (Driscoll-Kraay).

Figure 2 Coefficients in Response to Positive and Negative Episodes: full sample



Note: Bars are proportional to coefficient size. Only coefficients statistically significant at the 90% level (Driscoll-Kraay) are shown.

In response to a positive external demand episode, labor market dynamics reveal an internal reconfiguration of self-employment rather than an expansion of salaried employment or an increase in labor supply. Salaried employment, unemployment, and labor force participation show no statistically significant response, indicating that positive external demand episodes neither expand salaried employment nor draw additional workers into the labor force. This absence of a response in salaried employment may be explained by persistent structural labor rigidities—such as high hiring and firing costs—that discourage job creation even during periods of expansion (Bosch and Esteban-Pretel, 2012). In contrast, the most notable fluctuations occur within the self-employed group. Own-account work declines steadily, starting in period 2, dropping 0.7 points by period 3, and staying below its initial level even five years later.

This behavior confirms the countercyclical nature of own-account work; self-employment in the region tends to contract during expansionary phases of the economic cycle, as its safety-net function weakens under improved economic conditions (Loayza and Rigolini, 2011). At the same time, employers increase in periods 2–4, peaking at 0.2 points, while contributing family workers rise modestly in period 4. This suggests that self-employment is driven not only by subsistence but also by productive motivations, and that favorable conditions can shift its composition toward more organized forms of independent work (Cho et al., 2015; Maloney, 2004). Overall, external demand improvements neither expand salaried employment—typically associated with better job conditions—nor alter the overall labor force structure, but partly transform self-employment into more structured or collaborative forms.

In response to a negative external demand episode, the labor market reacts quickly and unevenly, reflecting an adjustment process that combines a contraction in salaried employment, a partial expansion of self-employment, and a contraction in labor force participation. Salaried employment falls from the first post-episode period, bottoming out in period 3 with a 0.6-point drop. This pattern aligns with studies documenting the high sensitivity of job destruction to negative demand episodes (Gallego and Tessada, 2007). Simultaneously, own-account employment increases in the first and fourth periods—by approximately 0.3 percentage points—highlighting its countercyclical role as a buffer against losses in salaried employment (Bosch and Maloney, 2008).

However, as observed under positive episodes, the adjustment dynamic across self-employment categories differs: both employers and contributing family workers decline, though to a lesser extent. Employers drop about 0.1 points in periods 2 and 3, suggesting small business closures or

weakening. Meanwhile, contributing family employment slightly drops in the second post-episode period, by roughly 0.1 percentage points—likely reflecting lower household income or reduced productive activity. Despite these disruptions, unemployment responds marginally and late, rising slightly in period 5, indicating that the primary adjustment channel is not unemployment. This muted unemployment response is consistent with theoretical and empirical evidence showing that, in segmented labor markets, adverse shocks may be absorbed through multiple employment and participation margins rather than unemployment alone (Dix-Carneiro and Kovak, 2019; Lambert et al., 2020; Leyva and Urrutia, 2020). This pattern has been documented across the region, where recessions prompt temporary withdrawals from the labor market among discouraged workers (Maridueña-Larrea and Martín-Román, 2024).

Overall, negative external demand episodes hurt Latin America more than positive ones. While positive episodes are associated primarily with shifts within self-employment, negative episodes trigger a multidimensional adjustment process: a reduction in salaried employment, a partial shift toward own-account work, a weakening of organized and collaborative forms of self-employment, and a temporary decline in labor force participation.

Taken together, these results are broadly consistent with the mechanisms outlined in Section 2.3. External demand contractions generate a stronger salaried-employment response than expansions, while own-account work and labor force participation provide additional margins of adjustment that limit the role of unemployment.

5.2. Geographic Region Results

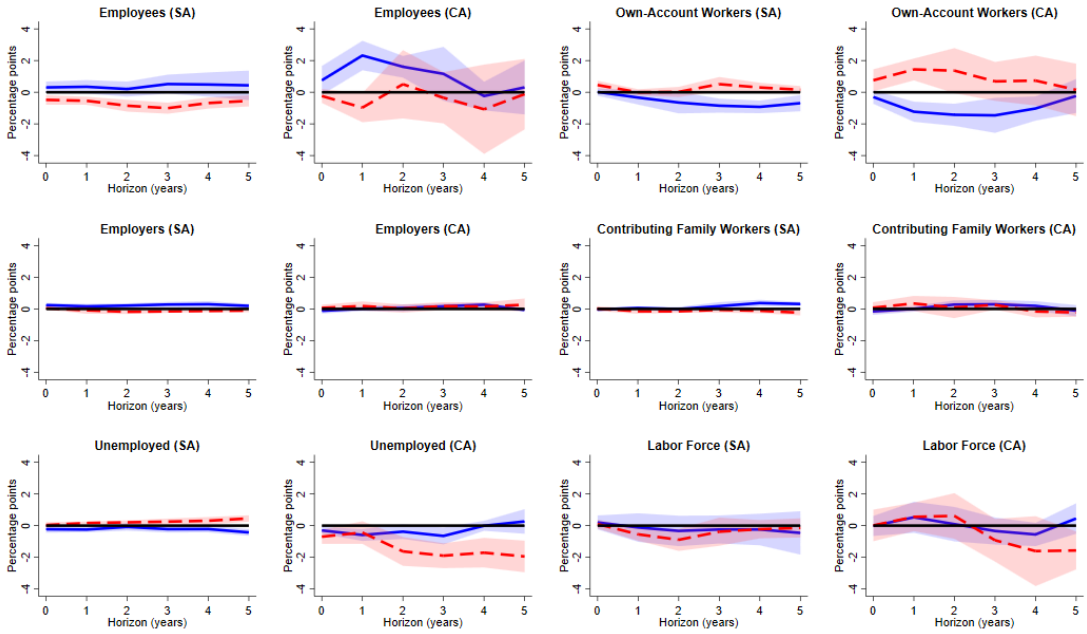
IRF analysis by subregion (Figure 3) and significant coefficients (Figure 4) reveals clear differences in adjustment dynamics between South and Central America. In South America, salaried employment only reacts to negative external demand episodes, while in Central America, the effect is concentrated in positive episodes, with an increase of more than two percentage points one year after the episode. Own-account work shows a similar pattern: Central America reacts faster and more strongly to both episodes than South America. Conversely, employer and contributing family worker categories show greater variation in South America. Two factors likely explain these differences. First, formal labor regulations are more rigid in South America, slowing the adjustment process and limiting the responsiveness of salaried employment (David et al., 2020, 2019).

Second, Central America is more exposed to external demand fluctuations due to its dependence on the United States, whereas South America is more affected by commodity cycles, which explains the earlier response observed in Central America (David et al., 2019). Recent evidence from Mexico is consistent with the relevance of this transmission channel: Estefan (2026) finds that increases in U.S. demand generate rapid employment gains in export manufacturing and reductions in unemployment and inactivity. Although this evidence pertains specifically to Mexico and its export-manufacturing sector, it illustrates how close integration with U.S. demand can translate relatively quickly into labor market adjustment.

Another relevant finding is that the labor force in South America adjusts more quickly than in Central America. Unemployment in Central America shows an apparent contradiction: after negative episodes, it falls more sharply than after positive ones. A possible explanation is that this reflects an

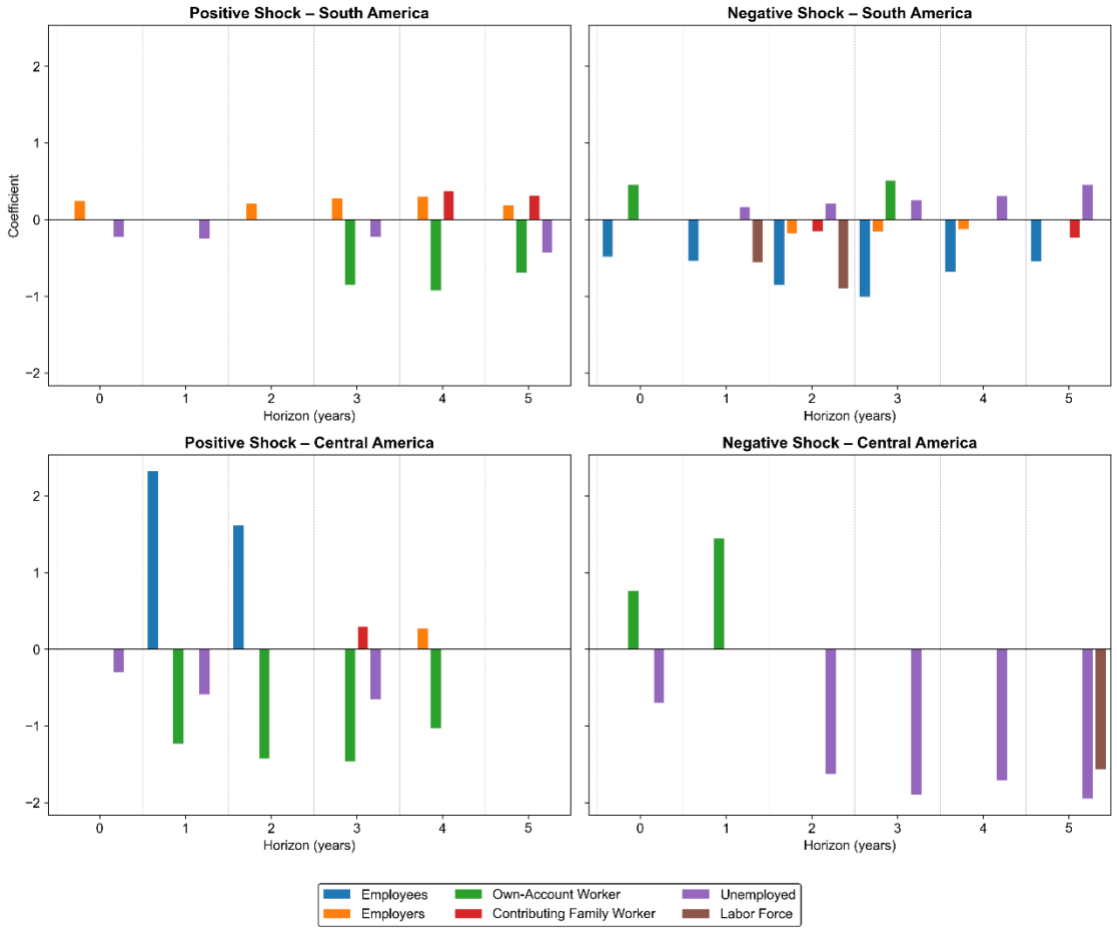
immediate discouragement effect—a rapid withdrawal of workers from the labor market due to perceived lack of opportunities, which simultaneously reduces both unemployment and labor force participation (Maridueña-Larrea and Martín-Román, 2024). This hypothesis is supported by the similarity in shape and magnitude between the IRF for unemployment and labor force participation in Central America, suggesting that the observed drop in unemployment does not indicate an improvement in labor conditions, but rather an accelerated exit of working-age individuals who stop actively seeking employment.

Figure 3. IRF by employment categories: geographic region



Note: The solid blue line represents the response to a positive external demand episode, while the dashed red line represents the response to a negative external demand episode. Shaded areas indicate 90% confidence intervals (Driscoll-Kraay). In panel titles, SA refers to South America and CA to Central America.

Figure 4. Coefficients in Response to Positive and Negative Episodes: geographic region



Note: Bars are proportional to coefficient size. Only coefficients statistically significant at the 90% level (Driscoll-Kraay) are shown.

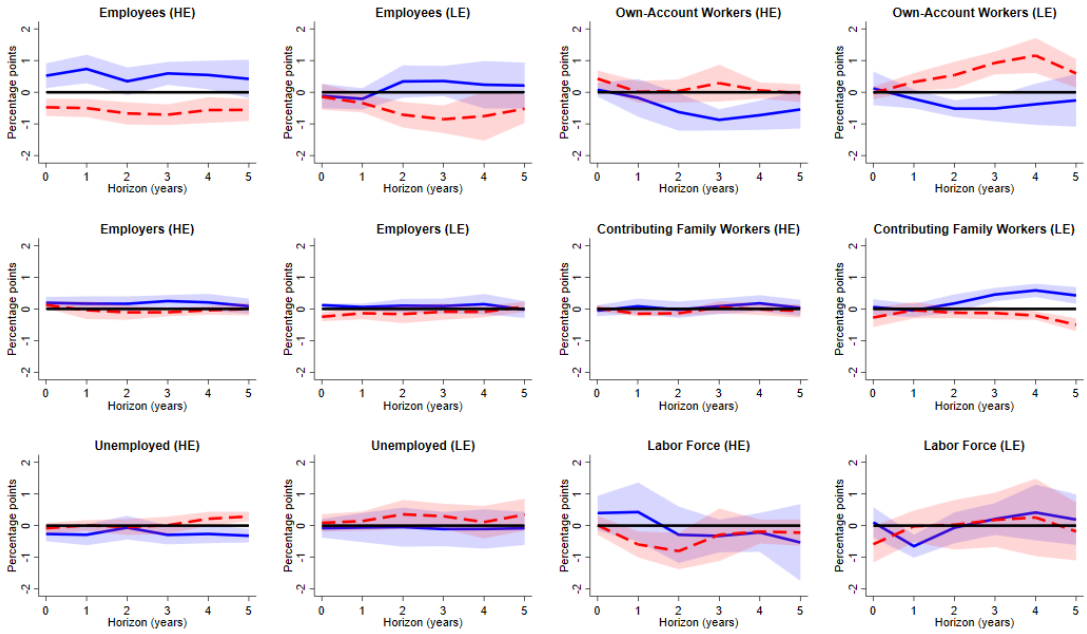
5.3. Labor Market Efficiency Results

Figure 5 and Figure 6 show that salaried employment (i.e., employees) in more efficient labor markets responds primarily to positive external demand episodes, whereas in less efficient markets, it only reacts to negative ones. This asymmetry is consistent with the literature, which finds that flexible labor markets enable greater formal job creation during periods of expansion, while rigid markets—

due to high adjustment costs and regulatory constraints—limit hiring capacity and thus reduce responsiveness to positive episodes (Saavedra and Torero, 2004). In contrast, own-account employment increases significantly following negative episodes, but only when labor markets are less efficient; in more efficient markets, adjustment to negative episodes occurs mainly through labor force withdrawal. Own-account work thus functions as a countercyclical adjustment mechanism during downturns in less efficient labor markets (Bosch and Maloney, 2008; Loayza and Rigolini, 2011). Contributing family workers tend to exhibit a procyclical pattern and greater volatility in less efficient labor markets, responding to both positive and negative episodes.

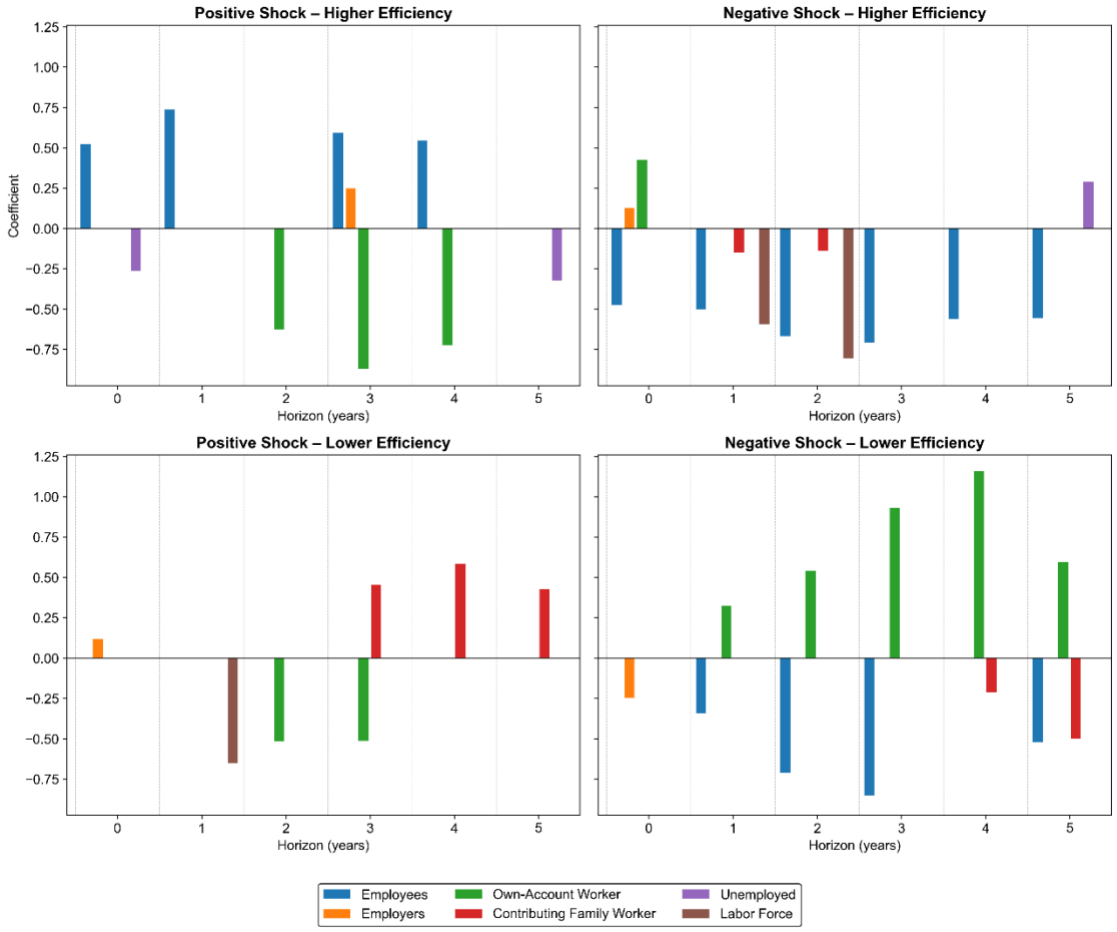
This behavior aligns with their role as a household-level buffer in settings with limited social protection (Loayza and Rigolini, 2011). Unemployment remains virtually unchanged, showing only a marginal and delayed reaction in more efficient labor markets. This is consistent with the broader evidence for Latin America that labor market adjustment often occurs through alternative employment margins or changes in labor force participation rather than unemployment alone (Bosch and Maloney, 2008; Lambert et al., 2020). After negative episodes, the labor force contracts in efficient markets, consistent with discouragement. In less efficient markets, it also decreases in response to positive episodes, possibly reflecting income effects in vulnerable households that allow some members to temporarily withdraw from the labor market during economic upswings (Maridueña-Larrea and Martín-Román, 2024).

Figure 5. IRF by employment categories: Labor market efficiency



Note: The solid blue line represents the response to a positive external demand episode, while the dashed red line represents the response to a negative external demand episode. Shaded areas indicate 90% confidence intervals (Driscoll-Kraay). In panel titles, HE refers to higher labor market efficiency and LE to lower labor market efficiency.

Figure 6. Coefficients in Response to Positive and Negative Episodes: labor market efficiency



Note: Bars are proportional to coefficient size. Only coefficients statistically significant at the 90% level (Driscoll-Kraay) are shown.

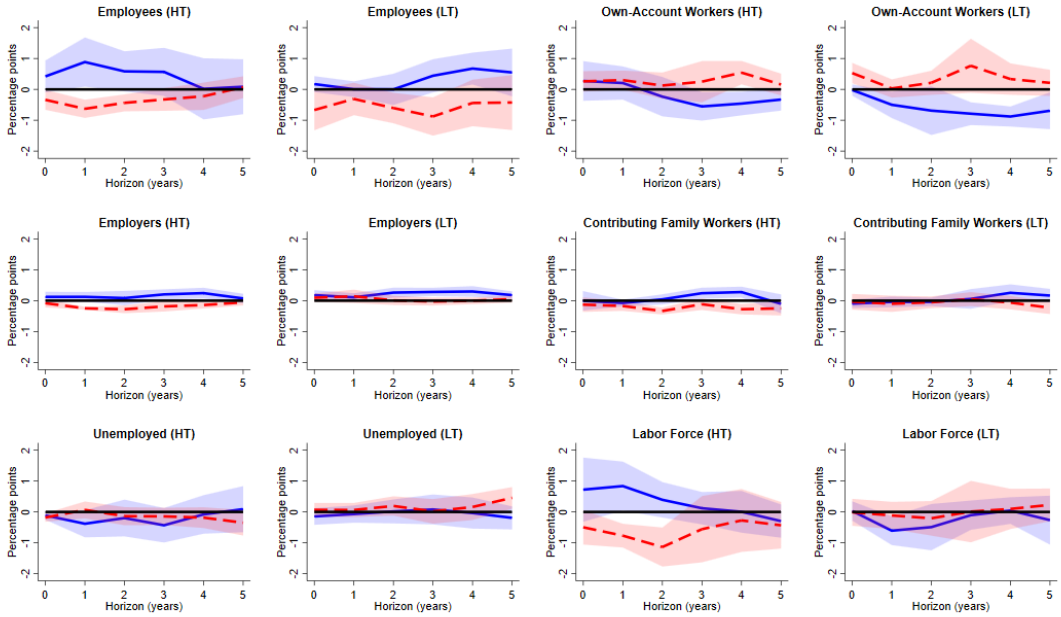
5.4. Trade Openness Results

Analysis by degree of trade openness (Figures 7 and 8) reveals distinct patterns in labor market responses to external demand fluctuations. In more open economies, salaried employment reacts promptly to both positive and negative episodes, though the effect tends to fade by the second period. This faster response is consistent with the mechanism outlined in Section 2.3, whereby

stronger integration with external markets accelerates the transmission of external demand conditions to domestic labor demand and employment reallocation. Own-account employment responds more strongly in less open countries, particularly to positive episodes, whereas in more open economies the response is weaker and short-lived.

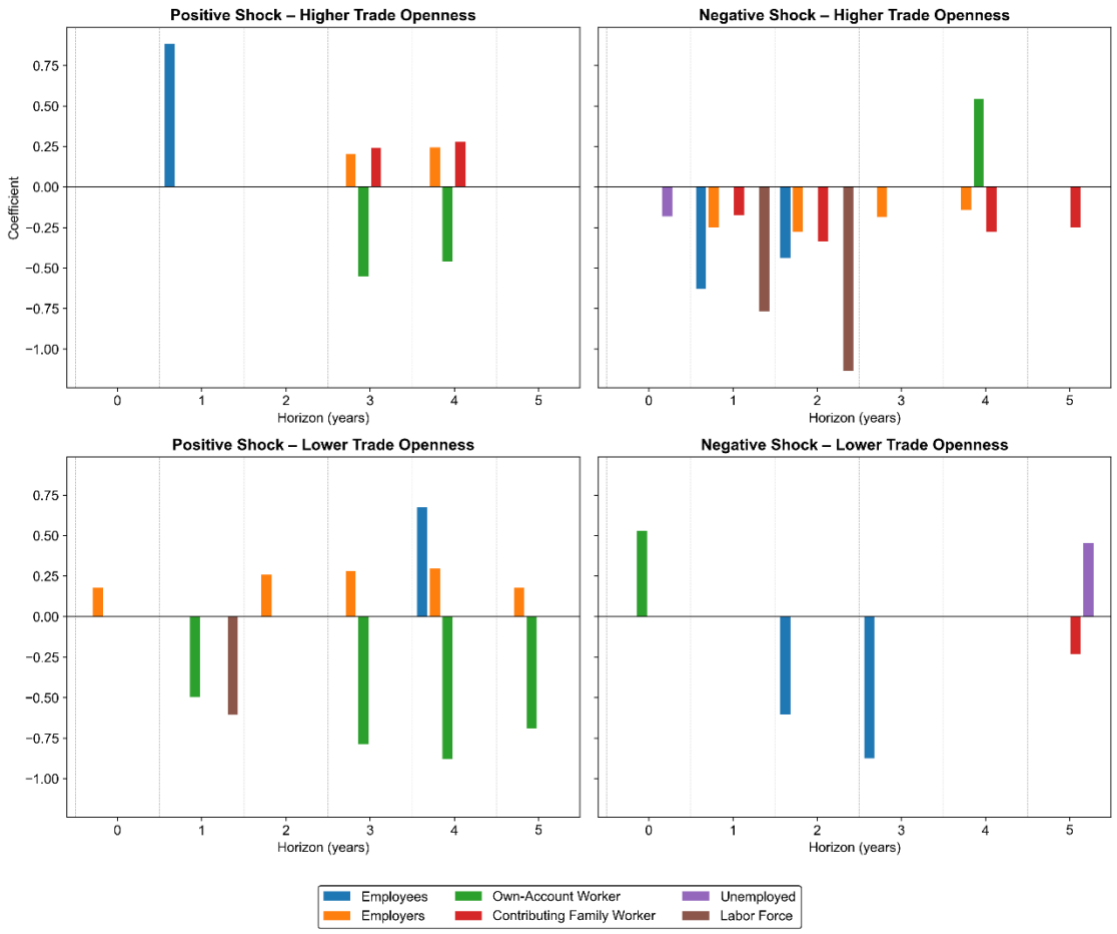
This pattern is consistent with a more indirect and persistent adjustment process in less open economies, where changes in salaried employment are delayed and non-salaried employment margins become relatively more important (Carrasco and Tovar-García, 2021). Overall, in more open economies, both positive and negative episodes tend to trigger early responses that dissipate by the third period. Negative episodes produce pronounced short-term effects on employees, self-employed workers, and the labor force—effects that nearly vanish by period 3. In contrast, in less open economies, responses are not only delayed but also more persistent: own-account employment remains depressed even five years after a positive episode, while negative episodes lead to a marked rise in unemployment five years later.

Figure 7. IRF by employment categories: Trade openness



Note: The solid blue line represents the response to a positive external demand episode, while the dashed red line represents the response to a negative external demand episode. Shaded areas indicate 90% confidence intervals (Driscoll-Kraay). In panel titles, HT refers to higher trade openness and LT to lower trade openness.

Figure 8. Coefficients in Response to Positive and Negative Episodes: Trade Openness



Note: Bars are proportional to coefficient size. Only coefficients statistically significant at the 90% level (Driscoll-Kraay) are shown.

6. Robustness Checks:

As a robustness check, we re-estimate the impulse-response functions using Wild Cluster Bootstrap inference, which is particularly useful when the number of clusters is limited (Canay et al., 2021). The resulting confidence intervals broadly confirm the main qualitative patterns obtained with

Driscoll–Kraay standard errors. In the full sample, the central findings for employees and own-account workers remain, although the responses of employers and contributing family workers lose statistical significance.

Some subgroup results are more sensitive to the alternative inference procedure. In South America, employees also display a significant response to positive external demand episodes, while in Central America labor force participation becomes significant in year 4 following a negative episode. In less efficient labor markets, the negative response of employees loses significance and the response of own-account workers is significant over fewer horizons. For countries with greater trade openness, positive external demand is associated with an immediate increase in labor force participation. Despite these differences, the broader conclusions regarding asymmetric adjustment and the stronger role of self-employment margins in less open economies remain broadly unchanged. Complete Wild Cluster Bootstrap impulse responses and coefficient plots are reported in Annex 3.

7. Discussion

The findings broadly align with the mechanisms developed in Section 2. Negative external demand episodes trigger a rapid contraction in salaried employment, whereas positive episodes do not generate comparable gains. This asymmetric pattern is consistent with hiring frictions, adjustment costs, and institutional segmentation that can slow employment creation during expansions while allowing faster adjustment when external demand weakens. At the same time, the limited response of unemployment and the movements in own-account work and labor force participation are consistent with the role of alternative adjustment margins emphasized by Lambert et al. (2020) and Dix-Carneiro and Kovak (2019). Finally, the differences across labor market efficiency and trade

openness groups are consistent with the idea that institutions and external integration condition the speed and composition of labor market adjustment. These results should therefore be interpreted as evidence consistent with these mechanisms rather than as direct causal tests of the institutional channels themselves.

The asymmetry in Latin American labor market responses underscores the central role of self-employment as an adjustment mechanism. Although self-employment and informality overlap substantially in Latin America, they are conceptually distinct and our employment-status data do not allow us to identify whether a worker is formally or informally employed. Our results therefore point specifically to a reallocation across employment-status margins: following negative external demand episodes, own-account work expands as a buffer while salaried employment contracts. This type of adjustment across labor market states is consistent with evidence from Brazil showing that adverse trade-induced labor demand shocks can have persistent effects that shift workers across employment and non-employment margins over time (Dix-Carneiro and Kovak, 2019).

Given the high prevalence of informality and limited social protection in the region, this pattern is consistent with broader evidence that workers moving into vulnerable forms of employment may face weaker social protection precisely when adverse conditions intensify (Alvarez and Ruane, 2024; Arnold et al., 2024). Although often viewed as driven by exclusion, some workers voluntarily choose informality due to high regulatory costs, weak enforcement of regulations, and limited formal job creation (Bosch and Esteban-Pretel, 2012; Duval-Hernández, 2021; Ponczek and Ulyssea, 2022; Ulyssea, 2018). In this institutional context, informality becomes both a necessity and a rational evasion strategy. The policy implication is clear: rather than focusing exclusively on punitive

approaches to reduce informality, efforts should prioritize altering the conditions that make informality attractive—lowering regulatory costs, strengthening enforcement capacity, and expanding formal job creation. Addressing this issue is critical, as persistent informality not only reflects labor market weaknesses but also exacerbates them during periods of adverse external demand conditions.

A global meta-analysis of 27 studies finds that incentives for formal jobs are the most effective way to boost formalization (Floridi et al., 2019). However, the evidence for the region suggests that not all incentives are effective. The SIMPLES tax simplification program in Brazil failed to increase the number of formal firms (Piza, 2018). Benefit- and training-based interventions have shown more promise: Bolivia's PAE wage subsidy program significantly increased access to formal employment (Novella and Valencia, 2022) , and Peru's Projoven training program raised participants' formal employment rate by around 8 percentage points, though effects faded in the medium term (Novella et al., 2025). These results suggest that replacing punitive approaches with tangible incentives and skills development offers the most effective path to reducing informality in Latin America and enhancing resilience to adverse external demand conditions.

Efficient labor markets and open economies also show more resilient labor responses. Specifically, our results show that in more open economies the labor market response to both positive and negative external demand episodes dissipates by the third period, while in less efficient labor markets the effects are more persistent and the adjustment occurs predominantly through self-employment margins. In Brazil, regions with less rigid regulation cushioned job losses after the 1990s trade contraction, while strict enforcement cut informality but caused layoffs and firm

closures(Ponczek and Ulyssea, 2022). At the regional level, an analysis of 17 countries shows that economies with flexible labor regulations experience much less persistent employment reductions following declines in terms of trade (Jacho et al., 2024). Specific improvements, such as the reduction of payroll taxes in Colombia, also shifted workers into the formal sector, strengthening the buffer against external demand fluctuations (Fernández and Villar, 2017).

In terms of openness, countries with more diversified exports and stronger institutional frameworks experience smaller increases in informality during commodity price cycles (Carrington et al., 2023) and are better able to cushion contractions originating from the United States or China (Guajardo et al., 2019). Therefore, strengthening regulatory flexibility, improving institutional quality, and expanding productive diversification not only mitigate the damage from external demand fluctuations but also enhance the capacity of Latin American labor markets to generate formal employment and sustain more resilient and inclusive growth.

8. Conclusions

The results reveal that Latin American labor markets respond in complex and heterogeneous ways to external demand fluctuations, with adjustment patterns varying according to the sign of the episode, employment structure, and institutional characteristics of each country. In the case of positive external demand episodes, the impact does not lead to a significant expansion of employees or an increase in labor force participation, suggesting the presence of structural barriers that limit the capacity of salaried employment to absorb external growth. Instead, the adjustment is concentrated in an internal transformation of self-employment, with a reduction in own-account work and a moderate increase in employers and contributing family workers, indicating a shift within

independent work towards more structured forms. In response to negative episodes, the adjustment dynamics are more immediate and diverse, marked by a decline in employees, a partial expansion of own-account workers, and a significant contraction of the labor force.

This pattern reflects both the vulnerability of salaried employment to external recessions and the compensatory role of own-account work, together with discouraged-worker effects reflected in declining labor force participation. Labor market responses also differ according to each country's institutional and structural context. In economies with more efficient labor markets, employees tend to respond positively to external expansions, whereas in less efficient markets, own-account workers strongly react in a countercyclical manner.

Subregional patterns are equally revealing. Central America tends to adjust more rapidly than South America, both in employees and own-account workers, while in South America, adjustments are slower and often occur through declining labor force participation. Additionally, the degree of trade openness shapes the speed and magnitude of the responses, with more open economies adjusting faster, and more closed economies showing delayed responses concentrated in own-account workers. These differences confirm that structural conditions and international integration determine not only a country's exposure to external demand fluctuations but also its capacity to respond.

Overall, this study contributes to the literature in three ways. First, it provides systematic empirical evidence on asymmetric labor market responses to external demand fluctuations in Latin America using a disaggregated employment classification based on ICSE-93, going beyond aggregate

employment or unemployment measures. Second, it documents heterogeneity within the region—across geographic areas, labor market efficiency levels, and trade openness—that standard cross-regional comparisons obscure. Third, it applies local projections with long differences in a panel setting with Driscoll-Kraay standard errors and Wild Cluster Bootstrap validation, offering a methodologically robust framework suited to the small-sample constraints of the Latin American panel.

While previous research has documented the sensitivity of employment to economic cycles, few studies have empirically examined asymmetric responses across disaggregated employment categories and structural subgroups within Latin America. The evidence presented here suggests that building more resilient labor markets in the region requires policies that simultaneously reduce formal employment rigidities, expand social protection for informal workers, and strengthen the productive diversification that conditions the speed and margins of adjustment to external demand fluctuations.

Several limitations of this study point to directions for future research. The analysis is restricted to the period 2001–2019, which excludes the labor market disruptions associated with the COVID-19 pandemic and their aftermath. Additionally, the panel covers 16 countries, which, while representative of the region, may not capture the full heterogeneity of smaller or less data-rich economies. Future work could extend the analysis to higher-frequency data, incorporate sector-level employment disaggregation, or examine the role of fiscal policy as a moderating factor in the transmission of external demand fluctuations to labor market outcomes.

Data Availability Statement

The dataset and replication code that support the findings of this study are available in Harvard Dataverse at https://doi.org/10.7910/DVN/IKIVID. The repository includes the constructed panel dataset, the external demand weights calculated by country and year, and the full replication code for the local projections estimations, asymmetric specifications, and Wild Cluster Bootstrap validation.

Declaration of Generative AI and AI-Assisted Technologies in the Writing Process

During the preparation of this work the authors used Claude (Anthropic) in order to improve the clarity and language of the manuscript. After using this tool, the authors reviewed and edited the content as needed and take full responsibility for the content of the published article.

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Annex 1. Country Classification According to Panel Segmentation Criteria

Country	Geographic Region	Labor Market Efficiency	Trade Openness
Argentina	1	0	0
Bolivia	1	0	0
Brazil	1	0	0
Chile	1	1	1
Colombia	1	1	0
Costa Rica	0	1	1
Dominican Rep.	0	1	0
Ecuador	1	0	0
El Salvador	0	0	1
Guatemala	0	0	1
Mexico	0	1	0
Nicaragua	0	0	1
Panama	0	1	1
Paraguay	1	1	0
Peru	1	1	1
Uruguay	1	1	1

Note: Rows marked with 1 indicate that the country's time-average for the corresponding variable is above the median of the full country sample. For Geographic Region, a value of 1 corresponds to South America and 0 to Central America.

Annex 2. Description of the Variables Used to Subclassify the Panel

Labor Market Efficiency: The variable used to measure labor market efficiency for the countries in the sample corresponds to Pillar 8 – Labor Market of the World Economic Forum's Global Competitiveness Index[2]. The components of Pillar 8 include: redundancy costs, hiring and firing practices, labor-employer relations, flexibility of wage determination, active labor market policies, workers' rights, ease of hiring foreign labor and internal labor mobility.

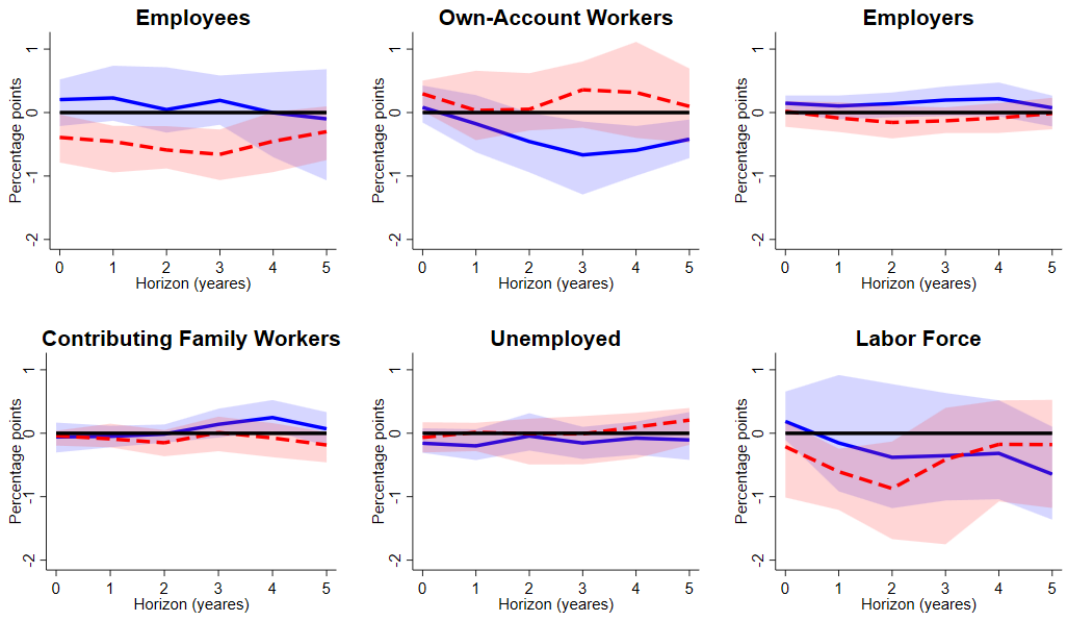
Trade Openness: This variable was obtained from The Heritage Foundation[3] and is a composite measure that assesses the extent of tariff and non-tariff barriers affecting the trade of goods and services. The score is based on two components: the trade-weighted average tariff rate and a qualitative assessment of non-tariff barriers.

[2] For more information on Pillar 8 – Labor Market Efficiency, refer to the methodological document of the Global Competitiveness Index 4.0.
https://www3.weforum.org/docs/GCR2018/04Backmatter/3.%20Appendix%20C.pdf
[3] For further reference on this variable, consult the methodology of the Heritage Foundation's Index of Economic Freedom. https://www.heritage.org/index/pages/about

Annex 3. Wild Cluster Bootstrap Robustness Checks

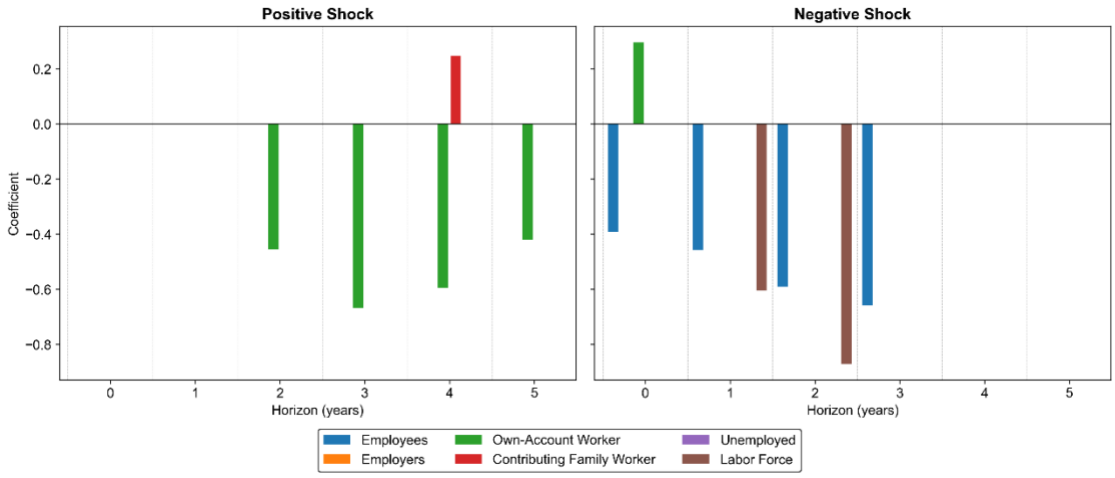
Annex 3 reports the complete robustness results obtained using Wild Cluster Bootstrap inference. The same local-projection specifications used in the baseline analysis are re-estimated, replacing Driscoll–Kraay inference with Wild Cluster Bootstrap confidence intervals to account for the limited number of country clusters. The figures reproduce the full-sample and subgroup impulse responses and statistically significant coefficients discussed in Section 6.

Figure A3.1. IRF with Wild Cluster Bootstrap SE by employment categories: full sample



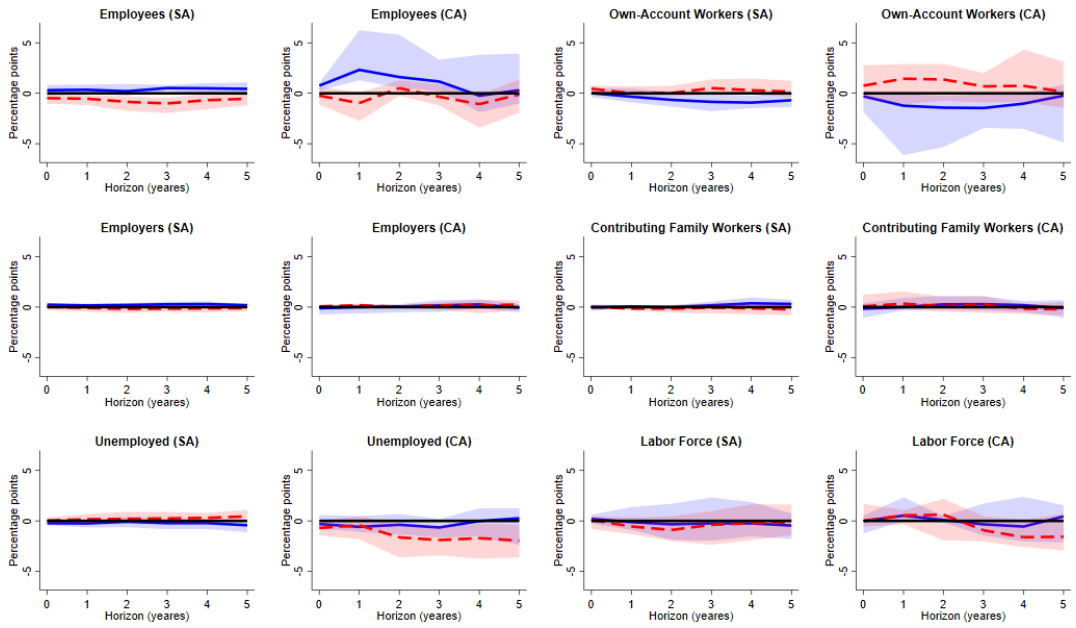
Note: The solid blue line represents the response to a positive external demand episode, while the dashed red line represents the response to a negative external demand episode. Shaded areas indicate 90% confidence intervals.

Figure A3.2. Coefficients in Response to Positive and Negative Episodes: full sample



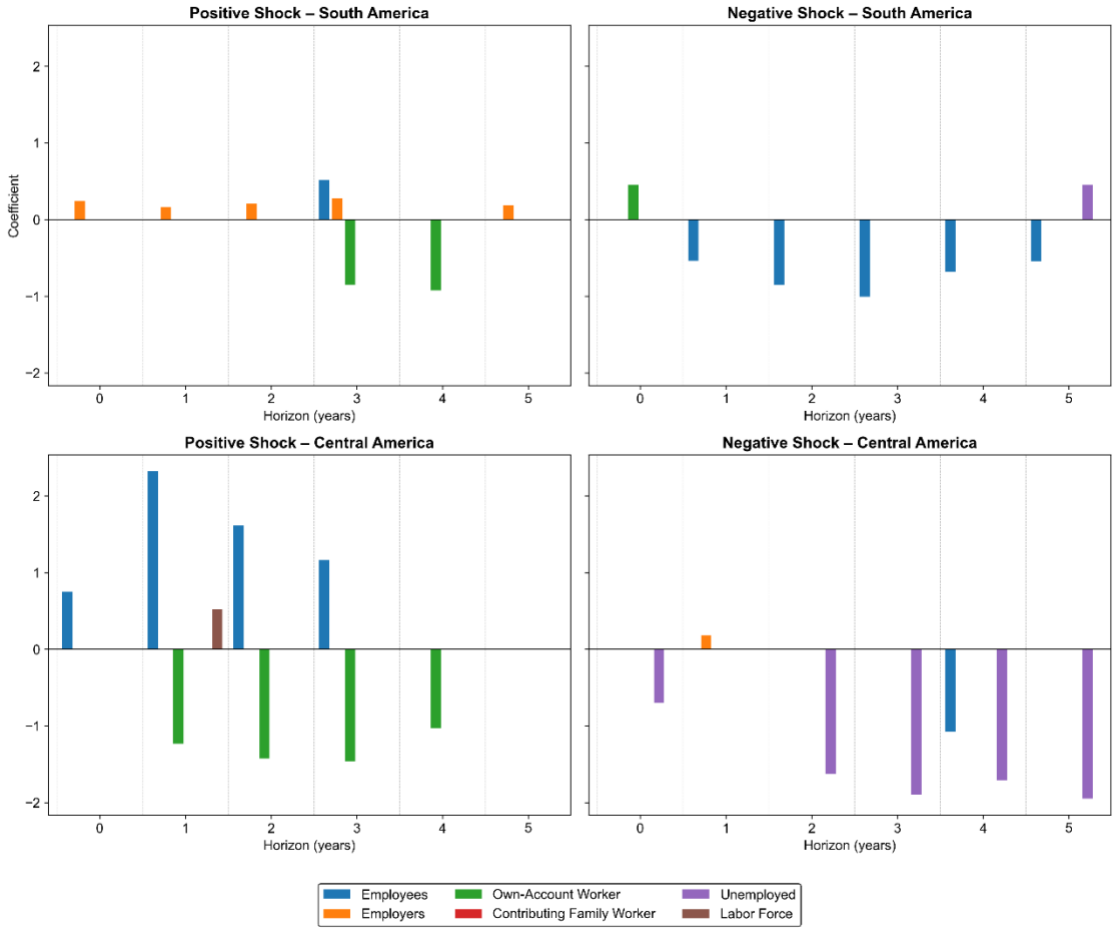
Note: Bars are proportional to coefficient size. Only coefficients statistically significant at the 90% level (Wild Cluster Bootstrap) are shown.

Figure A3.3. IRF with Wild Cluster Bootstrap SE by employment categories: geographic region



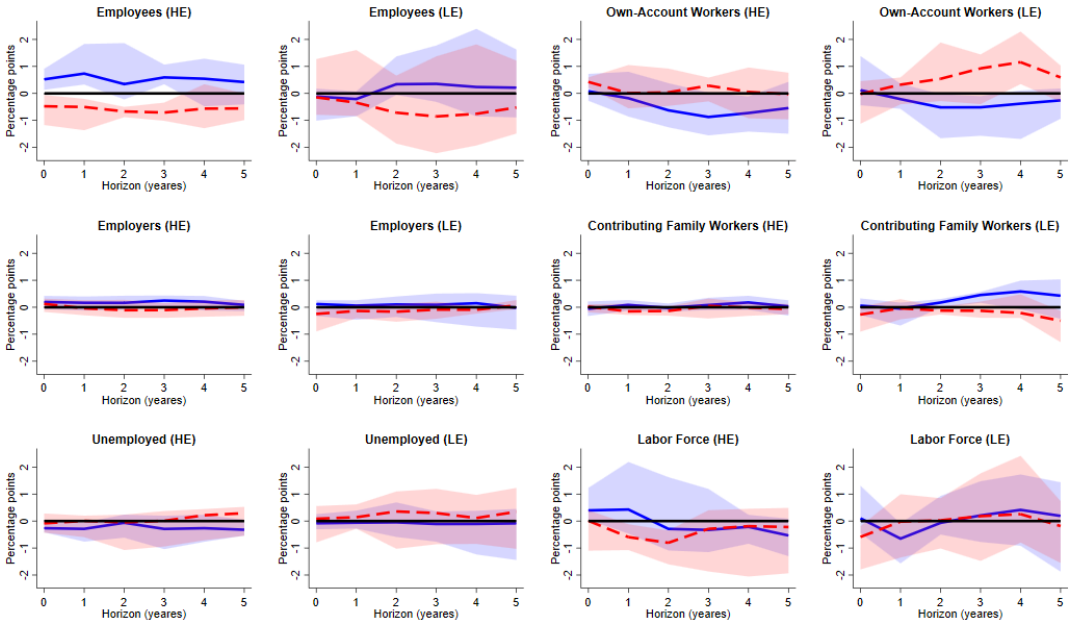
Note: The solid blue line represents the response to a positive external demand episode, while the dashed red line represents the response to a negative external demand episode. Shaded areas indicate 90% confidence intervals. In panel titles, SA refers to South America and CA to Central America.

Figure A3.4. Coefficients in Response to Positive and Negative Episodes: geographic region



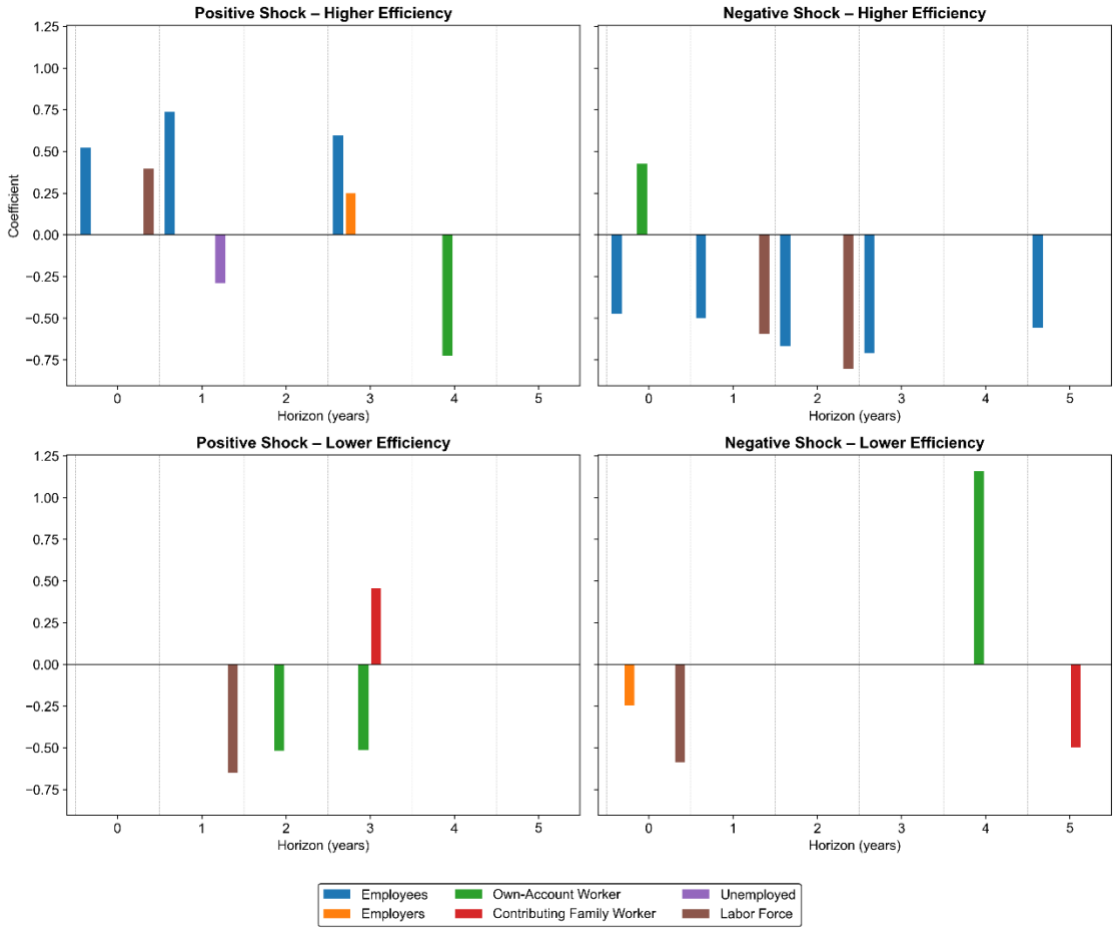
Note: Bars are proportional to coefficient size. Only coefficients statistically significant at the 90% level (Wild Cluster Bootstrap) are shown.

Figure A3.5. IRF with Wild Cluster Bootstrap SE by employment categories: Labor market efficiency



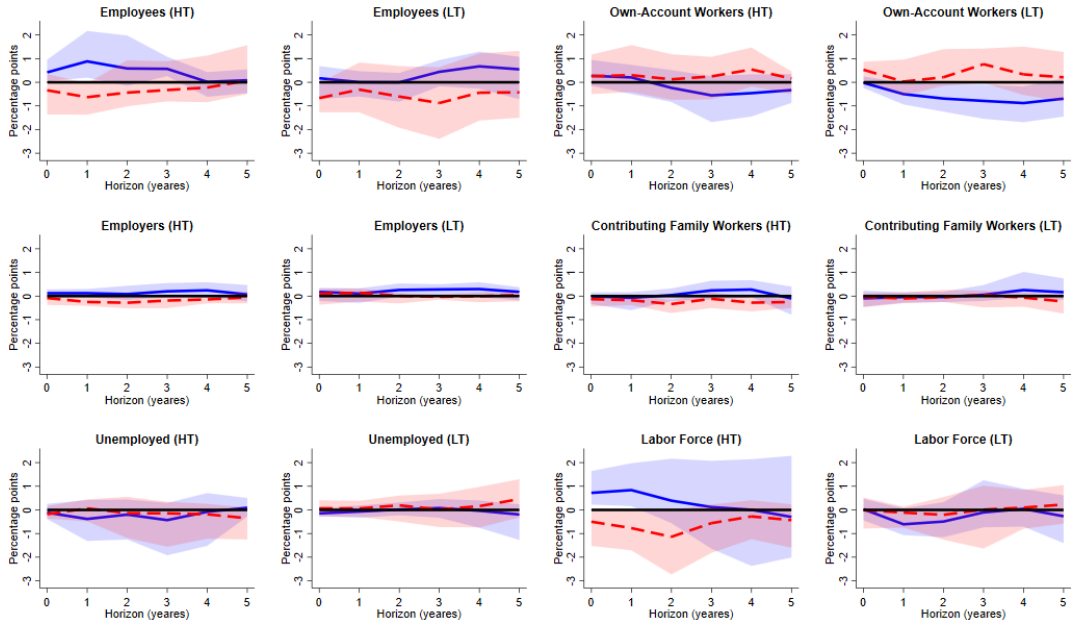
Note: The solid blue line represents the response to a positive external demand episode, while the dashed red line represents the response to a negative external demand episode. Shaded areas indicate 90% confidence intervals. In panel titles, HE refers to higher labor market efficiency and LE to lower labor market efficiency.

Figure A3.6. Coefficients in Response to Positive and Negative Episodes: labor market efficiency



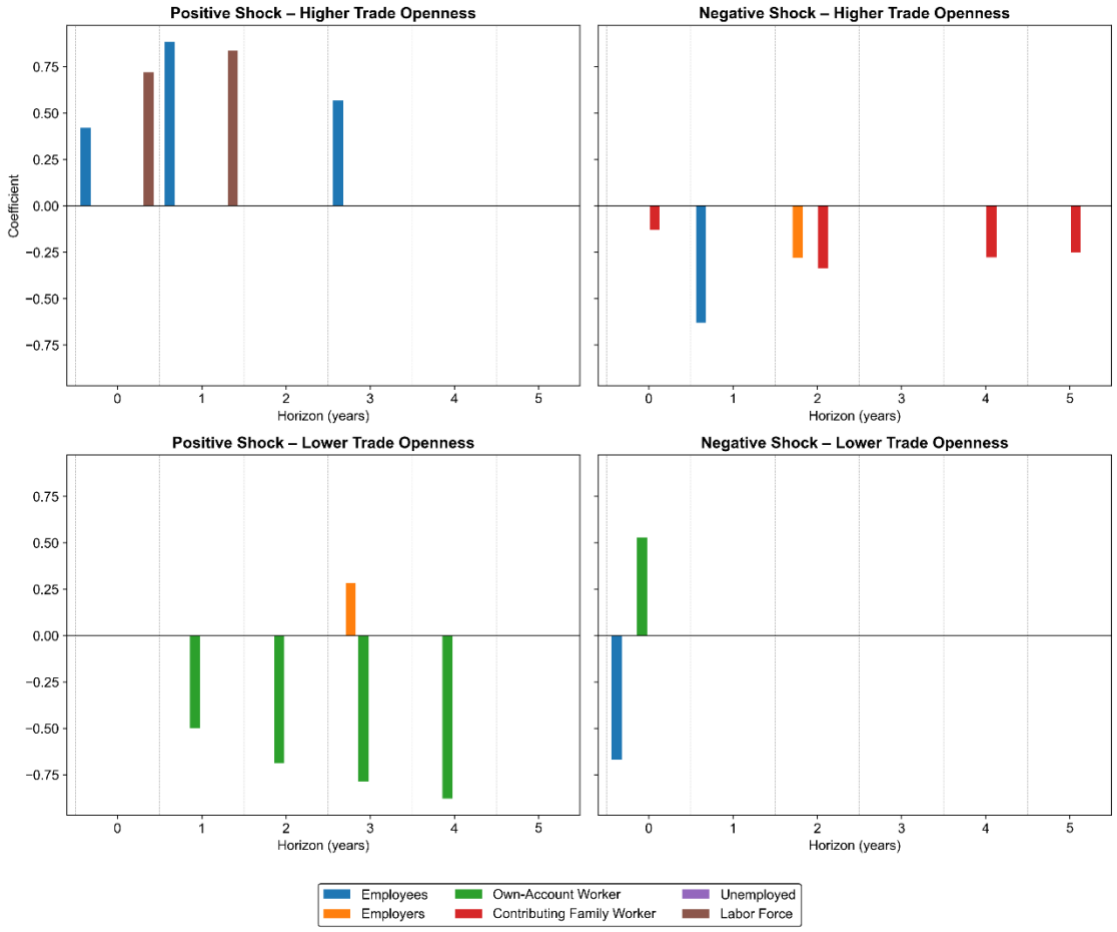
Note: Bars are proportional to coefficient size. Only coefficients statistically significant at the 90% level (Wild Cluster Bootstrap) are shown.

Figure A3.7. IRF with Wild Cluster Bootstrap SE by employment categories: trade openness



Note: The solid blue line represents the response to a positive external demand episode, while the dashed red line represents the response to a negative external demand episode. Shaded areas indicate 90% confidence intervals. In panel titles, HT refers to higher trade openness and LT to lower trade openness.

Figure A3.8. Coefficients in Response to Positive and Negative Episodes: trade openness



Note: Bars are proportional to coefficient size. Only coefficients statistically significant at the 90% level (Wild Cluster Bootstrap) are shown.

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