



# Structural reforms and firms' productivity: Evidence from developing countries



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## ABSTRACT

This paper assesses the effects of selected structural reforms on labor productivity growth for 37 developing countries over the 2006–14 period. It combines newly constructed reform indexes using the IMF Monitoring of Fund Arrangements dataset and firm-level productivity from the World Bank Enterprise Surveys. The paper highlights the following results. Structural reforms under consideration in this study, i.e., financial, fiscal, real sector, and trade reforms, significantly improve productivity at the firm level. Interestingly, real sector reforms have the most sizeable effects on firms' productivity. The relationship between reforms and productivity is nonlinear and shaped by certain firms' characteristics, including financial access, a distortionary environment, and firms' size. The pace of reforms matters since being a "strong reformer" is associated with a clear productivity dividend for firms. Finally, except for financial and trade reforms, all macroeconomic reforms considered are bilaterally complementary in improving firms' productivity. The findings are robust to several sensitivity checks including alternatives measure of productivity, and a counterfactual experiment based on unsuccessful reforms.

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## 1. Introduction

The literature on the economic effects of structural reforms has focused so far on developed countries.<sup>1</sup> Most papers document that structural reforms have positive effects on productivity. In this stream of work, there is a consensus in the literature that reforms are important to boost and sustain long-term growth. Reforms matter for macroeconomic performances (Bordon, Shirono, & Ebeke, 2016; Christiansen, Schindler, & Tressel, 2013; Bouis, Causa, Demmou, Duval, & Zdzienicka, 2012; Bourlès, Cette, Lopez, Mairesse, & Nicoletti, 2010) and promote growth (Prati, Onorato, & Papageorgiou, 2013) by increasing aggregate productivity (Nicoletti & Scarpetta, 2003) and raising employment (Bordon et al., 2016). Little is known about how structural reforms affect industries or firms in developing countries. In the developing world, the role of structural reforms to buttress firm-level productivity is crucial

because productivity is a critical element in the development process (Krugman, 1994). Productivity traces technological changes, technical and organizational efficiencies, and real cost savings. Higher productivity allows firms to produce higher output for the same level of input, earn higher revenues, and ultimately generate strong overall economic growth. Constraints to the business environment are huge in developing countries (Almeida & Carneiro, 2009; Aterido, Hallward-Driemeier, & Pagès, 2011); the business environment is characterized by macroeconomic instability with negative effects on taxation and private investment (Krugman, 1988); labor market and entry regulations are heavy (Dabla-Norris, Ho, & Kyobe, 2016; Klapper, Laeven, & Rajan, 2006); and financial, infrastructure and market distortions are severe (Kouamé & Goyette, 2018; Bah & Fang, 2015; Giannetti & Ongena, 2009).

In this study, four key structural reforms are examined as firm-level productivity enhancing in developing countries. First, *fiscal reforms* are key to improving firm-level productivity through changes in labor supply and investment in physical and human capital. For instance, labor tax reforms aimed at addressing youth unemployment improve firm-level productivity (Banerji, Lin, & Saksonovs, 2015). Reforming public investment in human capital (education and health) accelerates the technological catch-up and enhances the skills of domestic workers and firms' labor productivity (Pritchett, 2013; Baldacci, Clements, Gupta, & Cui,

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<sup>1</sup> In this paper, we adopt the common definition in the literature (Spilimbergo et al., 2009). Reforms refer to government policies aiming to address market failures, reduce or remove impediments to the efficient allocation of resources, government intervention (including removal of state-imposed price controls and the abolition of state monopolies), and restriction on trade, domestic and financial transactions.

2008). Likewise, basic structural reforms such as expenditure rationalization, revenue base broadening, or taxing “excess returns” and rents could minimize distortions and reduce cumbersome burdens and improve firm-level productivity (IMF, 2015, Cottarelli & Keen, 2012). Second, several papers find that *financial sector reforms* have positive effects on firm-level productivity through a more efficient allocation of resources (Galindo, Schiantarelli, & Weiss, 2005) and easier access to external financing (Rajan & Zingales, 1998). Financial sector reforms aiming at removing financial restrictions and financial repression have the potential to lower the cost of capital and boost firm-level productivity and growth at the firm level. They align the allocation of financial resources to more productive firms and, therefore, contribute to boosting firm-level productivity (Larrain & Stumpner, 2017). Third, several authors also document that *real sector reforms* enhance firm-level productivity. Various studies using rich micro-level datasets find robust evidence that structural reforms that promote competition in product markets could help boost firm-level productivity (Nicoletti & Scarpetta, 2003; Buccirossi, Ciari, Duso, Spagnolo, & Vitale, 2009; Bourlès et al., 2010). Excessive labor market regulation and collective bargaining in developing countries are sources of inefficiency that reduce firms’ output and employment (World Bank, 2013). Looser regulations could also encourage competition and firms to experiment with new ideas and technologies and facilitate the shift of resources from slow to fast-growing sectors (Daude, 2016). Fourth, *trade reforms* were found to be firm-level productivity enhancing at the aggregate level (Trefler, 2004; Melitz, 2003). For developed countries, Topalova and Khandelwal (2011) find that trade reforms increase firm-level productivity, with input tariff reforms having a larger impact. Melitz (2003) and Melitz and Ottaviano (2008) find, for example, that trade reforms increase competition which results in a reallocation of resources from less productive to more productive firms. In summary, there is ample evidence that the key structural reforms of interest in this paper are positively associated with increases in firm-level productivity, especially in developed countries.

The paper examines whether structural reforms are followed by significant changes in firm-level productivity on a sample of 37 developing countries over the 2006–14 period. The paper combines newly constructed structural reform indexes from the IMF Monitoring of Fund Arrangements (MONA) database with firm-level data from the World Bank Enterprise Surveys (WBES). To account for the fact that firms in the same country deal with similar contextual characteristics, the paper employs a multilevel modeling approach to assess the impact of structural reforms on firm-level productivity. By capturing both the between-country and within-country effects, the multilevel model accounts for potential bias and endogeneity issues. The model accounts for the fact that firms are nested within the country and allows the inclusion of both firm-level and macroeconomic variables as well as different types of fixed effects. The paper also explores conditional factors of the impact of structural reforms on productivity and whether structural reforms are substitutes or complementary in affecting productivity at the firm level.

Key findings are as follows. In developing countries, structural reforms significantly improve firm-level productivity. We also find that the pace of structural reforms matters since being a “strong reformer” is associated with a clear firm-level productivity dividend for firms. Interestingly, real sector reforms have the most sizeable effects on productivity growth. We also find that financially included firms benefit less from financial reforms. Financial access also strengthens the relationship between fiscal reforms and productivity growth. The effects of fiscal and trade reforms on firm-level productivity are hindered by distortions. Evidences also suggest that small firms benefit more from financial reforms

relative to the larger ones. Structural reforms considered in this study are bilaterally complementary in improving firm-level productivity (except for financial and trade reforms). The findings are robust to several sensitivity analyses including alternative measures of firm-level productivity, additional control variables and counterfactual experiments using unsuccessful reforms.

This paper brings at least two contributions to the literature. First, the paper is the first to use the MONA database to construct new reform indexes. Relative to the existing literature, by focusing on successful performance criteria, our reform indexes present the advantages of accounting for reforms implemented only. Moreover, we are able to identify the effects of specific structural reforms (financial, fiscal, real sector, and trade reforms) while the existing literature mostly uses liberalization index as a measure of structural reforms.<sup>2</sup> Also, alternative datasets such as the World Economic Forum Global Competitiveness Index and the World Bank Doing Business Indicators present some shortcomings with respect to our objectives in the paper. The World Economic Forum Global Competitiveness Index provides a score in different areas without describing the reforms that have been implemented to reach those scores. The originality of this paper is the focus on reforms that have been implemented and met. The World Bank Doing Business Indicators focuses on regulatory reforms already accounted in our index of real sector reforms. Second, to the best of our knowledge, this is the first paper to assess the impact of structural reforms on firm-level productivity in developing countries.<sup>3</sup>

The rest of the paper is structured as follows. Section 2 describes the datasets. Descriptive statistics and the empirical strategy are discussed in Section 3. Section 4 reports and discusses estimation results. Section 5 concludes.

## 2. Datasets

The data are compiled from four different sources. Structural reform indexes are computed from the IMF Monitoring of Fund Arrangements (MONA) database, firms’ characteristics are culled from the World Bank Enterprises Surveys (WBES), and the other macroeconomic variables are collected from the World Bank World Development Indicators (WDI) and World Governance Indicators (WGI).

### 2.1. The IMF Monitoring of Fund Arrangements (MONA) database

As argued in the literature, structural reforms are more difficult to measure than classical macroeconomic policies limiting the scope for quantitative analysis of their effects. Structural reforms are typically policies geared towards raising firm-level productivity by improving the efficiency of markets and institutions and by reducing (or removing) impediments to the efficient allocation of resources. Hence, structural reforms have typically been associated with regulatory policies that strengthen market-based incentives in the domestic product and service markets, labor markets, trade, and capital and financial markets. However, structural reforms may also involve actions to address market failures or other government policies that could affect firm-level productivity more directly.

The paper uses the IMF Monitoring of Fund Arrangements (MONA) database, which covers all aspects of conditionalities in the program. The MONA database provides a cumulative history

<sup>2</sup> See, Arnold et al. (2015); Prati et al. (2013); Abiad and Mody (2005); Abiad, Detragiache, and Tressel (2008).

<sup>3</sup> Tressel (2008) investigates the effects of, financial and trade sector reforms on real output growth at the industrial level in 91 countries including developed countries. However, Tressel (2008) focuses on financial and trade liberalization and does not examine the effects of these reforms on firm-level productivity. The few studies examining the impact of reforms on firms’ productivity in developing countries mainly focus on a specific reform in China, Colombia, India, and Indonesia.

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