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The Effects of Competition on Jobs and Economic Transformation

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WORLD BANK GROUP

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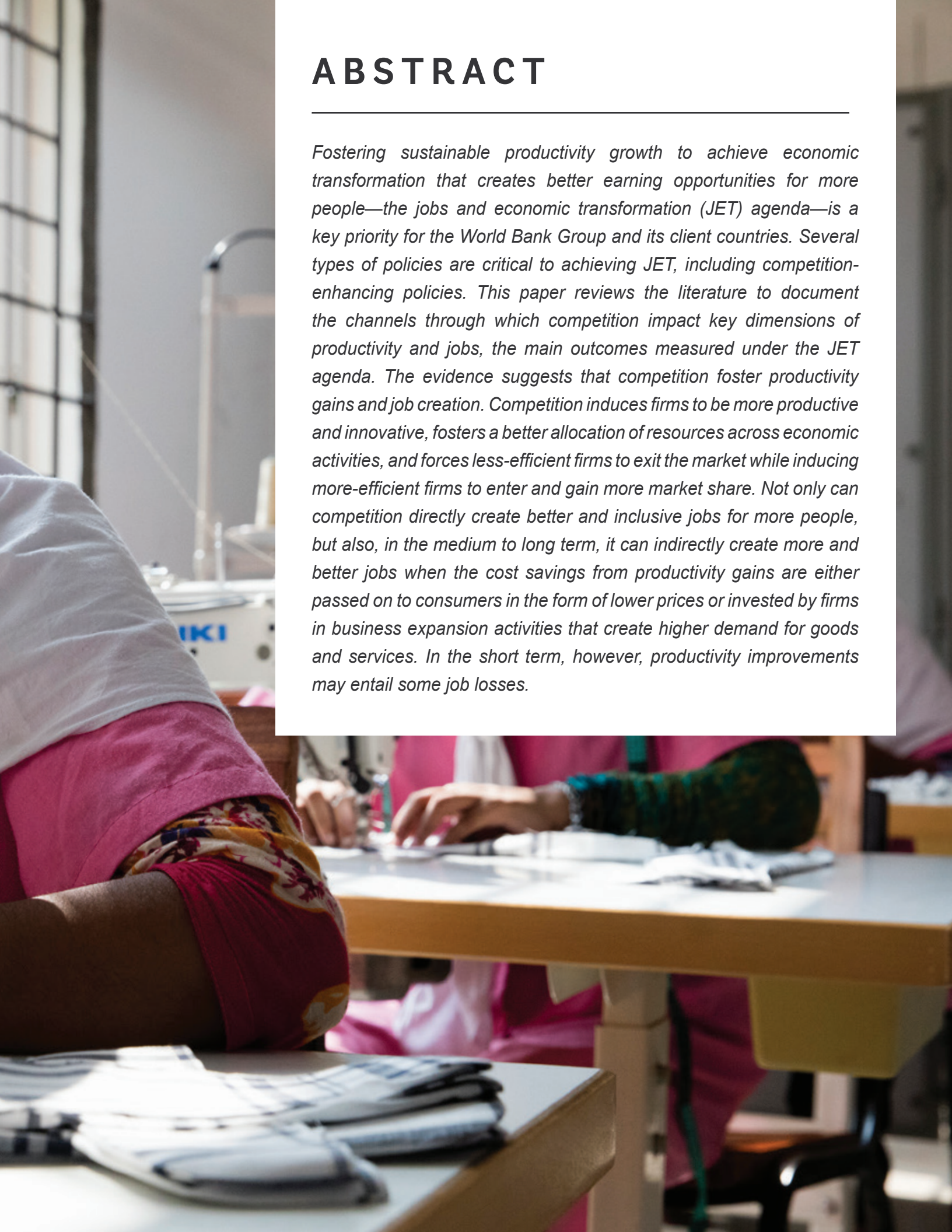
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This note was prepared by Seidu Dauda (Economist). The author is grateful to Jose Signoret (Senior Economist), Mariana Iooty (Senior Economist), and Yue Li (Senior Economist) for valuable comments and insights and to Georgiana Pop (Competition Policy Global Lead) and Christine Qiang (Practice Manager) for overall advice.

ABSTRACT

Fostering sustainable productivity growth to achieve economic transformation that creates better earning opportunities for more people—the jobs and economic transformation (JET) agenda—is a key priority for the World Bank Group and its client countries. Several types of policies are critical to achieving JET, including competition-enhancing policies. This paper reviews the literature to document the channels through which competition impact key dimensions of productivity and jobs, the main outcomes measured under the JET agenda. The evidence suggests that competition foster productivity gains and job creation. Competition induces firms to be more productive and innovative, fosters a better allocation of resources across economic activities, and forces less-efficient firms to exit the market while inducing more-efficient firms to enter and gain more market share. Not only can competition directly create better and inclusive jobs for more people, but also, in the medium to long term, it can indirectly create more and better jobs when the cost savings from productivity gains are either passed on to consumers in the form of lower prices or invested by firms in business expansion activities that create higher demand for goods and services. In the short term, however, productivity improvements may entail some job losses.



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Cover design and layout: Diego Catto / www.diegocatto.com



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Introduction

Fostering sustainable productivity growth to achieve economic transformation that delivers better jobs to more people is a key development priority for the World Bank Group and its client countries. The jobs and economic transformation (JET) agenda of the World Bank Group aims to raise productivity in order to create better earning opportunities for more people. Several types of policies are critical to achieving JET, including competition-enhancing policies.

The objective of this paper is to discuss the importance of competition (and competition-enhancing policies) to the JET agenda. This paper does so by reviewing both the theoretical and the empirical literature that documents the channels through which competition-enhancing policies impact key dimensions of productivity and jobs, the main outcomes measured under the JET agenda. The aim is not to cover all policies or channels by which to achieve JET, nor to cover all the literature documenting the importance of competition, but to focus on the link between the two. The theoretical and empirical literature show enormous evidence of the economic benefits of greater product market competition (or even the threat of competition). A more competitive marketplace benefits both those on the supply side of the market (producers) and those on the demand side (consumers). To the extent possible, this paper will focus on the supply side, linking aspects of competition to the productivity and job channels that bring about JET. Box 1 presents a summary of the key messages found in the literature.

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BOX 1. Key messages from the literature review

Creating more, better, and inclusive jobs in a sustainable way is critical to reducing poverty and boosting shared prosperity. This requires private sector–led acceleration of economic transformation to boost economic growth, which in turn requires fostering productivity growth. The jobs and economic transformation (JET) agenda—accelerating economic transformation to deliver better and inclusive jobs for more people in a sustainable way—is a top development priority of the World Bank Group. Several types of policies are critical to achieving JET, including competition-enhancing policies. The literature identifies several channels through which competition-enhancing policies impact key dimensions of productivity and jobs—the main outcomes measured under the JET agenda. Below is a summary of the main findings from the literature review.

A. Competition and productivity

- 1.** The theoretical and empirical evidence suggests that policies that enhance competition within industries can boost economic transformation by fostering productivity expansion in the affected industries through several channels:
 - i.** Competition fosters productive efficiency by inducing firms to be more productive (Aghion et al. 2004; Galdón-Sánchez and Schmitz 2002; Nickell 1996) and innovative (Geroski 1990; Vives 2008).
 - ii.** Competition enhances allocative efficiency by fostering a better allocation of resources both across firms within sectors and across sectors (Bartelsman and Dhrymes 1998; Melitz 2003; Olley and Pakes 1996).
 - iii.** Competition induces better market selection by forcing less-efficient firms to exit the market and inducing more-efficient firms to enter and gain market share (Eslava et al. 2013; Jovanovic 1982; Sekkat 2009).
- 2.** In addition, the evidence suggests that boosting competition in key enabling industries can generate trickle-down effects that also boost productivity in upstream or downstream industries (Barone and Cingano 2011; Bourlès et al. 2013; van der Marel, Kren, and Ito 2016).

B. Competition and (more, better, and inclusive) jobs

The evidence also suggests that competition policies can boost jobs through several channels:

- i.** Competition stimulates firms' willingness to invest and their demand for labor (Blanchard and Giavazzi 2003; Griffith and Harrison 2004), but this employment effect depends partly on the nature of product market reforms, policies, and institutions in other markets (Nicoletti and Scarpetta 2005), and there may be a short-term tradeoff (Bouis et al. 2012; Bouis, Duval, and Eugster 2016).
- ii.** Competition stimulates firms' willingness to pay higher wages to their workers (Brambilla, Chauvin, and Porto 2016), reduces the gender wage gap (Ashenfelter and Hannan 1986; Belfield and Heywood 2006), and reduces the level of informality in an economy (Anand and Khera 2016; Charlot, Malherbet, and Terra 2015).



Jobs and economic transformation: definition, key outcome measures, and ways to achieve JET

The World Bank Group's term "jobs and economic transformation" (JET) is an all-encompassing term combining jobs (J) and economic transformation (ET). JET is about strengthening the job dimension within the productivity growth course associated with the process of structural change that accompanies economic development. It involves moving labor and other production inputs from less-productive economic activities to more-productive ones and, by so doing, generating more and better jobs. This movement can occur across firms within industries, across industries (such as from agriculture to manufacturing and services), across regions (such as from rural to urban areas), or from informal sector activities to formal sector ones (World Bank 2019a). In other words, JET is about improving aggregate productivity through economic transformation in a way that sustainably creates better and inclusive jobs for more people. In this context, JET is a way to strengthen the job dimension within a country's productivity growth course by encouraging a "job-generating productivity growth" process, or, even more specifically, the type of productivity growth that generates more and better jobs.¹

The ways to achieve JET are no different from the traditional channels for productivity growth: within-firm upgrading, reallocation between firms or sectors, and entry and exit. Aggregate productivity growth can be decomposed into these three components. First, productivity improvements can occur when incumbent firms become more productive by improving their internal capabilities through innovation or the adoption of new technologies or better management techniques (the within-firm component). Second, improvements can occur when resources are reallocated from low-productivity firms to high-productivity firms within or across industries (the between-firm component). In this case, incumbent firms that are more productive gain market share at the expense of other, less-productive incumbent firms. And third, improvements in aggregate productivity can occur when less-productive existing firms exit the market or industry and new firms that are more productive enter the market (the entry-and-exit, or selection, component). Each of these three components matters for aggregate productivity growth and economic transformation, and thus the menu of productivity-enhancing policies should cut across all of them (figure 1).

1. Productivity is the efficiency with which firms convert production inputs into outputs. The term productivity in this paper refers to labor productivity, multifactor productivity, and total factor productivity. Although multifactor productivity and total factor productivity are used interchangeably in the literature, they are different from labor productivity. In addition, this paper does not distinguish between revenue productivity and physical productivity when assessing the literature, although the two are different.

In addition, efforts to bring about JET must encompass the multiple dimensions of job creation. There must be a concerted effort to ensure that economic transformation is accompanied by job expansion and upgrades to encourage, simultaneously, more, better, and inclusive jobs (figure 1). Each of these job dimensions are critical to reducing poverty and achieving shared prosperity. In other words, economic

transformation should (a) increase the quantity of jobs and reduce underemployment; (b) create jobs that are more productive, generate stable income, and take place under improved working conditions and social protection; and (c) boost inclusion by creating income-earning opportunities for the poor, youth, women, disadvantaged groups, and those willing to work but without jobs (World Bank 2019b).

> > >

FIGURE 1 Key analytical dimensions under JET: productivity and jobs

PRODUCTIVITY GROWTH			JOBS EXPANSION AND UPGRADING		
PRODUCTIVE EFFICIENCY (within a firm)	ALLOCATIVE EFFICIENCY (between firms)	ENTRY AND EXIT (selection)	MORE JOBS	BETTER JOBS	INCLUSIVE JOBS
Boosting firm capabilities: managerial and worker skills; innovation and technology-absorption capacity	Fostering a better allocation of resources across firms	Improving the quality of entering firms and fostering the exit of low-productivity firms	Increasing job opportunities	Raising earnings, generating stable income, and improving working conditions	Expanding access to jobs (by age, gender, and skills)

Source: Based on review of the literature.

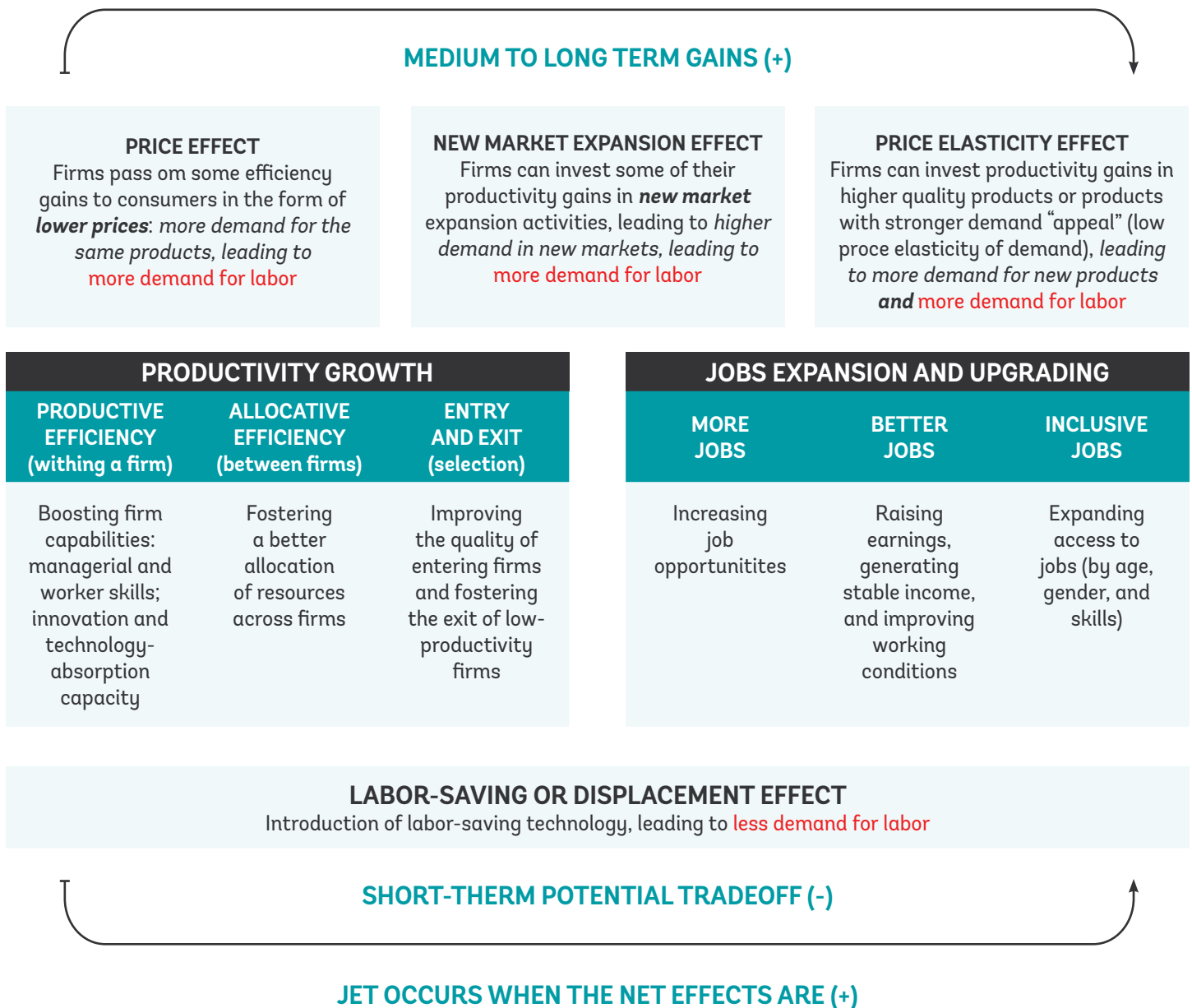
Finding the optimal balance between productivity expansion and job creation (in terms of both quality and quantity)—the key outcomes measured under the JET agenda—may involve tradeoffs. Overall, there is the question of whether higher productivity destroys jobs. When new physical capital or technology requires less labor input to achieve the same output, some jobs, especially low-skilled ones, may be lost in the short term. Thus, in the short term, productivity growth may reduce the demand for labor.

In the medium to long run, however, productivity growth can bring about higher demand for labor. For instance, when the cost savings from producing more with the same or less labor are passed on to consumers in the form of lower prices (the price effect), consumers are left with more money to spend on either the same goods and services, depending on the price elasticity of demand, or other goods and services. Within the same competitive market, if demand is sufficiently price elastic, the price reduction will lead to higher enough

demand to ensure that employment will increase even if the labor required per unit falls. However, if the price elasticity of demand is low (i.e., if demand is relatively inelastic), the fall in price might not generate enough demand, and job losses may occur.

In addition, productivity gains could be used to sustain a firm's expansion into larger or even entirely new markets (the market expansion effect), which would then increase its demand for labor. Moreover, the cost savings from productivity gains could allow a firm to move into a different segment or niche of the market where demand tends to be more price inelastic (i.e., a segment of products with stronger appeal). This would allow the firm to create demand for new products, which would result in more demand for labor. JET occurs when the positive employment gains from economic transformation outweigh the job disruption effect—that is, when the net job effects of economic transformation are positive (figure 2).

FIGURE 2 Spillovers from (and potential tradeoffs between) productivity growth and jobs



Source: Based on review of the literature.

Although promoting JET is important for countries at all stages of economic development, some growth components are more or less relevant depending on a country’s stage of development. Structural transformation (or shifting resources from low-productivity to high-productivity economic activities) is the key driver of overall productivity and economic growth, and the speed with which it occurs separates successful economies from less successful ones (McMillan, Rodrik, and Verduzco-Gallo 2014). However, although the JET principles—pursued through any of the productivity growth channels or drivers—are always important no matter the income level of a country, country context matters. For instance, in low-income economies, raising productivity within key sectors such as agriculture may be more relevant in the short

term, and reallocation across sectors may be more crucial for improving economic growth and income levels in the medium to long term. Indeed, McMillan, Rodrik, and Verduzco-Gallo (2014) suggest that broad patterns of structural change (or reallocation of resources from low-productivity agriculture to other sectors of the economy) may fail to boost overall productivity growth. Such was the case in many Latin American and Sub-Saharan African countries, where broad patterns of structural change contributed negatively to the continents’ growth during the 1990s. However, the importance of reallocation wanes with rising levels of income, and it contributes very little to productivity growth in more-advanced economies (Cusolito and Maloney 2018), where other components of growth matter more.

Policies that boost JET

The need to increase productivity alongside job creation (in terms of both quantity and quality) calls for an integrated approach to JET promotion. The private sector is the engine of economic growth and job creation. As such, policies to boost JET should focus on (a) creating markets and connecting firms to them and (b) building firms' and workers' capabilities and connecting workers to jobs. Creating markets and connecting firms to them requires (a) macroeconomic stability and good public debt management to reduce firms' and households' vulnerabilities; (b) high-quality institutions that ensure the protection of property rights, effective law enforcement, and an efficient bureaucracy; (c) policies to liberalize trade, integrate domestic firms into global value chains, attract foreign investment, and foster regional integration; (d) policies to ensure access to finance and infrastructure to connect customers to markets; and (e) policies to improve the business environment and ensure contestable product markets. Building firms' and workers' capabilities and connecting workers to jobs requires (a) policies to enhance human capital at the early childhood level, at the worker level (in order to improve the numeracy and analytical skills of the workforce and further future professional development and earning opportunities), and at the entrepreneur level (in order

to enhance the managerial, organizational, entrepreneurial, and technological capabilities of entrepreneurs and small and medium enterprises); (b) policies to ensure a dynamic labor market that can create new, more, and better opportunities for all workers; and (c) policies and programs to ensure productive inclusion and social protection of the poor and vulnerable. These policies and programs will improve economic performance over time and boost JET (World Bank 2019a).

Against this backdrop, competition enhancement stands out as one key policy dimension to boost JET because it enhances the competitive environment for firms. Competition is a process of rivalry between firms in the market or for the market. Such rivalry can occur along several dimensions, including price, quantity, and quality. The degree of competition can increase when (a) the market's size increases as more similar or substitutable products become available, which causes an increase in product substitutability; or (b) entry costs decrease, product markets are deregulated, or pro-competition reforms induce firm entry and enhance market contestability. See box 2 for further discussion of the factors that enhance competition.

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BOX 2. What is competition, and how is it enhanced?

Competition is a process of rivalry between firms in the market or for the market. Such rivalry can occur along several dimensions, including price, quantity, and quality. The degree of competition can increase when (a) the market's size increases as more similar or substitutable products become available, which causes an increase in product substitutability; or (b) entry costs decrease, product markets are deregulated, or pro-competition reforms induce firm entry and enhance market contestability.

The predominant mode by which competition increases, according to the literature on macroeconomic simulation, is through reductions in entry costs or barriers. Thus, competition-enhancing product market deregulation and other pro-competition reforms that loosen entry barriers in domestic markets can induce entry into those markets and generate beneficial effects on the economy. As entry barriers fall, new producers may enter the market and offer similar or differentiated products, thus increasing the degree of substitutability between products and hence the intensity of competition within the market. This change could force firms to lower prices (thus reducing markups), which would depress average market-level prices, or it could force firms to undertake efficiency-enhancing and innovative activities in order to escape competition. Even if new firms do not actually enter the market, the mere threat of entry induced by the reduced entry costs and trade barriers can force incumbent firms to behave as if there were actual entry, and it can still generate outcomes that benefit the market and hence the overall economy.

In addition, competition can increase when antitrust and other institutional frameworks are strengthened to combat abuse of dominant positions and other types of anticompetitive business conduct. Abuse of a dominant position occurs when a dominant firm (or group of firms) in a market engages in conduct, in order to maintain or increase its position in the market, that makes it difficult for other competitors, current or future, to compete on merit. Examples of such conduct include improper exploitation of customers, exclusion of competitors, conditioning the sale of one product on the sale of another, charging excessively high prices, and engaging in predatory pricing or price-squeezing. Strengthening competition law frameworks to tackle these business practices can enhance market contestability and result in better market outcomes such as lower prices and higher productivity.

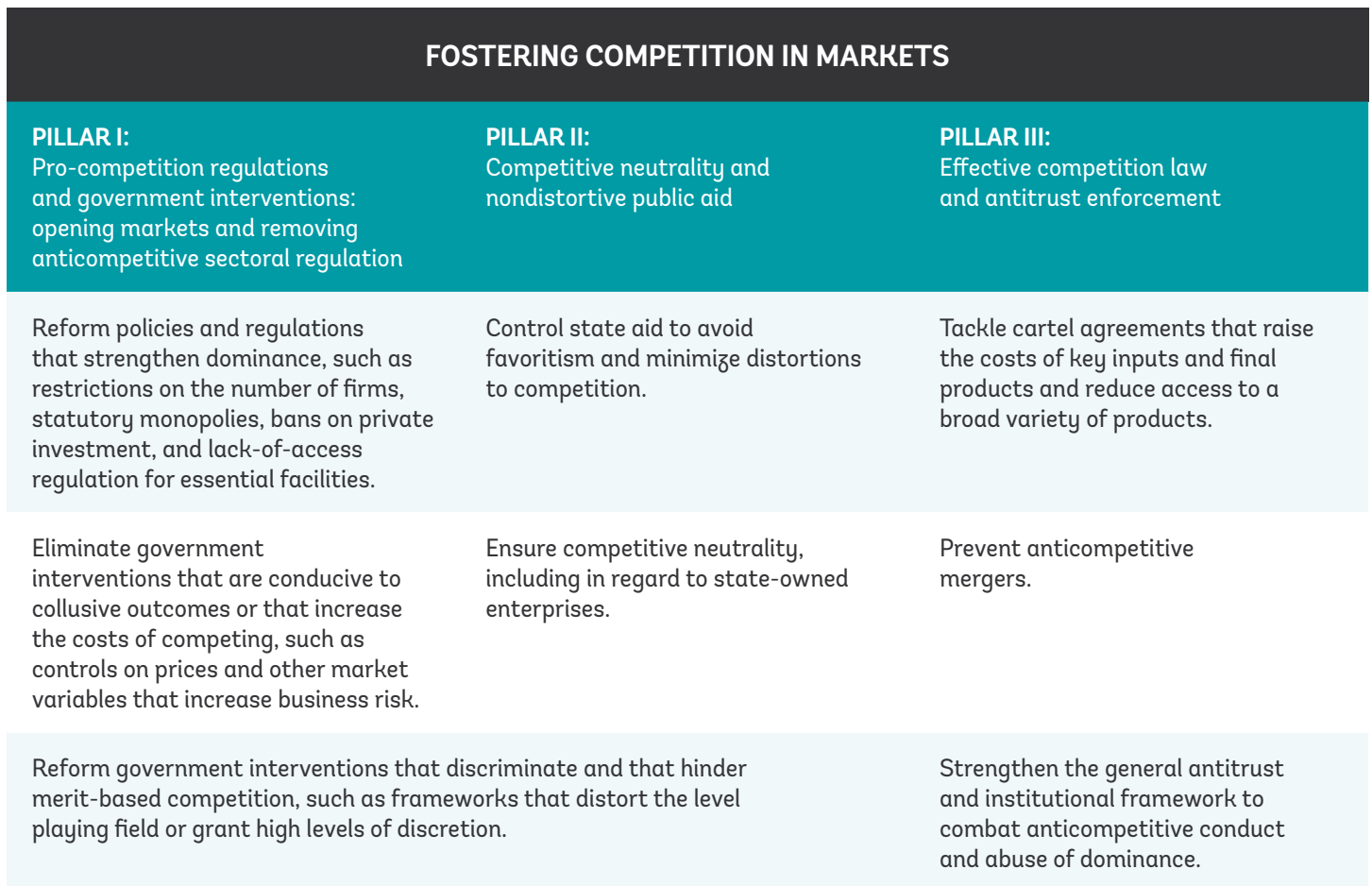


By strengthening the competitive environment for firms, competition-enhancing policies play a pivotal role in boosting JET by reducing product market distortions that deter firms from upgrading their productivity or prevent resources from flowing to their most productive uses. Strengthening the market environment through effective competition policies that incentivize firms to enter or invest, compete, and expand can boost aggregate productivity. Effective competition can be enabled through a comprehensive competition policy framework that includes policies and laws ensuring that competition in the marketplace is not restricted in such a way as to reduce economic welfare. In practical terms, a holistic competition policy framework involves the following: (a) the

promotion of measures to enable market contestability, firm entry, and rivalry, such as opening markets and removing anticompetitive sectoral regulations; (b) mainstreaming competitive neutrality principles in government interventions; and (c) ensuring effective competition law, which typically includes merger control, rules against abuse of dominance and anticompetitive agreements, and antitrust enforcement (figure 3). It is worth noting that the ultimate goal of competition policies is to incentivize firms to improve their performance and deliver the best outcomes for consumers and the economy as a whole, not necessarily to increase the number of firms in a market or to eliminate market power and achieve a theoretical state of perfect competition.

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FIGURE 3. A comprehensive competition policy framework



Source: Adapted from Kitzmuller and Licetti 2012.





A literature review on competition and JET transmission channels

Fostering competition in product markets can enhance productivity and economic growth through several channels. The subsections that follow review the literature on how greater product market competition impacts several key dimensions of JET. The first subsection reviews the literature on how greater competition affects overall gross domestic product (GDP) growth—the ultimate determinant of improvement in living standards—as well as some of its main components, such as investment, consumption, and exports. The second subsection reviews the literature on how greater competition affects aggregate productivity growth, the key driver of economic transformation and long-run economic growth. This subsection also goes in depth on and disentangles the components of aggregate productivity growth; it reviews the literature on how enhancing competition can impact the aggregate productivity growth of firms through each of its three components. The third subsection reviews the empirical literature examining the effects of competition in upstream industries on the productivity of downstream firms. The fourth discusses how strengthening antitrust measures and the institutional framework to combat anticompetitive conduct and abuse of dominant positions can boost aggregate productivity and overall GDP growth. The fifth subsection reviews the literature on how greater competition creates more, better, and inclusive jobs. Finally, one last section concludes this review.



Competition and GDP growth

Several studies have linked proxies of competition intensity or reforms that enhance competition to GDP growth without necessarily identifying the transmission channel. For instance, Loayza, Oviedo, and Severén (2010) find evidence linking greater product-market regulation to a reduced average annual growth rate of GDP per capita. De Loecker and Eeckhout (2020) also find evidence that weakening competition has a detrimental effect on aggregate output. De Loecker and Eeckhout use firm-level data to estimate the average market power for the US economy and then link the observed evolution of market power to certain observed macroeconomic outcomes since 1950. Their analysis suggests that the slowdown in the US's aggregate output after the 2007–09 Great Recession coincided with the sharper rise in market power of firms during this period, although other factors could also have played a role. In addition, Barnes et al. (2011) find that regulatory reforms to strengthen competition in product markets of Organisation for Economic Co-operation and Development (OECD) countries will generate long-run gains in GDP per capita.

Other studies have assessed the effects of the competition restrictiveness of product market regulation on investment, a key component of GDP growth. For instance, Griffith and Harrison (2004) investigated the effects of product market reforms undertaken in the European Union (EU) over the 1980s and 1990s on certain macroeconomic variables, including investment. Using a two-stage methodology, they first estimated the effect of product market reforms on the level of markups, or economic rents, in the economy (and in the manufacturing and service industries). They then estimated the effect of the predicted level of markups on investment levels, among other variables. Their findings suggest that reforms that lower entry barriers, remove price controls, and lessen the state's involvement in production result in greater competition by lowering average markups in the economy. Greater competition, in turn, results in higher levels of investment, particularly in the service industry. In addition, Alesina et al. (2005) found that more restrictive product market regulations had a negative effect on private investment in OECD economies, and Schivardi and Viviano (2011) found that reducing entry regulation in the Italian retail sector stimulated investment in information and telecommunication technologies.

Competition and aggregate productivity

The empirical literature has documented how greater competition improves aggregate productivity growth without necessarily identifying the component of productivity affected by competition. The positive effect of product market competition on productivity growth has been proven for a key measure of competition (markup) and in studies using firm-level and industry-level data, for both developed and developing countries. For instance, Aghion, Braun, and Fedderke (2008) used a nonparametric estimate of markup (as a proxy for competition) to test for the effect of product market competition on productivity growth. They find a positive effect of higher competition on productivity growth in South Africa, particularly when the intensity of competition is not too high. In addition, Dauda, Nyman, and Cassim (2019) find greater competition—proxied by markup, which they parametrically estimated using the De Loecker and Warsinsky (2012) method—to be associated with higher productivity growth in South Africa's manufacturing sector. Similar evidence, drawing on sectoral data at the three-digit ISIC (or its equivalent) level for the manufacturing sector, rather than firm-level data, was found for Argentina (Licetti et al. 2018), Brazil (Reis et al. 2018), Jordan and Morocco (Sekkat 2009), Moldova (World Bank 2019c), and Tunisia (World Bank 2014).

In addition, several other studies have examined the source of competition-induced improvements in overall productivity by quantifying the importance of various productivity-enhancing outlets. Fiercer product market competition can improve aggregate productivity growth in the affected industry through three key channels: (a) by inducing positive changes in work practices and fostering innovation that makes firms more productive; (b) by ensuring better resource allocation across firms and sectors; and (c) by ensuring better market selection by forcing less-efficient firms to exit the market and inducing more-efficient firms to enter and gain market share. These effects are, respectively, the within-firm component (productive efficiency), the between-firm component (allocative efficiency), and the net-entry-and-exit component (market selection) of productivity growth.

Competition and productive efficiency (the within-firm component of productivity growth)

Empirical work suggests that enhanced product market competition can boost within-firm productivity levels and growth. A well-known and influential empirical study on the productivity impact of greater competition was conducted by Nickell (1996). In a study of about 670 UK firms over the period 1972–86, Nickell examined the effects of competition on productivity levels and growth using various proxies of competition, including concentration, import penetration, the numbers of competitors, and monopoly rents. Nickell suggested that competitive pressure enhances productivity by incentivizing managers to work hard in shareholders' interests. He finds evidence that greater competition, as proxied by increased numbers of competitors or lower rents, leads to significantly higher productivity growth rates. Since Nickell's study, several other empirical papers have examined the productivity-competition relationship using firm-level and sector-level data from other countries, both developed and developing. For instance, within OECD (developed) countries, Arnold, Nicoletti, and Scarpetta (2008); Conway et al. (2006); Griffith and Harrison (2004); and Nicoletti and Scarpetta (2003) all find evidence that restrictive product market regulations depress productivity levels and growth by dampening the competitive pressure needed to incentivize firms to undertake productivity-improving measures. These empirical results also hold for developing economies when using other proxies of competition.

Some empirical studies also provide evidence that foreign competition brings positive impacts for productive efficiency at the firm level. For instance, Galdón-Sánchez and Schmitz (2002) and Schmitz (2005) find evidence that increased foreign competition fostered the productive efficiency of US and Canadian iron ore producers. The early 1980s saw the US and Canadian iron ore industries facing increased foreign competition, particularly from Brazilian producers, because of

developments in the world steel market such as the collapse of world steel production and the subsequent decline in market prices. As a response to this increased competitive pressure, US and Canadian producers embarked on significant changes in work rules and practices related to their mode of production. For example, restrictive or rigid work practices that had led to overstaffing were loosened. These changes explained most of the labor productivity gains that the US and Canadian iron ore industries witnessed in the years following the collapse.

In addition, other empirical analyses show that policy reforms that loosen regulatory restrictions on competition also induce firms to seek improvements in their productive efficiency. The UK adopted a series of key economic reforms in the 1980s and 1990s to improve its long-term economic performance, including a policy reform that changed foreign firm entry conditions and opened the UK economy to greater foreign competition. Aghion et al. (2004) exploited these reforms to examine the impact of (actual) foreign entry on the productivity growth of incumbent firms using panel data on British establishments in the manufacturing industries for the period 1980–93. Their findings suggest that increased entry has a positive effect on the average rate of productivity growth among domestic incumbent firms and that it leads to faster aggregate productivity growth by increasing the incentives of incumbents closer to the technological frontier to innovate and escape competition. In addition, Fabrizio, Rose, and Wolfram (2007) find that the substantial productivity gains that followed the deregulation of the US electricity generation sector were caused by within-plant reductions in input costs, which then improved the operating performance of existing plants. Furthermore, when assessing the sources of Australia’s manufacturing productivity gains following its trade liberalization in the mid-1990s, Palangkaraya and Yong (2011) find that the productivity gains are mostly attributable to a fall in x-inefficiency as industries experiencing a high degree of trade liberalization shed employment. Pavcnik (2002) also finds large aggregate productivity gains attributable to the within-plant effect as a result of Chile’s trade liberalization.

A key determinant of a firm’s productive efficiency is managerial practice, which is ultimately influenced by competition pressure. Product market competition incentivizes firms to minimize organizational slack and upgrade their internal capabilities, such as technical, managerial, workforce, and general cognitive skills, as well as their technological innovation and absorption capabilities. Competition acts as a disciplining device, forcing managers to minimize slack, adopt better work and management practices, and constantly be on their toes looking for better techniques and technologies to raise outputs or produce at lower unit costs. As noted by Syverson (2011), managers are the conductors of the

production input orchestra, given that they coordinate the application of production factors such as intermediate inputs, labor, and capital. A weaker competitive environment, in contrast, does not encourage management to use the optimal combination of production inputs. Managers “get away” with organizational slack, operating at average cost levels higher than the optimal levels, and their firms are still able to survive in the midst of weak competitive pressure. Competition therefore reduces pure technical (or productive) inefficiencies within firms and results in aggregate productivity gains through improvements in their productive efficiency. Greater competition encourages firms to close the gap between their observed average costs and the optimal average costs (i.e., to decrease their x-inefficiency).

In light of this observation, several empirical studies show that differences in managerial practices and talent explain a significant portion of productivity differences across firms. The available empirical evidence suggests that greater competition enhances management quality and practices, and the management and productivity literature has identified differences in managerial practices and talent as a potential driver of productivity differences among firms and even among plants within the same firm. Empirical work by Bloom and coauthors (Bloom et al. 2012; Bloom et al. 2015; Bloom, Sadun and Van Reenen 2012; Bloom and Van Reenen 2007; Bloom and Van Reenen 2010; Van Reenen 2011) corroborate the finding that product market competition is positively correlated with higher management quality and practice scores, while Alimov (2013) finds that competition is positively related to the efficiency of managerial decisions with respect to merger and acquisition activities.

Greater competition enhances productivity within firms by fostering innovation—be it the creation of new products, new production processes, or improvements to existing process—to reduce costs. When competitive forces in a product market are weak, incumbent firms have no incentive to innovate in order to stay ahead of their competitors or escape the competition. Stronger competition therefore encourages firms to increase their innovation inputs, such as research and development expenditures, in order to discover new or improved products to retain their current customers or gain new ones. Successful innovation leads to obsolete products being replaced with new and improved ones and a greater variety of horizontally differentiated products becomes available in the market. This process of creative destruction and the expansion of the set of products available to consumers ensures that producers can meet consumers’ demand requirements dynamically. Firms that can make the necessary technological improvements to their products and processes get to stay in the market and reap the returns, while those that are unable to meet the innovation



challenges induced by rising competition exit the market. All these effects result in a dynamically efficient economy with greater productive efficiency, aggregate productivity levels, and growth than there would be otherwise.

The evidence suggests that greater product market competition boosts innovation inputs and outputs, which in turn drive productivity improvements within firms. Several theoretical and empirical papers have examined the link between increased product market competition and the innovative activity of firms.² The theoretical work of Vives (2008) suggests that, although the link depends on the measure of competitive pressure employed and which innovative activity (i.e., product or process innovation) considered, greater competitive pressure generally fosters innovation.

The empirical evidence also concludes that enhanced product market competition boosts innovation and hence productivity growth (Aghion et al. 2005; Aghion, Howitt, and Prantl 2015; Bassanini and Ekkehard 2002; Blundell, Griffith, and Van Reenen 1995, 1999; Cameron 2003; Correa and Ornaghi 2014; Égert 2016; Galdón-Sánchez and Schmitz 2002; Geroski 1990; Griffiths, Harrison, and Simpson 2010). For instance, Geroski (1990) relates major innovation counts to several concentration indices, as proxies of competition, in a sample of 73 three-digit SIC industries in the UK during the 1970–79 period and finds strong evidence that increases in competitive rivalry increase innovativeness. In addition, Bassanini and Ernst (2002) examine the link between product market regulation and innovation in a cross-section of OECD countries and find evidence of a negative link between research and development (R&D) intensity and both nontariff barriers and regulations in product markets. Similarly, Égert (2016) finds a strong positive relationship between overall R&D expenditures and multifactor productivity levels.

Although more-intense competition drives firms to innovate

and raises productivity within firms, there is a concern that too much competition can depress monopoly rents and harm innovation. As noted by Schumpeter (1942), too-low monopoly rents, driven by too-intense competition, can disincentivize firms and dampen their innovative and productivity-inducing activities, thereby decreasing not only aggregate productivity levels but also the firms' growth trajectories. Numerous studies by Aghion and coauthors suggest that the positive impact of greater competitive pressure on the innovative activities of firms depends on certain conditions, including intellectual property rights and whether the affected sectors (or firms within the sectors) are initially close to the technology frontier. Increased product market competition induces neck-and-neck firms at similar technological levels to innovate in order to escape competition (the escape-competition effect) but dissuades lagging firms from innovating (the Schumpeterian effect). The overall effect of increased competition on innovation depends on the initial level of competition in the economy and on the economy's level of development. Existing work suggests that the escape-competition effect tends to dominate the Schumpeterian effect at low levels of competition and in more advanced economies, while the opposite is the case at high levels of competition and in less advanced economies (Aghion et al. 2005; Aghion et al. 2018; Aghion and Howitt 1992). However, several studies have found results that dispute the existence of an inverted-U relationship between competition and innovation. Rather, they find either a positive relationship between competition and innovation outputs or no relationship at all between the two factors in some industries (Boldrin et al. 2011; Correa 2012; Correa and Ornaghi 2014; Hashmi 2013; Tabacco 2015).

2. Although the findings from the theoretical literature are not unanimous, only a few posit a negative relationship.



Competition and allocative efficiency (the between-firm component of productivity growth)

Product market competition fosters a better allocation of factors of production and market share toward more-productive firms, thus boosting aggregate productivity growth. Intense competitive pressure, either from abroad or from within a country, ensures that firms that can produce at lower costs (i.e., that are more efficient) than their industry competitors also sell at lower prices than their competitors, thus allowing them to draw customers, gain market share, and even force the least-efficient firms to cease production and exit the market. The resulting reallocation across firms of market share and resources such as land, intermediate inputs, labor, and capital—known in the literature as the business-stealing effect, market-sorting effect, or between-firms effect—can lead to a new market equilibrium in which production inputs and market share are more efficiently allocated across firms. Hence, output per factor inputs becomes larger for the more-efficient firms and smaller for the less-efficient ones.³

In an additional effect, distortions caused by a lack of domestic competition can draw resources away from some domestic sectors in favor of others, causing some sectors to grow too big and others too small and leading to allocative inefficiencies. Thus, greater competition ensures better allocative efficiency across firms and sectors: the productivity of the average functional firm improves after the reallocation effect, leading to enhanced aggregate productivity level and growth.

Several empirical studies have quantified the contribution of this reallocation effect to improvements in aggregate productivity, induced by greater competition. They find significant evidence of this effect in a broad section of manufacturing industries, both within countries (Baldwin and Gu 2006; Bartelsman and Dhrymes 1998; Disney, Haskel, and Heden 2003; Harris and Li 2008), across countries (Arnold, Nicoletti, and Scarpetta 2011; Hsieh and Klenow 2009; Scarpetta et al. 2002), and for specific sectors (Collard-Wexler and De Loecker 2015, for the US steel industry; Foster, Haltiwanger, and Krizan 2006, for the US retail trade sector; Olley and Pakes 1996, for the US

telecommunications industry; Syverson 2004, for the US ready-mixed concrete sector). For instance, Foster, Haltiwanger, and Krizan (2006) find that nearly all the gains in labor productivity growth in the retail trade sector following developments that led to a restructuring and reallocation of the sector's economic activity in the 1990s were caused by the reallocation of market share from less-productive incumbents to more-productive entrants. Furthermore, Collard-Wexler and De Loecker (2015) studied the introduction of the minimill, a new technology for producing steel, into the US steel industry in the late 1950s. This technology's proliferation, which increased competition, led to improvements in productive efficiency, which then led to a reallocation of economic resources and to productivity growth.

Empirical studies also show that exposure to international trade intensifies product market competition and ensures a better reallocation of resources between domestic and foreign markets. Trade liberalization intensifies product market competition as more productively priced foreign products enter the domestic market and the most-efficient domestic firms enter export markets. At the same time, it induces less-productive firms to concentrate on the domestic market and forces the least-efficient firms to cease production and exit the market. Therefore, exposure to trade ensures that only the more-productive firms remain in the industry, thus shifting resources to these surviving firms and increasing aggregate productivity. Indeed, several studies have shown that foreign and exporting firms are, on average, more productive than their domestic and non-exporting counterparts (Bernard et al. 2007; Bernard and Jensen 1999; Bernard, Jensen, and Lawrence 1995; Lipsey 2004; Melitz 2003). For instance, theoretical work by Melitz (2003) and Melitz and Ottaviano (2008), though operating through different economic channels, shows that exposure to trade does indeed cause the most-efficient firms to self-select into exporting activities, whereas the least-efficient firms exit the industry and other less-efficient firms elect to produce only for the domestic market. Empirical work by Pavcnik (2002) on Chile's trade liberalization finds

3. Ideally, in the long run, the reallocation process should ensure that productivity levels across all functional firms are equalized, with the resulting aggregate productivity level higher than it would have been without the competitive pressure.

evidence of aggregate productivity gains attributable to this reallocation effect.

In contrast, poorly designed product market regulations curb competitive pressure, preventing the efficient allocation of resources across sectors and dampening aggregate productivity. Government interventions in markets are sometimes justified (and, indeed, necessary) when market failures and other distortions in the operating environment cause resource misallocation across firms and dampen aggregate productivity growth.⁴ However, government interventions can also impede the competitive dynamics of markets by preventing entry and investment, reinforcing dominance, or favoring incumbents. Some such interventions include regulations restricting foreign entry into key enabling sectors; price controls, such as price ceilings and price floors; minimum entry requirements; and overly complex licensing and permit systems.

In this regard, empirical studies provide evidence that pro-competition government interventions can improve allocative efficiency. For instance, Olley and Pakes (1996) quantified the productivity gains stemming from a relaxing of regulations. The US telecommunication equipment supply industry saw significant entry following the loosening of regulations that had restricted entry prior to the early 1970s. This deregulation led to significant increases in the industry's productivity growth, and Olley and Pakes' decomposition suggests that these improvements were caused mainly by a reallocation effect.

In addition, the British government and many others supported anticompetitive behaviors, such as collusion and cartelization, in response to the 1930s' Great Depression in order to raise prices and prevent unemployment. Broadberry and Crafts (1992) assessed the effects of these collusive agreements, which caused a lack of competition, on the British-US productivity gap. Their findings suggest that British industries in which competition was suppressed (through anticompetitive behaviors such as cartelization and trade associations), such as tin cans, electric lamps, and blast furnaces, saw poor productivity relative to their US counterparts, while industries that witnessed fierce price competition, such as cement and margarine, saw the exit of inefficient firms, resulting in a high productivity gap with the US. As noted by Crafts (2012), other government-sponsored restraints on competition in sectors such as coal (Supple 1987), cotton (Bamberg 1988), and steel (Tolliday 1987) failed to foster productivity improvement.

Furthermore, Pellizzari and Pica (2011) examine the effects of the 2006 Italian liberalizing reform that removed pricing restrictions (such as price floors and bans on price bundling and contingent pricing) and other anticompetitive restrictions on the legal profession. They find that the removal of these restrictions, which reduced the entry barrier to the legal field and induced the entry of higher-productivity lawyers, resulted in greater productivity.

In addition, government participation in the economy, particularly a large presence of unproductive state-owned enterprises (SOEs) in industries with active private sector participation, can limit allocative efficiency and dampen aggregate productivity growth. The issue is not the presence of SOEs per se but the distortions created when the principles of competitive neutrality are not embedded in regulatory frameworks and when regulations and policies protect them from competition (Pop and Connon 2020). As such, the presence of these otherwise uncompetitive SOEs can limit resource allocation in their industries and depress aggregate productivity growth.

SOEs often possess undue competitive advantages over their private-owned competitors, such as financial support and access to favorable government policies including tax breaks, preferential interest rates on loans from state-owned financial institutions, debt guarantees and exemptions, exemptions from regulations such as antitrust enforcement, and preferential treatment for public procurement. Such conferred advantages, which are unrelated to the SOEs' economic performance, efficiency, technology-adoption capabilities, or management skills, tilt the playing field and allow inefficient SOEs to stay in operation and use up scarce resources. This effect causes allocative inefficiencies and misalignment of the factors of production, which hampers aggregate productivity gains attributable to allocative efficiency.

Empirical work on China suggests that the productivity growth attributable to China's SOE reform was caused mainly by improvements in resource allocation (Huang 2019). In addition, work by Brandt, Tombe, and Zhu (2013) suggests that resource misallocation reduced China's nonagricultural productivity by an average of 20 percent over the 1985–2007 period, with more than half of the loss attributable to within-province misallocation of capital between state and nonstate sectors. Thus, fostering competitive neutrality within markets, particularly those where SOEs operate, and designing mechanisms to minimize the distortive effects of state aid and other incentives can allow more-productive private incumbents to gain market share and new private firms to enter and compete.

4. Government interventions include government policies, regulations, rules, procedures, and actions by government officials that affect the decisions made by market players regarding economic matters.

Competition and market selection (the entry-and-exit component of productivity growth)

Product market competition drives incumbent low-productivity firms out of the market and encourages new high-productivity firms to enter. The process of entry and exit, or market selection, has been identified by selection models as an important component of industries' aggregate productivity growth. For instance, standard models of industry dynamics such as Ericson and Pakes (1995), Hopenhayn (1992), and Jovanovic (1982) assume that firms are heterogeneous only along the productivity dimension and that this idiosyncratic productivity difference is what drives firm entry, growth, and exit. When faced with fierce competition, a firm may exit the market if its productivity is such that the salvage value of the firm should it exit exceeds the discounted value of future profits from staying in operation. Competition increases the productivity threshold required for firm survival, and firms not meeting that threshold exit the market. The exit of low-productivity firms releases resources that could be more efficiently used by new entrants or incumbents. Competition therefore acts as a cleansing device that facilitates the Darwinian selection, or churn, process, and in so doing, it truncates the left tail of the productivity distribution and ensures higher aggregate productivity.

Increased competition stemming from trade liberalization or competition-enhancing regulatory reforms has been shown to increase observed average industry productivity through market selection. For example, Colombia introduced several major reforms during the early 1990s, including reforms that largely liberalized trade. Exploiting the sectoral changes in tariffs induced by these reforms, Eslava et al. (2013) find that the trade reform facilitated the exit of less-productive plants during the reform period. Similarly, many EU countries have introduced several product market reforms over the past two decades in order to make their regulatory environment more conducive to competition. Using annual country-sector data for EU countries, Anderton, Di Lupidio, and Jarmulska (2020) assessed whether product market regulation in the energy, transportation, and communications sectors is related to firm churn (birth and death rates) and then whether churn is related to total factor productivity. Their evidence suggests

that churn occurs at a higher rate when regulations enhance competition. In other words, when the regulatory environment is less friendly to competition, incumbent firms can remain in the market even when they are less efficient. The higher rate of firm churn induced by better product market regulations, in turn, leads to higher aggregate total factor productivity.

In addition, state participation in commercial activities in industries with active private sector participation can impede the development of competitive markets and limit productivity gains attributable to better market selection. In many countries, the state is involved in product markets as a producer or seller (as an SOE), as a buyer (through public procurement activities), and as a regulator (such as a sector's regulatory body). Such involvement can generate significant distortions in the economy. As mentioned earlier, it is not the mere involvement of SOEs but their preferential treatment relative to private players that generates these distortions and sustains inefficient SOEs. In addition, preferential treatments for SOEs tilt the playing field, sustains inefficient SOEs, and discourages more-efficient private players from entering SOE-ridden markets, thus harming aggregate productivity gains. Furthermore, SOEs tend to be used by the government as avenues for employment with no regard to productivity, resulting in resource misallocation.

In fact, the empirical evidence suggests that the presence of SOEs and other privileged firms in markets where private sector participation is viable limits the entry of new private enterprises and the exit of low-productivity firms with government connections. SOEs in countries and sectors of the Central, Eastern, and Southeastern European region tend to be less productive than their privately-owned counterparts, and the more they dominate their sectors, the greater the overall inefficiencies (Richmond et al. 2019). In addition, Sekkat (2009) finds a positive impact on productivity growth of a decrease in the share of SOEs in a given industry, and Brown, Earle, and Telegdy (2006) find that privatization of SOEs tends to improve productivity.



Competition in upstream service sectors and productivity growth among downstream users

Pro-competition product market reforms enhance the productivity not just of the directly affected sectors but also of other sectors that use the outputs of those sectors as inputs. Many key upstream industries impact the performance of firms in downstream industries through such input-output links. For instance, firms in the manufacturing industries rely on intermediate services provided by key service sectors such as energy, transportation, telecommunications, and professional services as production inputs. Therefore, poor regulations or anticompetitive business practices in those key upstream sectors can trickle down and have severe consequences for the performance of downstream firms. The literature highlights two important channels through which fiercer competition in upstream industries can positively impact the performance of downstream firms. First, competition in upstream markets can directly generate downstream productivity gains as downstream producers get access to cheaper and higher-quality intermediate inputs. Second, upstream competition can induce downstream firms to allocate some of their savings caused by the reduction in input prices into productivity-enhancing activities such as innovation, the adoption of better technology and managerial practices, and workers' training.

Several studies suggest that anticompetitive regulations (and hence reforms that promote competition) in key upstream service industries affect the productivity performance of downstream manufacturing industries. Among the OECD countries, Barone and Cingano (2011) and Bournès et al. (2013) find that anticompetitive regulations in key upstream service industries like energy, transportation, communications, and professional services have significantly restricted the productivity growth and export performance of the manufacturing industries that used these upstream services

most intensively and that the impact is stronger for industries closer to the productivity frontier. Cettè, Lopez, and Mairesse (2013, 2015, 2016), Correia and Gouveia (2017), and van der Marel, Kren and Ito (2016) all find relatively similar results.

Country-specific evidence also supports the finding that service sector reforms have had significant positive impacts on the productivity of firms in the manufacturing industries. For instance, Bas (2014) finds that India's energy, telecommunications, and transportation reforms in the 1990s, which led to the liberalization of those service industries, also led to improvements in the export performance of downstream manufacturing firms, with stronger effects for firms that were initially more productive. Arnold, Javorcik, and Mattoo (2016) find that banking, telecommunications, insurance, and transportation reforms in India also enhanced the productivity levels of manufacturing firms. Similarly, Arnold, Javorcik, and Mattoo (2011) find that the Czech Republic's service reforms induced the entry of foreign firms into the country's service industries and led to productivity improvements in manufacturing firms that used the services as inputs. Similarly, Bas and Causa (2013) find that China's structural reforms before and after its accession to the World Trade Organization in 2001, which led to the liberalization of key service sectors like energy, telecommunications, and financial services, resulted in aggregate gains in manufacturing productivity, again with stronger gains for firms that were closer to their industries' technological frontiers. Finally, De Rosa et al. (2009) find that reducing regulatory restrictions in the energy, transportation, and communications sectors in Croatia to the EU15 standard would raise Croatia's GDP per capita by about 1.4 to 2.8 percent.



Competition law enforcement and productivity growth

Tackling anticompetitive business practices can also boost aggregate productivity and overall GDP growth. There is a consensus in the economic literature that collusive, predatory, exclusionary, and otherwise anticompetitive practices and behaviors, which limit competition, can have a negative effect on a country's economic growth and development. By limiting market competition, such practices and behaviors often lead to suboptimal market outcomes, such as low productivity, and generate welfare losses for the economy.⁵ Indeed, several empirical studies have linked cartels with deteriorating allocative, productive, and dynamic efficiency. For instance, Broadberry and Crafts (1992) find that collusive agreements in Britain, which the government supported as a response to the Great Depression, hampered the productivity gap with the US in British industries where competition was suppressed. In addition, Günster, Carree, and van Dijk (2011) assessed the productivity of 141 publicly listed firms that were involved in 49 cartel-related infringements of EU competition law between 1983 and 2007, and they find that the firms' productivity during their cartel period was significantly lower than it was before and afterward.

In addition, the introduction of rules to safeguard competition can boost productivity growth. Well-designed competition law and its effective enforcement (or lack thereof) has been strongly linked to productivity and economic growth. Empirical evidence suggests a robust positive association between effective enforcement of competition law and both productivity and GDP growth (Buccirossi et al. 2013; Dutz and Hayri 1999; Dutz and Vagliasindi 2000; Petersen 2013; Symeonidis 2008; Voigt 2009). For instance, Dutz and Vagliasindi (2000) find that increasing the effectiveness of competition policy implementation—as measured by the policy's enforcement, advocacy, and institutional effectiveness—resulted in the expansion of more-efficient private firms. Also, when assessing the productivity effect of the 1956 Restrictive Trade Practices Act (which abolished restrictive agreements between firms in numerous industries in the UK and thus intensified competition in those industries in subsequent years), Symeonidis (2008) finds that labor productivity grew more slowly in collusive industries than in noncollusive industries prior to the Act but that the difference shrank enough to lose statistical significance in the years after the Act. Therefore, enhancing the enforcement of competition law is crucial to ensuring that consumers can benefit from efficient markets.

5. Cartels have also been linked with significant overpricing worldwide. For instance, successful cartels have been shown to have a mean overcharge of about 50 percent, and international cartels have an even larger mean overcharge (Connor 2014).



Competition and jobs

Fostering competition in product markets can promote economic transformation, which is critical to creating more, better, and inclusive jobs, through several channels. Product market competition can stimulate firms' demand for labor and thus increase the quantity of new jobs created and reduce underemployment. In addition, greater competition helps drive labor into more productive jobs, and such jobs generally command better wages and may also provide stable incomes, better working conditions, and social protection. Fierce competition can also ensure that income-earning opportunities are available to all people, including the poor, youth, women, and disadvantaged groups. More, better, and inclusive jobs, in both the formal and informal sectors of the economy, are crucial to reducing poverty and achieving shared prosperity. However, although these employment outcomes may occur in the long run, competition may also cause a short-term job destruction effect.

Competition and more jobs

Fierce competition is expected to stimulate firms' willingness to invest and their demand for labor. There are two key channels through which competition may lead to job creation. First, competition exerts downward pressure on prices and thus reduces the level of rents (or price markups) charged by firms. It does so by forcing firms to either align their output prices with marginal costs or transmit some of their cost savings from productivity gains to consumers and other businesses in the form of lower output and input prices. Either way, consumers and other businesses will have more money to spend, either on the same products (depending on the products' price elasticity of demand) or on other goods and services elsewhere in the economy, thus causing firms to demand more labor (i.e., to create jobs) in order to meet the increased output demand. Second, producers can invest some of their productivity gains to expand their activities in other markets, thus raising their demand for labor and creating jobs. These two mechanisms both increase demand for jobs, bringing new, more, and better jobs into the economy. However, this phenomenon occurs over the long term; in the short term, competition may curtail job growth through displacement effects as some firms are driven out of the market.

Against this backdrop, theoretical and empirical work suggest an overall positive effect of product market competition on jobs in the long term. For instance, theoretical work by Blanchard and Giavazzi (2003) suggests that competition-enhancing product market deregulation that reduces entry costs leads to higher real wages and lower unemployment rates in the long term, with no short-term negative effect on output. In their model, such deregulation has no short-term effect because the number of firms is assumed to be fixed in the short term. However, in the long term, more firms enter the market because of the reduced entry costs. This change leads to higher demand elasticity and lower price markups, which then increase

aggregate demand and hence raise employment and lower unemployment. Empirical work by Griffith and Harrison (2004) also suggests that product market reforms enhance employment. According to their findings, reforms that lower entry barriers, remove price controls, and lessen the state's involvement in production enhance competition by lowering average markups in the economy. Greater competition in turn results in higher employment and investment, particularly in the service industry. In addition, Bordon, Ebeke, and Shirono (2016) find that product market reforms are linked to higher employment rates and that the bulk of the gains occur in the second year post the reforms and afterward. Also, Correia and Gouveia (2017) find that competition-enhancing deregulation in upstream network sectors results in employment growth gains for downstream industries.

The empirical evidence also suggests that restrictive entry regulations curb competition in markets and limit job creation. Several studies have examined the impact on employment of loosening specific regulations that dampen competitive pressure in various markets. Regulations such as price controls, zoning requirements, occupational licensing, and opening hours can all restrict entry and depress competitive pressure. Thus, loosening them will in some cases benefit the economy. For instance, commercial zoning regulation introduced in late 1973 in France required regional zoning boards to approve the entry of large retail stores or the expansion of their activities. Exploiting the variation in approval rates across time and space, Bertrand and Kramarz (2002) examine the impact of the deterrence of entry on employment growth. Their findings suggest that stronger deterrence of entry resulted in higher retailer concentration and higher prices, which led to slower employment growth in the food retail sector.

Empirical studies also present evidence that the effects of competition-enhancing policies on jobs depend partly on the nature of product market reforms, policies and institutions in other markets (such as the labor market), and their interactions. For instance, although some studies find that competition-enhancing product market reforms are more effective in reducing unemployment when labor market regulations are tight and enhance the bargaining power of workers through unions that promote employment (Fiori et al. 2012; Griffith, Harrison, and Simpson 2006; Nicoletti and Scarpetta 2005), other findings suggest the opposite, that product market reforms are more successful when labor market policies are less restrictive or less favorable to workers (Amable, Demmou, and Gatti 2006; Bassanini and Duval 2006; Berger and Danninger 2007; Spector 2004).

In addition, evidence suggests that the long-term positive effect of product market competition on jobs may involve a short-term tradeoff. The realization of the positive employment effects of product market competition may take time, and short-term employment losses may be immediate. Evidence from some studies shows that the long-term gains can entail significant short-term depressing effects (Bassanini 2015; Bouis et al. 2012; Cacciatore et al. 2016; Cacciatore and Fiori 2016). However, other studies point to no such negative effects (Bouis, Duval, and Eugster 2016) or even positive short- to medium-term gains (Andrés, Arce, and Thomas 2017; Gal and Hijzen 2016).

Competition and better and inclusive jobs

The empirical evidence as to the effect of product market competition on wages is scanty and mixed. Some studies find that greater product market competition has a positive effect on wage growth in South Africa's manufacturing industries (Dauda, Nyman, and Cassim 2019) and on wage levels of employees in China's listed firms (Yang 2016). Additionally, the theoretical work of Blanchard and Giavazzi (2003) suggests that competition-enhancing product market deregulation leads to higher real wages by lowering output prices. However, other studies find little to no discernible effect of competition-restraining practices on wages (Blanchflower and Machin 1996; Symeonidis 2008), while others even find that product market power has a positive impact on wages (Nickell, Vainiomaki, and Wadhvani 1994).

Nevertheless, product market competition may lead to higher wages through its effect on productivity. The available evidence suggests that product market competition induces firms to be more productive, and there appears to be a positive link between productivity and high-paying jobs. Several studies suggest that reforms that expose the domestic market to greater competition can induce foreign firms to enter domestic markets and induce exporting firms to enter foreign markets. There is empirical evidence that foreign and exporting firms generally pay higher wages because they are more productive on average than their domestic and non-exporting counterparts and transmit some of their productivity gains to workers through employment and wage premia. For instance, Brambilla, Chauvin, and Porto (2016) find that, on average, exporting firms in developing countries pay 31 percent higher wages than non-exporters, although there are variations across countries. Similarly, a series of studies by Andrew Bernard and his coauthors find the existence of an

export wage premium for US manufacturing firms (Bernard et al. 2007; Bernard and Jensen 1999; Bernard, Jensen, and Lawrence 1995). In addition, various studies find evidence of a foreign wage premium (Aitken, Harrison, and Lipsey 1996; Egger, Jahn, and Kornitzky 2019; Fukase 2013; Heyman, Sjöholm, and Tingvall 2007; Martins 2004).

Product market competition can also stimulate firms' willingness not only to pay their workers higher wages but also to reduce the gender wage gap. Theories of taste-based discrimination postulate that competition will drive discriminatory behavior by employers out of the market. Several studies document the positive impact of competition on women's employment. For instance, Ashenfelter and Hannan (1986) find that product market competition has a positive effect on the relative employment of women. Furthermore, Cooke, Fernandes, and Ferreira (2019) find that increased product market competition—induced by Portugal's business registration reform—enhanced the growth of the female employment share and reduced the gender pay gap for middle managers and for medium- and high-skilled workers (but not for top managers or the unskilled). Moreover, Belfield and Heywood (2006) find that greater competition leads to significantly smaller differences in pay between men and women, an indication that in competitive markets, worker productivity is valued more by managers than other employee characteristics.

However, greater competitive pressure triggered by trade and product market liberalization can increase wage inequality. Several studies have found that trade and product market liberalization has diminished labor's share in income and increased wage and income inequalities in many countries (Anand and Khera 2016; Borjas and Ramey 1995; Guadalupe 2007; Slaughter and Swagel 1997). Stronger competition in an industry forces firms to attract better workers, which in turn raises the returns to skilled labor. As product market competition become more intense, firms with lower marginal costs benefit more from higher profits as market share is reallocated toward them. If high-skilled workers produce at lower costs, then the demand for high-skilled workers and their returns will rise as product market competition intensifies, thus widening the wage gap between high- and low-skilled workers (Guadalupe 2007). This impact of product market competition on wage inequality is more severe the more concentrated an industry is (Borjas and Ramey 1995).

In addition, some studies show that stringent product market regulations can increase informality and expand the informal sector, which can be an obstacle to productivity growth and therefore dampen the creation of better jobs. Informal sector firms are often less productive than their formal sector counterparts because they tend to operate on a small scale and with obsolete production technology, employ a less-productive workforce or lower-quality management, and lack access to formal sources of finance, among other drawbacks (La Porta and Shleifer 2008). As a result, rising informality has been noted to decrease economic growth (Loayza, Servén, and Sugawara 2010). However, informal firms often do not pay taxes or comply with regulations, unlike their formal sector counterparts, and this cost advantage more than offsets their low productivity and small scale (Farrell 2004). This effect allows them to charge lower prices than formal sector firms and drive market share away from them. As such, strong informal sector competition faced by formal sector firms in the same market can be an obstacle to productivity growth as well as to better jobs because it can prevent the more-productive formal sector firms from gaining market share. However, some studies suggest that facing intense informal competition can boost the productivity of formal sector firms because it forces formal firms to innovate or adopt new technologies in order to be productive enough to withstand this competition (Ali and Najman 2015).

The evidence also suggests that competition in the formal sector can reduce the level of informality in an economy. Several studies find that enhancing product market competition by reducing formal sector entry costs reduces the level of informality in an economy (Anand and Khera 2016; Charlot, Malherbet, and Terra 2015; Munkacsi and Saxegaard 2017). For instance, Charlot, Malherbet, and Terra (2015) find that loosening product market regulation by reducing formal sector entry costs reduces not only the level of unemployment but also the level of informality at the time. Anand and Khera (2016) find that structural reforms that decreased formal regulation of India's product and labor markets reduced informality. Higher gains are experienced when product market and labor market deregulation reforms are combined. Munkacsi and Saxegaard (2017) find similar long-term gains from product and labor market reforms in South Africa.





Concluding remarks

The JET agenda is about fostering aggregate productivity improvements in order to achieve economic transformation that delivers better and inclusive jobs for more people in a sustainable way. Productivity improvements can occur when labor and other resources are moved from low-productivity firms and sectors to high-productivity ones (reducing resource misallocation), when firms innovate and upgrade their production processes and other internal capabilities (increasing efficiency), or when more-productive firms enter the market and compete for market share, forcing unproductive firms to exit the market (spurring market selection). Economic transformation occurs when the allocation of resources across firms and sectors is optimized.

Although several policies matter for promoting the JET agenda, policies that enhance product market contestability are important among them. In light of this, increasing domestic and foreign firm participation in key enabling markets and removing anticompetitive sectoral regulation that limits entry and expansion may be important to the JET agenda. Mainstreaming competitive neutrality principles in government interventions (to ensure a level playing field) and instituting rules (and effectively enforcing them) against abuse of dominant market positions and other anticompetitive practices, such as hardcore cartels, may be critical as well. And fostering an effective merger control framework that balances the need to review mergers that could harm competition with the costs of unnecessary merger review may also be important. All these competition-enhancing measures can promote market functioning and increase rivalry and market contestability.

This review of the theoretical and empirical literature on competition and JET transmission channels shows that greater competition is crucial to achieving the JET agenda. Effective competition induces firms to be more productive and innovative (in order to keep up with frontier firms), ensures a better allocation of resources across firms and sectors, and forces less-efficient firms to exit the market and more-efficient firms to enter and gain market share. Greater competition, induced by reforms that facilitate entry and expansion, can directly generate more, better, and inclusive jobs. And in the medium to long term, greater competition can also foster better and inclusive jobs for more people by improving productivity, which can increase demand for labor by (a) reducing prices and thus generating higher demand for the same products or (b) leading firms to invest productivity gains in business activities that create higher demand for other goods and services.

However, it is important for policymakers to recognize the transition costs associated with economic transformation. The quest to transform economic structures in order to achieve sustained economic growth and higher standards of living may entail some adjustment (or transition) costs. As resources are transferred to firms and sectors where they may be used more productively, other firms and sectors may experience temporary or permanent job displacement. These structural unemployment costs, and other costs associated with the transition to more productive economic activities, may have to be attenuated by other policies, such as labor-market reforms and other reforms that minimize the impact of any short-term job losses that arise.





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