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Informal employment: An explanation from the demand

Empleo informal: una explicación desde la demanda

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Abstract

The paper presents a demand-led explanation of informal employment. Our proposal suggests that it is premature deindustrialization that developing economies are undergoing the main cause of informal employment. To support our theoretical argument, we present empirical evidence using data of selected economies of Latin America. The results of our panel data estimation indicates that in effect premature deindustrialization explains informal employment. Therefore, to reduce it, a policy focused on reindustrializing the economy must be implemented.

JEL Code: E12, O14, O17.
Keywords: informal employment; premature deindustrialization; effective demand; Latin America

Resumen

Este artículo presenta una explicación desde la demanda del empleo informal. Nuestra propuesta sostiene que es la desindustrialización prematura que aqueja a las economías en desarrollo la causa del empleo informal. Para soportar el argumento teórico, presentamos evidencia empírica usando datos de un grupo de economías de América Latina. Los resultados de nuestra estimación de panel indican que en efecto la desindustrialización prematura incide en el empleo informal. Para reducirlo, por lo tanto, una política enfocada a la reindustrialización debe ser implementada.

Código JEL: E12, O14, O17.
Palabras clave: empleo informal: desindustrialización prematura; demanda efectiva; América Latina

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Introduction

One of the most pressing problems facing developing economies is informality, particularly employment in this sector. The International Labor Organization (ILO, 2016) states that the rate of informal employment in developing and emerging countries is over 50 percent. Informal employment, in general, is distinguished by the lack of employment benefits established by law (such as guaranteed access to health insurance), low wages, and instability, in other words, job insecurity. As a result, belonging to and remaining in informal employment portends poverty. On the other hand, informal employment does not typically require skilled employees, so the productivity observed there is low, contributing to aggregate productivity only marginally (Benjamin & Mbaye, 2014). Productivity growth, it must be emphasized, largely explains the success of economic growth and development, so widespread informal employment also makes it difficult to accelerate productivity growth. In short, informal employment represents a challenge for developing economies. To narrow it down, the main question the literature has tried to answer is what causes it (Günther & Launov, 2012; Jiménez Restrepo, 2012).

The efforts that have gained prominence in understanding informal employment are generally a strand of neoclassical or neo-Keynesian theory. One is known as the escape theory, and the other as the exclusion theory (De Soto, 1989; Perry et al., 2007). In addition, there is also the argument derived from Lewis' (1954) growth model for understanding informality (Laporta & Shlefier, 2014). That is to say, up to now, the theoretical proposals in vogue assume, on the one hand, that the origin of informal employment lies in the imperfections of the labor market or that it is a consequence of a rational decision of economic agents to enter into informality or that, on the other hand, the surplus labor that is released (essentially from the primary sector) cannot be absorbed by the modern sector due to the slow growth of investment in said sector. In either case, the starting point comes from the supply side. For the same reason, the role that effective demand can play in informality is omitted. Effective demand has proven to be relevant and successful in understanding various economic phenomena (see Keynes, 2000).

So far, efforts to include demand as a means of understanding informality are non-existent at the theoretical level and have only been marginally considered in empirical work (Jimenez Restrepo, 2012). Therefore, this paper intends to propose an alternative theoretical argument derived from Kaldor's (1989, 1967) deindustrialization model to explain informal employment and present this proposal's empirical results using data from Latin America. In short, attention is focused, theoretically and empirically, on the role of demand in understanding informality, attempting to make a relevant contribution to the literature.

The paper is structured in 5 sections, including this introduction. The following section describes the prevailing theories on informal employment to highlight the absence of the demand side in their

analysis. The third section presents the theoretical argument on how premature deindustrialization explains the existence and dynamics of informal employment. The fourth section presents the results of an econometric exercise using panel data from Latin American economies to support the preceding theoretical argument. The last section presents some policy recommendations to reduce informal employment.

Informal employment: An explanation from the supply side

To date, the predominant theories for understanding informal employment have been based on the economy's supply side. Indeed, on the one hand, there are theories based on the argument of the rigidities faced by the neoclassical (or neo-Keynesian) labor market. On the other hand, there is the argument derived from Lewis' (1954) growth model, which is also based on the economy's supply side. In the remainder of this section, these theories are described, emphasizing that they are developed exclusively on the economy's supply side.

As is well known, the neoclassical theoretical view postulates that the levels of output and employment are determined in the labor market. Thus, in the short run, the level of full employment is determined by the interaction of the decisions of companies and workers to maximize their profits and utility, respectively. These decisions converge in the labor market. That is to say, when productivity and the marginal cost of labor are equalized, the excess supply and demand for labor disappear, establishing a full employment equilibrium, leaving only so-called structural, cyclical, or voluntary unemployment, which makes up the open unemployment rate of an economy (Curthbertson & Taylor, 1987)

Nevertheless, according to this theory, when rigidities are observed in the labor market, it is impossible to achieve full employment, thus giving rise to unemployment that is neither cyclical, structural, nor voluntary. Without an institutional framework that guarantees unemployment insurance (as is the case in developing economies), this labor force must earn a living somehow, seeking alternatives outside the formal market. Thus, the inflexibility or rigidity of the labor market gives rise to informal employment.

Labor market rigidity has its origins in three potential sources. In the first instance, government regulations on the labor market, the establishment and operation of companies, and the taxation of workers and companies. Regarding labor legislation, for example, the creation of labor unions, the establishment of minimum wages, and restrictions on dismissal stand out. This entire legal framework reduces the flexibility of the labor market. Tax policies, also called distortionary taxes, tax the worker's income and the company's profits. Finally, there are the policies or regulations governing the establishment and operation of the companies.

Secondly, the rigidity comes from the companies themselves through, for example, entry clauses for hiring their employees or through the establishment of efficiency wages. The third source comes from the strength of unions to negotiate wages higher than those consistent with their labor productivity. Each of these rigidities is captured, in general, by the theories of escape and exclusion, which are predominant in understanding the origin of (and solution to) informal employment.

The escape theory, also noted as the romantic explanation of informal employment (Laporta & Shlefier, 2014), states that informality is a consequence of a rational and even optimal decision of economic agents in the face of distortionary taxes. That is to say, workers and entrepreneurs estimate, as a result of a scrupulous analysis, that the benefits of informality are superior to those of formality and choose to enter such a market (Perry et al., 2007). For example, individuals who aim to maximize their profit can decide between two options: entering the labor market through the formal or informal sectors. Their decision will result from evaluating the benefits and costs of a job in each sector. Among the benefits in the formal sector are employment benefits such as retirement savings funds, vacations, and access to social security, including housing loans and access to health care.

Nevertheless, these benefits are accompanied by deductions from their salary that are allocated to the payment of taxes, among them their social security contributions. Therefore, if a worker prefers a higher wage that is not subject to tax deductions, the worker will be strongly motivated to enter the labor market through the informal sector where such taxes do not exist, thus increasing profitability. As can be seen, a worker's decision to join the informal sector results from tax policies distorting the formal sector. The same logic is followed when entrepreneurs decide whether to enter and remain in the formal market by complying with the rules and regulations established there, which implies higher costs (and reduced profits) or to enter the informal market where such regulations are non-existent (and profits are not reduced in this way).

Companies' decisions can also give rise to rigidities in the labor market. Consider, for example, the case of companies that, by imposing certain restrictions on hiring, exclude a segment of the labor supply. In other words, the exclusion theory, another of the predominant theories derived from a form of labor market segmentation, suggests that the establishment of certain types of requirements in the formal labor market for hiring a worker, based on age, gender, years of work experience, educational level, or school of origin, among others, gives rise to informality by discriminating against potential workers who do not conform to the established profile (Perry et al., 2007). In other words, certain workers are displaced to unprotected, low-productivity jobs, their only employment alternative due to these requirements.

One strand of the exclusion theory originates from the imperfections that workers may generate when negotiating their wages. Here, the bargaining power of a group of workers (called insiders) to set their wages above the marginal productivity of labor that the market cleans up has an impact on the group

of workers without jobs (called outsiders) but willing to work at a lower wage, being excluded from formal employment (Carlin & Soskice, 2006). Thus, by being able to negotiate a higher wage than would clear the market, workers leave out their peers who would be willing to work at a lower wage, forcing them to seek sustenance in informality. The same happens when companies establish efficiency wages (those above marginal productivity) precisely to raise employee productivity, avoid talent drain, or reduce the costs of training new employees. Accordingly, efficiency wages also exclude from the formal market workers willing to work at a lower wage, thus forcing them into informality.

Thus, as can be seen, the origin of informality seen from the neoclassical or neo-Keynesian labor market can be explained by the imperfections that exist in the formal labor market. So it is in this market that the solution to the problem of informality lies. It is not surprising, therefore, that many of the studies on informality start (implicitly or explicitly) from some of the above theoretical arguments to test them empirically and, from there, derive public policy suggestions to try to reduce them. In this regard, there are works that, for example, show that the minimum wage is a source of informality (Del Caprio & Pabon, 2017; Broecke et al., 2017). Others suggest cost reduction for companies in the form of lower taxes or the disappearance of contractual obligations (Anand & Khera, 2016, for the case of India, or Vargas, 2015, for the case of Paraguay). Some suggest increasing the quality of human capital (understood as increased education) and the government's capacity to enforce the law in the labor market (García Cruz, 2011, for the Colombian case); for his part, Loayza, (2007), for the Peruvian case, reaches similar conclusions in the sense that increasing the quality of human capital, greater labor market flexibility, greater government capacity to enforce the law as well as improved public services can reduce informal employment.

The second theoretical argument from the supply side that has been used to explain informality stems from dual or structural growth models (Jiménez Restrepo, 2012; Laporta & Shefleir, 2014), in particular the famous Lewis model (Puyana & Romero, 2012; Todaro, 1969). One of the characteristics of this model is to assume the existence of an infinite supply of labor in the subsistence sector (also called traditional or primary). The model assumes that marginal productivity, and therefore the wage, is higher in the modern sector than in the traditional sector, and therefore labor from this sector is attracted to the modern or formal sector. It also assumes that the modern sector employs this labor force to the extent that this sector reinvests its profits, i.e., each time it expands its production capacity. This process is continuous until the infinite labor force of the traditional sector is exhausted. At that point, the economy will have moved to more advanced stages of development because the productivity of both sectors will begin to equalize. It is very difficult, nonetheless, for the process to occur uninterruptedly until the economy matures. If the modern sector stops investing or invests at a lower rate than the rate at which labor is released from the traditional sector, there will be an excess of unemployed labor. One of the resulting phenomena will be informal employment. In other words, all those workers who cannot find a place in

the modern sector will look for a way to earn an income and do so in the informal sector. Thus, the lower the growth of the modern sector due to low investment dynamics, the larger the size of the informal economy.[1]

The mechanism to reduce informality derived from the Lewis model involves increasing investment to absorb unemployed labor. As a neoclassical model, as pointed out before, investment can only be stimulated strictly through the interest rate or the banking sector (by deregulating it to encourage and capture more savings).

From all the above, it can be inferred that the explanation and solution to the problem of informal employment lie on the economy's supply side, that is, in the labor market or in the mechanisms that encourage investment in the so-called loanable funds market. The demand side is absent in the explanation of this phenomenon. For example, wages and their growth in the Lewis model are viewed simply as a cost of understanding employment dynamics. Thus, the dominant explanations of informal employment theoretically omit the role of demand. Its role has been included rather marginally in empirical work mainly through the economic growth rate or per capita income (Jiménez Restrepo, 2012; Laporta & Shlefeir, 2014) or by thinking about the extent to which income affects the demand for goods and services in the informal sector (Böhme & Thiele, 2011).

To this end, there is no theoretical argument that focuses on the evolution of demand to explain informality, even though, as known, there is a whole theory from that side of the economy to understand various economic phenomena (Keynes, 2000). Its significance cannot and should not be ignored. Therefore, it is believed that an important gap in the literature on informal employment needs to be filled. The following section intends to propose a theoretical argument to that effect based on Kaldor's (1967, 1989) work on deindustrialization and its version of developing economies recognized as premature deindustrialization (see, among others, Dasgupta & Sigh, 2006, Rasiah, 2011, Cruz, 2015). The basis for this argument rests, of course, as shall be seen, in the evolution of demand.

Premature deindustrialization and informal employment

The theory of economic development suggests that the transformation of the production structure, from one dominated by the primary sector to one dominated by the tertiary sector, is the normal and endogenous process through which every capitalist economy eventually passes (see, for example, Lewis, 1954, Kaldor,

[1]It is interesting to note that the Todaro (1969) and Harris & Todaro (1970) models argue that even when they know that there is no short-term employment in the modern sector, workers in the traditional sector will decide to migrate in the expectation of a higher permanent income in the long run, once they are employed in the formal sector. In other words, their models represent the idea that there is a transition zone between the traditional and formal sectors, which can be interpreted as the informal sector.

1967, Rostow, 1956). In this process, employment evolves in the same direction; that is, most of the labor force is initially employed in the primary sector and then moves to the secondary sector, particularly manufacturing, and finally to the service sector. Thus, economic development theory suggests that outsourcing an economy is the successful culmination of the development process if it is associated with high levels of welfare, where, under normal conditions, low unemployment and well-paid jobs are standard.[2]

The reason why the successful outsourcing of an economy can be seen as the pinnacle of economic development has much to do with what happens on the way to that stage in terms of productivity, income, and consumption patterns. Economic success lies in what happens during the industrialization stage, understood not only as an increase in the share of the sector's output and employment in total output and employment, respectively but also as an increase in the economy's capacity to both organize and transform its production activities (Chang, 2004). When such a process is successful, the incentives for the emergence of informality are low and therefore, informal employment will not be elevated. Thus, to explain this proposal, the first step is to detail why informality does not emerge (or is small) in successful industrialization and mature deindustrialization processes.

The basis of the argument is the work of Kaldor (1967, 1989), who, perhaps more than anyone else, has shed light on the significance of the processes of both industrialization and deindustrialization in capitalist economies. Indeed, his work highlights, in essence, that the faster the engine of economic growth grows, i.e., the manufacturing sector, the faster the economy will move, generating a virtuous circle of productivity growth-increased demand generation, of employment-rapid economic growth. In these conditions of rapid industrialization, it will be unusual to observe, among other economic phenomena, the expansion of informal employment.

According to Kaldor (1967), the manufacturing sector is the engine of growth due to its unique characteristics. First and most importantly, increasing returns to scale are likely to occur predominantly due to technological progress and skill specialization, which implies a steady increase in productivity. Second, since this sector is strongly linked backward and forward with the rest of the productive sectors, this productivity spills over to the economy. Finally, due to this linkage, demand from the manufacturing sector drives the rest of the sectors, particularly the service sector, which generates labor absorption. The

[2]Laporta & Shleifer (2014) present evidence that the greater the economic development, measured in terms of income per person, the smaller the size of the informal sector. Accordingly, the informal sector tends to disappear as the economy successfully outsources.

essence of these arguments is captured in his laws of growth[3], which have been extensively validated[4]. Haraguchi et al. (2017) comprehensively review the literature focused on papers that positively test Kaldor's first law in developing economies. On the other hand, using novel econometric techniques, Andreou et al. (2017) show that for the U.S. economy, the industrial sector explains 60% of the variation in GDP, while the manufacturing sector explains 14% of that variation. That is, even in mature economies (with substantially smaller manufacturing sectors than in the past), Kaldor's first law holds.

It is important to note that as employment and productivity increase in the manufacturing sector (and in the rest of the productive sectors), wages will grow due to the dynamism of productivity and the greater bargaining power of workers. Income growth, according to Engel's law, defines consumption patterns. In the early stage of industrialization, manufactured goods will be predominantly demanded and consumed because the income elasticity of demand for these goods is equal to or greater than unity. This characteristic, the high demand for manufactured goods, reinforces industrialization as output and employment growth. Eventually, as productivity, employment, and income continue to rise, consumption patterns and demand change; now, the income elasticity of demand for services is greater than unity, while that for manufactured goods is equal to or less than unity. This fact signals the end of industrialization and the beginning of mature deindustrialization, or successful outsourcing (see Rowthorn & Ramaswamy, 1999). In other words, due to the constant increase in income, the demand for services increases, which encourages this sector to grow in output and employment, so its role as an engine of growth and employer is increasingly important.

What is relevant for these purposes is that the productive sectors consolidate and mature thanks to the growing income and demand, predominantly for manufactured goods and later for services. This enables them to steadily absorb the labor force that is being released or incorporated into the labor market, thus naturally preventing the formation or expansion of informal employment. That is, "Changes in consumer preferences and consumption patterns during economic growth [generate] changes in the means of production and the products and services offered to final demand. It is ultimately what happens on the demand side [...] which defines how producers allocate their resources and transform their technological opportunities into profitable goods and services" (Cotsomitis, 2015: 450). Furthermore, it is important to

[3]Kaldor's laws can be explained as follows. Kaldor's first law distinguishes the causal relation between the growth rate of manufacturing and that of output, i.e., the law states that the faster the growth rate of manufacturing the faster the growth rate of GDP. Kaldor's second law (also known as the Kaldor-Verdoorn law) establishes a causal link between the productivity of the manufacturing sector and the growth of the economy as a whole. Finally, Kaldor's third law, which is a consequence of his first law and which also supports the first and second, establishes a positive and significant correlation between the rate of growth of the economy's output and the rate of growth of employment in the manufacturing sector (Kaldor, 1967).

[4]Mamgain (1999), however, proves that Kaldor's third law does not explain productivity in some newly industrialized Asian countries. Consequently, he suggests a revision of Kaldor's laws in the context of globalization.

emphasize that demand evolves only if income increases. Thus, when the economy finally begins to outsource, it has not only a manufacturing sector that maintains its importance for the economy as an engine of growth and employer but also a strong service sector, capable of sharing the role of economic growth driver and, perhaps more importantly, an employer of labor, with high wages prevailing in both sectors.

Thus, if demand patterns play a crucial role in the shift toward outsourcing, it should not be surprising that the process of mature deindustrialization (understood as a steady decline in the share of manufacturing output and employment in total output and employment) has historically occurred when per capita income has reached, according to Rowthorn & Ramaswamy (1999) and Rowthorn & Coutts (2004), around US$12 000 (1991, PPP) or, according to Dasgupta & Singh (2006), US$10 000 (current). In other words, these are income levels that, according to the World Bank, would make it possible to classify the economy as middle- or high-income. To put it in another way, these income levels make it possible for any society to have a high consumption of manufactures and sophisticated services, both with high-income elasticity of demand. Moreover, in an outsourced economy, households' expenditures are increasingly directed toward high-quality products and services, which increase their well-being and comfort. It is the double interaction between the development of consumer demand and the consequent evolution of supply that fuels the outsourcing of the economy and ensures its sustainability in the long term (Cotsomitis, 2015: 450).

As can be seen, demand patterns play an essential role in the onset of mature deindustrialization, as the lower demand for manufactures is reflected in their production and capacity to absorb labor. As the engine of economic growth slows down, it will be normal to observe a deceleration in the economic growth rate (see Kaldor, 1967, Rowthorn & Ramaswamy, 1999, and Singh, 1977). Nonetheless, this condition of lower growth does not prevent the economy from continuing to generate well-paid jobs, nor does it imply zero progress in productivity because, on the one hand, the domestic market will be strong due to its consumption capacity. Also, the economy will already be immersed in the production and export of sophisticated goods, implying production for external markets, which will encourage the maintenance of high productivity. To summarize, mature deindustrialization does not jeopardize the virtuous circle described above. Therefore, under these conditions and as mentioned above, outsourcing is synonymous with economic success and with little or no informality.

What happens if an economy deindustrializes before the income threshold mentioned above? More precisely, what are the economic consequences of premature deindustrialization? The broadest response, and the most worrying, is the postponement of the economic development process as productivity, the basic source of this process, stagnates, preventing the production of goods and services with high-income elasticity of demand (Cruz, 2015).

Nevertheless, the most relevant consequence for this study is, on the one hand, the slow generation of employment and, on the other hand, the inability of the service sector to mature. Both phenomena give rise to and drive informal employment. Regarding the first point, slow economic growth resulting from premature deindustrialization will generate lower investment. At the same time, productivity will evolve in the same direction. With investment and productivity declining, stagnating, or growing slowly, job creation will not only be slow, but the wages offered will not be high. Workers who do not manage to enter the labor market will begin to look for alternatives to obtain an income, with informal employment being one of the options (another is international migration).

Regarding the second point, when income is still low and stagnating, the maturation of the service sector will come to a halt. In other words, those industries in the sector that should emerge due to growing demand will not do so, leaving only traditional activities that are generally labor-intensive and operate with low productivity. In this way, the sector cannot contribute to the dual task of promoting growth and employing well-paid workers. As in the rest of the economy, its growth dynamics will be unable to absorb as much of the existing labor force as necessary, thus contributing to unemployment. These unemployed, as it has been noted, will seek some source of income, expanding informal employment as a result.

Thus, premature deindustrialization—which originates in income stagnation and at the same time perpetuates and deepens it—will become the main reason for informal employment. It is to be expected that the deeper and more prolonged the deindustrialization, the more the informal sector, which occupies a large part of the labor force, will expand. Thus, the economic consequences of premature deindustrialization result in perverse and pathological phenomena, one of them being informal employment.

This is the extent of the theoretical argument. In the next section, attempts are made to test it empirically.

Premature deindustrialization and informal employment: Empirical evidence from Latin America

This section presents an empirical exercise to corroborate the preceding section's theoretical argument. In other words, an attempt to show that premature deindustrialization is the cause of informal employment was made. By empirically supporting this hypothesis, it will be possible to make more informed policy suggestions to address informal employment.

The data for this exercise comes from Latin America, one of the developing regions where informal employment is dramatically high and persistent. According to the World Economic Forum

(2017), in 2015, around half of Latin America's labor force was engaged in the informal economy (and the informal economy, for its part, already exceeded that of the Sub-Saharan Africa region). This is equivalent to 133 million people in the economically active population in that year. This is a huge number of people condemned to precarious employment and, therefore, to poverty.

Table 1 shows informal employment for 9 Latin American economies (Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Mexico, Peru, and Venezuela). These economies make up the sample used in the econometric exercise, and they were selected based on the availability of information. As seen throughout the 1995-2016 period, the data on informal employment in this set of economies remains close to that of the region's average (i.e., around 50%). Nevertheless, it is important to note that in some years, decreases are observed for the previous year, such as in 2010, 2014 and 2016. Despite these decreases, informal employment remains at a worrying level and needs to be addressed for all the economic and social implications it entails. In other words, it is a major challenge in terms of economic growth, development, and poverty.

Table 1
Informal employment in selected Latin American countries, 1995-2016 (% of total urban employment)

Year	Total
1995	50.9
2000	47.2
2005	46.9
2006	46.4
2007	45.9
2008	46.9
2009	47.2
2010	44.9
2011	46.2
2012	46.9
2013	47.1
2014	45.4
2015	46.3
2016	45.7

Source: Created by the authors with data from the ILO publication Labor Overview of Latin America and the Caribbean (various issues)

Figures 1 and 2, on the other hand, show the evolution of the share of manufacturing value added in total value added for the period 1989 to 2016 in the selected economies. In other words, it shows the process of deindustrialization suffered by the region during those years. As can be seen, there is a sustained decline

in the share of manufacturing value added. It is important to note that this deindustrialization in this group of economies began at the end of the 1970s and deepened in the following decade of the last century. However, the recoveries observed, such as in Argentina in the early 2000s or in Venezuela in 2015, are short-lived. Mexico, on the other hand, has been slowly reindustrializing since 2009.

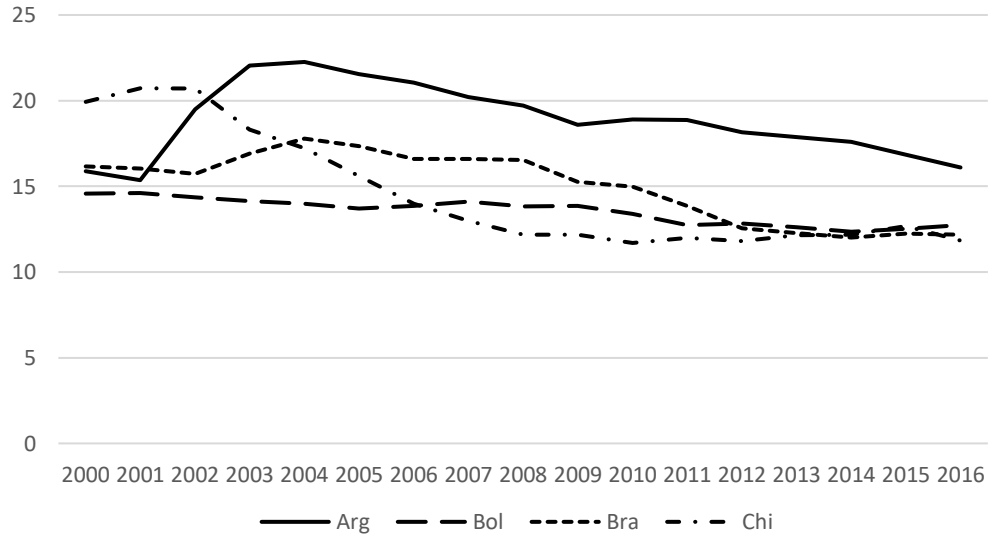

Figure 1. Deindustrialization in Latin America, 2000-2016, selected countries
(manufacturing value added over total value added, %)
Source: United Nations Statistics (https://unstats.un.org/unsd/snaama/)

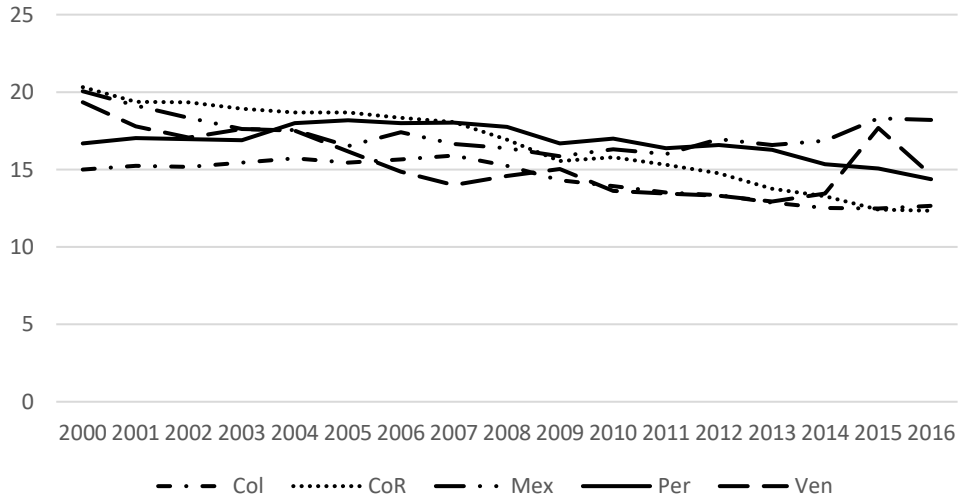

Figure 2. Deindustrialization in Latin America, 2000-2016, selected countries
(manufacturing value-added over total value-added, %)
Source: United Nations Statistics (https://unstats.un.org/unsd/snaama/)

The observed deindustrialization process can be classified as premature since it began when the level of per capita income in terms of constant 2011 dollars or terms of current dollars, according to data from the World Bank's World Development Indicators, was below the previously mentioned threshold, i.e., between US$10 000 and US$12 000 (2005=100). If the 2011 per capita income in PPP is taken as a reference, the available information begins in 1990, showing that only Mexico and Venezuela were above the threshold. Nonetheless, as pointed out, deindustrialization had begun in all economies much earlier. It is clear then that, for the countries in the sample, the process of deindustrialization began earlier than it should have, and it follows that they are suffering from premature deindustrialization, as measured by manufacturing output. The same can be said when deindustrialization is measured through employment. In other words, there has been a steady decline in manufacturing employment as a percentage of the total, markedly since the end of the 1980s (not shown in the graphs). These results are generally consistent with those of recent work that has demonstrated premature deindustrialization in Latin American countries (Cruz, 2015, Castillo & Martins, 2016, Harahuchi et al., 2017, and Palma, 2019).

Having established that the region suffers from premature deindustrialization, the following corroborates that this phenomenon impacts informal employment. As mentioned, the data from the nine economies noted above are used from 1989 to 2016. With this information, an unbalanced panel of data (because much information on informal employment is not available for all years and economies in the sample) was used to estimate an equation with informal employment as the dependent variable and the

two measures of deindustrialization as independent variables: manufacturing value added as a percentage of total value added on the one hand, and employment in the sector as a proportion of total employment on the other. In order to obtain more robust results, alternative measures of informal employment as dependent variables were tested.

In this regard, always in rates, employment in the informal sector, urban self-employed workers, the population employed in the informal sector, and unskilled self-employed workers are used. The data come from different databases available online. Specifically, the ECLAC, ILO, and World Development Indicators databases are used. All variables were log-transformed in order to interpret the econometric results as elasticities and estimations were performed with fixed effects (FE) to account for the existence of individual heterogeneity of the selected countries (Wooldridge, 2010; and Carter et al., 2011), adjusting the results with panel-corrected standard errors. The Generalized Least Squares Feasible (GLSF) technique is also used. The intention of using two estimators is to test the robustness of the results.

The idea, in short, is to estimate the following specification:

$$e_{it} = \alpha_i + \beta_k x_{kit} + \varepsilon_{it} \quad (1)$$

Where e_{it} is the informality rate of country *i* in period *t*, 1989-2016, α_i represents the fixed effect that captures the unobserved determinants of unemployment for each country, and x_{it} is the vector containing the explanatory variables, given by deindustrialization measured by output and, in a second estimation, by the employment of country *i* in period t. Further details on the data and sources of information are provided in Table A1 in the Appendix.

Table 2 presents the results of this estimation. As can be seen, the sign is as expected, i.e., negative, in both FE and GLSF. Likewise, the estimated parameter is statistically significant in all cases. Thus, the results suggest that, in effect, as premature deindustrialization increases, measured in terms of output (i.e., the ratio of manufacturing output to total aggregate output falls), informal employment increases. The parameter estimates suggest that those who suffer the most from increased deindustrialization are the urban self-employed, increasing by a third of a percentage point in the face of a one percentage point drop in manufacturing output in total output. In brief, all other things being equal, the evolution of the manufacturing sector has a significant effect on informal employment, whatever its measure.

Table 2
Deindustrialization (measured by output) as a determinant of informal employment, 1989- 2016

	Employment rate in the informal sector (1)	Rate of self-employed urban workers (2)	Rate of population employed in the informal sector (3)	Rate of unskilled self-employed workers (4)
FE with GLSF	-0.1171***	-0.1962***	-0.2386***	-0.1331*
	(0.0421)	(0.0513)	(0.0532)	(0.0711)
FE with SECP	-0.1964***	-0.3337***	-0.2329***	-0.2185**
	(0.0584)	(0.0726)	(0.0624)	(0.0910)
GLSF Constant	4.0840***	3.6242***	4.0540***	3.3025***
	(0.1283)	(0.1616)	(0.1644)	(0.2225)
SECP Constant	4.3152***	4.0272***	4.0268***	3.5832***
	(0.1768)	(0.2295)	(0.1919)	(0.2795)
Observations	147	157	163	159
No. of countries	9	9	9	9
Prob. Wald $/^{MCGF}$	0.0000	0.0000	0.0000	0.0000
Prob. Wald $/^{EECP}$	0.0000	0.0000	0.0000	0.0000

Notes: Statistically significant at *** 1%, ** at 5%, * at 10%. FE: fixed effects. GLSF: generalized least squares feasible. SECP: standard error corrected for the panel. All estimates include time effects captured with dichotomous variables. Modeled with heteroscedasticity, autocorrelation for columns 1, 3 and 4, and heteroscedasticity in column 2.

Table 3 shows the results by measuring deindustrialization through employment (i.e., the percentage of manufacturing employment in total employment). In this case, the results also have the expected sign in all cases, except for the parameter associated with the employment rate in the informal sector estimated through GLSF. On the other hand, only the parameters of urban self-employed workers, population employed in the informal sector, and skilled self-employed workers estimated with GLSF and the parameter associated with the population employed in the informal sector estimated with SECP were statistically significant. As can be seen, the size of the parameters is very similar in all cases, suggesting that a one percent decrease in the manufacturing employment ratio increases the rate of urban workers, the employed population in the sector, and the skilled self-employed by one-tenth of a percentage point.

These results show that it is necessary to increase the size of the manufacturing sector in the total economy to reduce informal employment (i.e., to reindustrialize), and such an increase will impact the rest of the productive sectors. Thus, as the manufacturing sector grows, employment and income in the sector would be expected to increase, setting the growing demand-income-employment cycle in motion. As demand for services increases, it is expected that the maturity of this sector will materialize and increase the demand for employment in the process. Thus, with total employment growth, it is reasonable to expect a decrease in informal employment. The question that immediately arises is how to

achieve re-industrialization. The answer is provided in the following section.

Table 3
Deindustrialization (measured by employment) as a determinant of informal employment, 1989 - 2016

Dependent variable	Employment rate in the informal sector (1)	Rate of self-employed urban workers (2)	Rate of population employed in the informal sector (3)	Rate of unskilled self-employed workers (4)
FE with GLSF	0.0017	-0.1457***	-0.1253***	-0.1460**
	(0.0336)	(0.0391)	(0.0470)	(0.0592)
FE with SECP	-0.0139	-0.1060	-0.1412**	-0.0948
	(0.0407)	(0.0739)	(0.0664)	(0.0916)
GLSF Constant	3.741***	3.4015***	3.6800***	3.2846***
	(0.0939)	(0.0792)	(0.1331)	(0.1737)
SECP Constant	3.7704***	3.2930***	3.7302***	3.1915***
	(0.0742)	(0.2038)	(0.1946)	(0.2698)
Observations	116	120	126	122
No. of countries	9	9	9	9
Prob. Wald $/^{MCGF}$	0.000	0.000	0.000	0.000
Prob. Wald $/^{EECP}$	0.000	0.000	0.000	0.000

Notes: Statistically significant at *** 1%, ** at 5%, * at 10%. FE: fixed effects. GLSF: generalized least squares feasible. SECP: standard error corrected for panel. Estimates include time effects captured with dichotomous variables, except column 2. The unbalanced panel structure does not allow the calculation of contemporaneous correlation in the sense of Pesaran, Friedman, or Frees. Modeled in the presence of heteroscedasticity and autocorrelation in columns 1, 3 and 4, heteroscedasticity in column 2.

Nevertheless, a complementary way to corroborate that effective demand impacts informal employment is to develop a regression including the components of aggregate demand (investment, private consumption, government spending, and exports, all measured as a percentage of GDP) as explanatory variables. This exercise is particularly relevant if one considers the exceptional period of economic expansion that the region experienced during 2003-2013, also known as the supercycle (Fanelli, 2019). In it, thanks to favorable external conditions in terms of prices of primary goods, the region's economies experienced a boom driven by exports, which also occurred through consumption, investment, and government spending (García & Cruz, 2017). The dynamism of these variables could be a factor in understanding why, as shown in Table 1, informal employment underwent some declines during the period under study.

In principle, it would be expected that all demand variables would have an inverse relation with informal employment, i.e., the higher (lower) the demand, the lower (higher) the informal employment due to the increase in achieved output. Nevertheless, some of them can also be expected to have a positive association. This is the case with investment. As is known, investment is positively associated with

employment. That is, the higher the investment, the more employment follows the same trend (Garcia & Cruz, 2017). Investment, in contrast, falls in both the formal and informal sectors, resulting in employment gains in both sectors. Thus, it is possible to expect a positive association between investment and informal employment.

Similarly to the above, the equation to be estimated would be the following:

$$e_{it} = \alpha_i + \beta_k x_{kit} + \varepsilon_{it} \quad (2)$$

Where e_{it} is the informal employment rate of country *i* in period *t*, 1989-2016, α_i represents the fixed effect that captures the unobserved determinants of unemployment for each country, and x_{it} is the vector containing the explanatory variables, in this case, given by private consumption, investment, government spending, and exports of country *i* in period *t*, all expressed as a percentage of GDP (see Table A1, in the Appendix for more details on the data and sources of information). In this regression, the variables were also transformed into logarithms to interpret the results in terms of elasticities.

Table 4 reports the estimation results with FE, using three proxies of informal employment. As can be seen, government spending, consumption and exports are, in all cases, statistically significant and with the expected sign. In other words, when they grow, informal employment decreases. The importance of private consumption in the dynamics of informal employment stands out, with an elasticity close to unity in the case of the parameter associated with the population employed in the informal sector. Thus, the importance of consumption for understanding informal employment echoes the previous theoretical argument in the sense that it is the strength of private consumption (i.e., purchasing power and the consequent changes in consumption patterns) that ultimately defines the evolution of informality by reflecting (and determining) the current (and future) maturity of the productive sectors.

On the other hand, there is the parameter associated with the investment. As can be seen, all the informal employment proxies have one of the expected signs, in this case, positive, but it is only statistically significant for the population employed in the informal sector. The result suggests that part of the investment is being channeled to the informal sector, hence the increase in employment in the sector.

In short, what can be derived from these results is that effective demand plays a significant role in understanding informal employment. In the period under study, through all its components, except investment, effective demand has been important in reducing informal employment, despite the deindustrialization observed in the economies in the sample. In other words, effective demand has lessened the effects of deindustrialization on informal employment, thus emphasizing the importance of demand as a mechanism to alleviate such employment.

Finally, it is important to highlight that, unlike other empirical works that marginally include

some component of demand to explain informal employment (Jiménez Restrepo, 2012), these results confirm that it can be central to understanding it and suggest policies to reduce it. This is the subject of the following section.

Table 4
Aggregate demand as determinants of informal employment, 1989 - 2016

Variables	Population employed in the informal sector (1)	Rate of self-employed urban workers (2)	Rate of unskilled workers (3)
FE model with GLSF			
Gross capital formation	0.1664***	0.0287	0.0334
	(0.0588)	(0.0413)	(0.0497)
Government spending	-0.2295***	-0.1559***	-0.1972***
	(0.0646)	(0.0464)	(0.0539)
Private spending	-0.8757***	-0.3538**	-0.5056***
	(0.1985)	(0.1433)	(0.1725)
Exports	-0.2305***	-0.1003***	-0.0142
	(0.0418)	(0.0328)	(0.0387
Constant	19.5456***	5.1662***	5.5744***
	(0.9611)	(0.7327)	(0.8652)
FE model with SECP			
Gross capital formation	0.1597**	0.0226	0.0571
	(0.0668)	(0.0463)	(0.0598)
Government spending	-0.2882***	-0.2072***	-0.1901***
	(0.0673)	(0.0551)	(0.0582)
Private spending	-0.7751***	-0.5031***	-0.6571***
	(0.2133)	(0.1698)	(0.2065)
Exports	-0.1855***	-0.1524***	-0.1000**
	(0.0437)	(0.0417)	(0.0461)
Constant	19.2804***	6.0879***	6.3526***
	(1.0220)	(0.8877)	(1.0230)
Observations	109	109	110
R^2	0.99	0.97	0.97
No. of countries	8	8	8
Prob. Wald $/^{MCGF}$	0.0000	0.0000	0.0000
Prob. Wald $/^{EECP}$	0.0000	0.0000	0.0000

Note: Statistically significant at *** 1%, ** at 5%, * at 10%. Standard error in parentheses. All estimates include time effects captured with dichotomous variables. FE: fixed effects. SECP: standard error corrected for the panel. The unbalanced panel structure does not allow the calculation of contemporaneous correlation in the sense of Pesaran, Friedman, or Frees. Modeled with the presence of heteroscedasticity for column 2. Modeled with heteroscedasticity and serial correlation in column 1 and heteroscedasticity in columns 2 and 3.

Policy recommendations

The theoretical argument presented, as well as the empirical findings of the econometric exercise, have

important policy implications for reducing informal employment. First, establishing a policy focused on re-industrialization is essential and a priority. It must not be forgotten that this path of industrialization is one of proven success (Cherif & Hasanov, 2019). Consequently, policy measures must be implemented so that the manufacturing sector not only expands but also drags the rest of the productive sectors along with it in its expansion process. Government participation through government spending, particularly in investment, is undoubtedly necessary to reactivate industrialization. Of course, this must be done in the context of an industrial strategy, that is, identifying in what direction to go and through which industries.

Such a policy requires giving impetus to and supporting various industries that will eventually drag the economy along with the capacity to compete in international markets. This is important because Latin America is a region that has embarked on the process of globalization to achieve economic growth and development without successful results so far. Recall that Latin American countries continue to export mainly primary goods with little processing and that the exception, the Mexican economy, exports mainly assembled manufactured goods. Thus, only by supporting domestic industries to be able to compete in foreign markets eventually, can this strategy hope to be truly successful.

Second, as pointed out, boosting industrialization requires expanding government investment spending. For this reason, an indispensable requirement is to break with the obsession of maintaining a fiscal surplus or balance at all costs. Otherwise, implementing an industrial policy cannot even be considered. The benefits of government investment spending are both short and long-term and are reflected not only in higher demand but also in higher productivity and a potential improvement in the exchange rate and, consequently, in the external balance.

Third, and finally, within the re-industrialization strategy, the growth of demand components, particularly private consumption, must be boosted to strengthen the manufacturing sector, particularly the services sector. This can be achieved through redistributive policies, employment generation, and productivity support. For such objectives, again, fiscal policy plays a relevant role.

In short, to reduce informality, what is required is to reindustrialize the economy in question. Without this in mind, only partial solutions will be offered to a problem with serious social and economic consequences.

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Annex

Table A1
Variables and sources

Variable	Construction	Source
Population employed in the informal sector	Labor force * unemployment rate = unemployed population. Labor force - unemployed population = employed population. Employed population * rate of population employed in the informal sector = Population employed in the informal sector.	ECLAC (https://estadisticas.cepal.org/) ILOSTAT, International Labour Organization. (https://ilostat.ilo.org/)
Rate of self-employed urban workers	Share of urban self-employed workers in the total employed population.	ECLAC (https://estadisticas.cepal.org/)
Rate of unskilled self-employed workers	Sum of rates of unskilled workers employed in: 1) industry and construction, 2) commerce and services, 3) agriculture, livestock and others.	ECLAC (https://estadisticas.cepal.org/)
Deindustrialization by product	Share of manufacturing product value added in total value added at nominal prices	United Nations (www.unstats.un.org)
Deindustrialization by employment	Share of manufacturing employment in total employment	ILOSTAT, International Labour Organization. (https://ilostat.ilo.org/)
Gross capital formation	Percentage of GDP	World Bank (http://databank.worldbank.org/data/home.aspx)
Government spending	Percentage of GDP	World Bank (http://databank.worldbank.org/data/home.aspx)
Private spending	Percentage of GDP	World Bank (http://databank.worldbank.org/data/home.aspx)
Exports	Percentage of GDP	World Bank (http://databank.worldbank.org/data/home.aspx)