



UNIVERSITA' DEGLI STUDI DI TRENTO - DIPARTIMENTO DI ECONOMIA

AN ENCLAVE-LED MODEL OF GROWTH: THE STRUCTURAL PROBLEM OF INFORMALITY PERSISTENCE IN LATIN AMERICA

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Discussion Paper No. 4, 2005

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**An enclave-led model of growth:
the structural problem of informality persistence in Latin America***

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Keywords: Informal employment, balance of payment constrained growth, Latin American economy

* Paper presented at the GRADE Workshop “A Micro Approach to Poverty Analysis”, University of Trento, Italy, February 2005.

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Abstract

Nowadays, informality persistence is a major concern for Latin American governments and it is at the hub of current debates on labor market dynamics. There is a general consensus on the fact that the informal sector includes heterogeneous activities, from precarious street jobs, to autonomous workers and salary earners, all characterized by low productivity. But, different approaches find themselves in disagreement about the voluntary or residual fundamental nature of informality, and therefore diverge about solving methods.

Orthodox approaches, which are by far the dominant ones, depict informality as a voluntary solution for rational economic actors who choose to belong to the informal sector due to unnecessary regulation and burden of the formal one. Hence, they call for increased flexibilization and reduced government intervention as hints towards informality reduction. On the contrary, this paper takes a structuralist perspective and looks at informality as a sort of refuge or residual strategy for economic agents that are excluded from formal labor markets and, hence, it advocates for reality-tailored policies which foster industrial transformation and labor absorption in the formal sector.

This paper considers the coexistence of a formal and an informal sector as the relevant characterization of the production structure of Latin American economies, which is viewed as a product of an enclave-led specialization model and a constrained export led growth. A model of growth is presented. It studies the links in both ways: from the pattern of growth of the formal sector to the dynamics of the informal sector, and from these dynamics to the pattern of overall growth. It is argued that in Latin America, the export-led economy has become an unfortunate enclave-led economy. Overall economic performance is pulled down by the informal sectors' dynamics where almost the half of regional workforce is concentrated in and productivity gains in the outward oriented sector have inflated informality thus deteriorating both growth in per capita income and income distribution.

The model shows that (i) an upgrading in international specialization and in participation to international trade in qualitative terms (sectors, industries and products) appears to be a necessary condition for reducing the weight of the informal sector, and that (ii) the synchronization of structural changes (transformation of production structures, repositioning in global trade, efforts to augment human capital formation, backward and forward linkages and networks' density) appears crucial in order to take pressure off the trade balance constraint and to allow output, productivity and employment growth to ensue.

Introduction

Accelerating productivity, output, and employment growth seems a key threefold challenge for Latin America today. The structural reforms of the 1990s granted macroeconomic stability and controlled inflationary pressures, but there is a growing consensus about the fact that more has to be done in order to achieve sustained output growth and poverty alleviation. Indeed, regional performance on growth and poverty is worse today than during the period prior to the “lost decade”. The growth rate of average regional GDP was 5.6% in 1945-1980, while it was 3.8% in 1990-1997, only showing a slight recovery in the last years: 1.5% in 2003 and 4% in 2004; the average annual growth rate of per capita income was 3.1% between 1945 and 1980, 1.9% in the seven years after the lost decade and 0.1% in 2003. The problem of poverty persists dramatically: the percentage of poor households accounted on average for 35% between 1945 and 1980, 35.5% during the period 1990-1997 and rose to 36.1% in 2002 (ECLAC 2002, 2004; Cimoli, Primi and Stumpo 2004). These crude data tell us that development is not a natural process, and suggest that Latin America still awaits a long way to be developed. This prediction can be confirmed by a striking single fact: the persistence of a very large share of the informal sector, which has recently reached almost a half of the whole economy.

In the literature it is possible to identify at least three main approaches to informality that basically diverge about definitions and policy proposals (Rosenbluth 1994; Maldonado 1995). The orthodox approach, which is by far the dominant one, considers informality as an emerging consequence of government intervention: excessive legal burdens and bureaucratic requirements make formality an extreme costly option (De Soto 1986; Loayaza 1997). Thus informality, more than a problem *per se*, appears a voluntary solution for those rational economic actors who effectively choose to belong to the informal sector due to the unnecessary regulation and burden of the formal sector. Hence, labor market flexibilisation and reduced governmental interventions will guarantee a reduction of informality. Legalization may make up for entrepreneurship, income, and employment. An even more optimistic variant sees the workers’ passage to informality as a possible gain in working time flexibility and autonomy, thus making welfare policy unnecessary.¹ This approach undoubtedly captures some real aspects, but it fails to account for the deep precariousness and marginalization that mostly characterize the informal sector and for the worsening of overall economic performance in Latin America.

¹ Maloney (2004) provides evidence on this point, but Goldberg and Pavcnick (2003) provide other contrary evidence showing substantial worse characteristics of informal with respect to formal jobs.

A slightly different perspective about the informal sector is the institutional one. Globalization, increased interdependency of global trends, augmented demand instability and induced radical changes in production modes and labor organization. Profit maximizing entrepreneurial behavior leads enterprises to undertake cost reducing strategies by profiting from new institutional contractual forms like outsourcing and subcontracts, thus creating room for informal employment (Piore and Sabel 1984). However, some recent evidence shows that subcontracting relations of informal micro-firms with large firms have declined (Sanchez, Joo, and Zappala 2001).

On the other hand, there is the structuralist approach, whose pioneers were Prebisch, Pinto, and the members of the Regional Employment Program for Latin America and Caribbean (PREALC). According to structuralist analyses the informal sector originates from the prevalent specialization in international trade and from the consequent vicious functioning of the formal sector, which is not able to sufficiently employ and train labor. Informality is a sort of refuge or subsistence strategy for marginalized groups that reinforces, if not generates, social exclusion and tensions. In a macroeconomic feedback, informality thus worsens economic growth and income inequality. Therefore, as an alternative to the orthodox pro-flexibilisation or legalization policies, structuralists advocate for reality-tailored industrial and production policies, which foster labor absorption in the formal sector, and that enhance overall growth.

Besides the divergences amongst the various theoretical approaches, there is a general consensus on the fact that the informal sector includes heterogeneous activities, from precarious street jobs, to autonomous workers and salary earners. However, an indisputable characteristic, common to all informal activities, is low productivity, which is due to backward technology, unskilled labor, and small size production (Portes, Castells and Benton, 1989; Rosenbluth, 1994; Tokman 2001; Maloney 2004).

This paper argues that the coexistence of a modern outward oriented sector and a persistent, if not growing, informal one represents a structural barrier for export led growth to overcome the current enclave-led specialization model in Latin America. In fact, it is argued that the export-led economy has thus become an unfortunate enclave-led economy where, productivity gains in the outward oriented sector have inflated informality, thus deteriorating both growth in percapita income and overall income distribution. Therefore, a productive restructuring of regional apparatus is required to modify the contemporary adverse international trade specialization, and to boost, at the same time, productivity and output dynamics in the formal sector. Employment in the

formal sector will thus expand, the weight of informality will diminish, and the performance of the overall economy will improve not only in terms of employment, output and productivity, but also of income distribution.

1. An heterogeneous production structure

Economic growth and structural change are interlinked phenomena, especially in open economies. The model proposed in this paper considers the persistency of structural heterogeneity, and in particular the distinction between a formal and an informal sector as the relevant characterization of the production structure of Latin American economies². It then studies the links in both ways: from the pattern of growth of the formal sector to the dynamics of the informal sector, and from these dynamics to the pattern of overall growth. The formal sector is considered as mostly able to acquire new knowledge and to capture technological change, and it is mostly exposed to international markets. The informal sector is mainly inward oriented, it is residual in employing labor and, in some cases, it can blur the line between economic activities and subsistence ones. The dynamics of the informal sector feeds back to the overall growth pattern, by worsening aggregate productivity growth, and income inequality³.

Structural heterogeneity is not a novel feature of Latin American production systems (Pinto, 1970; 1976). Already Singer (1950) and Prebisch (1962; 1970) observed the dualism of Latin America, stressing the coexistence of an export oriented and highly productive sector, and of a set of low productive activities operating for and in domestic markets.

Now, in the new context of open economies and after a decade of reforms, heterogeneity is still a structural weakness of Latin American production apparatus, and the concentration of technical progress does not only persist, but it is strengthened. In fact, the opening up process has favored the modernization and technological upgrading of the formal sector only, so that employment concentrates in the less productive and dynamic sector. Hence, Latin America appears to be as a sort of polarized economy, where two

² The model hereby presented stresses the heterogeneity between the formal and the informal sector for the sake of simplicity, but it is necessary to point out that these sectors are far from being homogeneous in themselves.

³ Actually the concept of informal economy dates back to the 1972 ILO mission in Kenya when this expression was used for the first time to identify the huge mass of working poor that survived, produced and carried out subsistence activities outside the current legal framework, thus working in what was called an “unstructured sector” (ILO, 1972).

sectors with different dynamics of accumulation, production and output growth coexist, and where the leading formal sector emerges as an enclave.

The formal sector is not homogeneous in itself. It includes labor-intensive industries, assembling activities, knowledge intensive industries and natural resource processing, which show diverse output, productivity and employment dynamics (Capdevielle 2004; Porcile 2004). However, common features are export orientation, relative modernized production processes, a relative prevalence of high skilled labor, and medium or large size of the firms.

The informal sector is even less homogeneous for kind of activity performed, productivity dynamics, workers' living standard and educational attainment. It includes both elementary entrepreneurial and wage earning activities. The concept of informality must also be distinguished from that of illegality, although reality is more mixed. Informal activities, just like illegal ones, are carried out in a non-governed arena in an illegal form, but, in general, their produce is legal.⁴

The informal sector is, by definition, difficult to identify and to measure. According to ECLAC methodology it consists of low productivity activities and it includes the following categories: domestic service, unpaid family and non-professional workers, and people in enterprises with less than 5 employees (ECLAC, Social Panorama). These activities share the common features of domestic orientation, lagging technology, a relatively low skilled labor and micro firm size.

In what follows, evidence, and a simple model will support the arguments.

The static part of the model assumes that the output of the economy, Y , includes two types of products: the output produced by the formal sector, Y_f , which employs imported inputs and is exported, and the output produced by the informal sector, Y_i , which is entirely domestic.

The formal sector produces according to a simple additive technology, which uses labor (L_f) increased with a variable labor effort (h), and imported inputs (M_f).

$$(1) \quad Y_f = \Pi_f L_f h + \eta M_f \quad \Pi_f > 0, \eta > 0.$$

⁴ Informality in Latin America needs to be addressed from a different perspective than informality in advanced countries. Here, informality is mainly related to fiscal evasion, and sometimes to illegal activities. It often produces inputs for production, sometimes with high skill.

Π_f and η are technological parameters that are given to the firm, and change in the long run. In particular, technical progress usually increases Π_f ; but it may also require labor substitution by reducing η .

The extension of (1) to variable labor effort is typical of the formal sector, and it is expected to be larger than the effort in the informal sector. The justification is that formal sector employs more skilled labor, which is more difficult to monitor. As in the standard economic literature on efficiency wages, labor effort is assumed to be a positive (S-shaped) function of wages, and deterred by the lower wage of the informal sector.⁵ A handy specification is here chosen:

$$(2) \quad h = \ln q \frac{W_f - W_i}{\Pi_f}$$

i.e. if the wage gap between the two sectors increases with (labour saving) technical progress, then labour effort does not change.

All firms of the formal sector maximize profits (P_f) by controlling for wages. Some barrier to entry allows positive profits. Maximization requires that $\frac{\partial P_f}{\partial W_f} = 0$, that is:

$$(3) \quad \frac{\partial}{\partial W_f} (Y_f - L_f W_f - p \eta M_f) = 0$$

where p is the international price of imported inputs in domestic currency. Profit maximization thus yields the following results after substituting (1) into (3):

$$(4) \quad W_f = \Pi_f + W_i$$

$$(5) \quad h = \ln q$$

Therefore, firms are able to determine a fixed level of effort, which is greater than 1 if q is greater than the Neperian number.⁶ Wages in the formal sector are determined by labor productivity, and by wages in the informal sector, which are lower.⁷ The labor market thus emerges as segmented and formal wages do not clear. Labor queues for a formal job, so that firms in the formal sector can select labor, thus becoming more productive. A given demand for output of the formal sector will jointly determine the necessary employment and imports in this sector, while the informal sector becomes residual.

⁵ The literature on efficiency wages applied to a dualistic economy is ample, e.g. Stiglitz (1974, 1976), Bulow and Summer (1986), Esfahani and Salehi-Isfahani (1989), Agenor and Aizenman (1999), Goldberg and Pacvnik (2003). Arbache (2001) provides some evidence for Brazil.

⁶ Note that the parameter m must be sufficiently greater than the Neperian number, in order to have at least positive profits, i.e. $P_f = L_f (\Pi_f (\ln q - 1) - W_i) + (1-p) \eta M_f$.

⁷ Size and number of firms remain indeterminate.

The specification of the informal sector is extremely simple. Output is produced with constant returns to labor and unitary effort, i.e.:

$$(6) \quad Y_i = \Pi_i L_i$$

An important assumption for the following analysis is that:

$$(7) \quad \Pi_i = d\Pi_f \quad \text{with } 0 < d < 1.$$

Profit maximization yields that:

$$(8) \quad W_i = \Pi_i.$$

Therefore, the informal sector is typically characterized by low productivity, wages are determined in this sector, and hence in the formal one through equation (4).

2. Output, productivity, and employment dynamics in the formal sector

This section introduces the main dynamic equations of the model, labeled Demand and Productivity Regimes (Setterfield and Cornwall 2002). In fact, the first equation explains demand growth in an open economy, and the second equation endogenises productivity growth in the formal sector, in a circular way with demand growth.

The Demand Regime represents the output growth of the formal sector, y_f , as explained by demand for exports⁸. The specification follows the harrod-kaldorian perspective,⁹ as equations (9) and (10) synthetically describe.¹⁰

$$(9) \quad y_f = b\pi_f \quad \text{Demand Regime (DR)}$$

$$(10) \quad b = \frac{x}{\varepsilon\pi^*}$$

where π_f stands for productivity growth rate in the formal sector, π^* stands for foreign productivity growth rate, x denotes that export growth as due to foreign income's growth, ε denotes income elasticity of imports.

The economic meaning of equations (9) and (10) is simple. Appendix I gives the economic derivations and more details. The less constraining the trade balance is – due to export growth and income elasticity of imports – the greater the output growth of the formal sector – which is sold at international markets – will be in the long run. In particular, domestic output growth is greater, the greater is the speed of closing the

⁸ The component of domestic demand growth may be also included, but it has declined in Latin America. The inclusion of a reduced component of domestic demand would not change the results of the model.

⁹ See among others: Cimoli, Dosi and Soete, 1986; Cimoli, 1988, 1994; Dutt, 2000; Harrod, 1933; Kaldor, 1966, 1975; Lawson, Palma and Sender, 1989; McCombie and Thirlwall, 1994; Thirlwall 1979.

¹⁰ This simple specification does not consider the effects of real exchange rates, as in the original Thirlwall's model, which has been successfully tested for various Latin American countries by Gonzaga (2003), Moreno-Brid (1999a; 1999b), Perraton (2003).

productivity gap with respect to the technological frontier, i.e. π_f/π^* . In fact, an increase of this ratio, called technological gap multiplier (Cimoli and Correa 2002), implies a better competitiveness on international markets. The technological gap multiplier, in turn, is mainly due to technological learning capabilities, linkages and diversification of the production structure.¹¹ Therefore, with the Demand Regime, the model captures the capacities of the exporting sector to lead economic growth by generating more competitiveness and alleviating external constraint depending on the characteristics of the production structure.

The Productivity Regime equation follows the Verdoorn-Kaldor law applied to the formal sector,¹² i.e.:

$$(11) \quad \pi_f = \alpha + \beta y_f \quad \text{Productivity Regime (PR)}$$

with $\alpha > 0$ and $0 < \beta < 1$. The parameter α measures autonomous efforts that directly and indirectly influence productivity growth in formal sector, like human capital formation, and capacity building activities. The β coefficient captures structural capacities of learning and knowledge diffusion, industrial linkages and complementarities, thus accounting for the capacity of output growth to increase productivity. Learning regards agents' capabilities of transforming and improving industrial produce and organizational techniques; while linkages and density of nets determine technological and knowledge dissemination (Dosi and Freeman, 1992; Dosi, Pavitt and Soete, 1990).

The Demand Regime (equation 9) and the Productivity Regime (equation 11) form a system of simultaneous equations. Therefore, the equilibrium solutions (indicated with the subscript "e") for output and productivity growth in the formal sector are:

$$(12) \quad y_{fe} = \frac{b\alpha}{1-b\beta}$$

$$(13) \quad \pi_{fe} = \frac{\alpha}{1-b\beta}.$$

In order to have positive solutions let us assume that $b\beta < 1$, which is a realistic assumption. Hence, the pattern of output and productivity growth is better, the greater are the local linkages and knowledge transferring capacities, i.e. the more complex is the production structure, the greater are human capital formation and capacity building efforts

¹¹ For a detailed empirical analysis of the technological gap multiplier in Latin America before and after the liberalization process see Cimoli and Correa 2002.

¹² On the Verdoorn-Kaldor equation see Amable 1992; Kaldor 1975; McCombie and Thirlwall 1994; McCombie, Pugno, and Soro 2002; Thirlwall 1979-1997.

and the more virtuous is the domestic participation to international trade, that is the lower is income elasticity of imports with respect to growing exports.

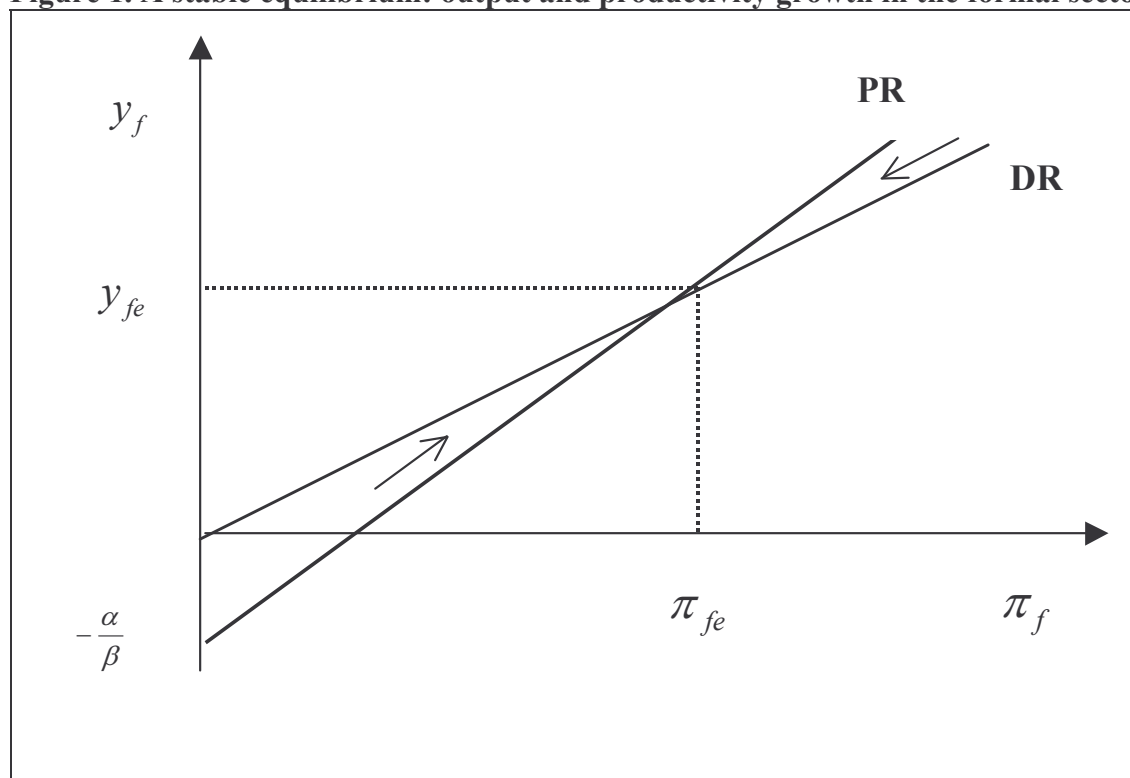
It should be observed that the solutions of output and productivity dynamics of the formal sector hold if wages in this sector do not clear the labor market, and total labor supply is not constraining. These conditions are usually *assumed* in the literature on externally constrained economic growth (McCombie and Thirlwall 1994)¹³. In our model instead, wages in the formal sector do not clear the labor market because of the efficiency wage determination, as explained in the previous section, so that total labor supply can be constraining.

Equation (9), and equation (11), thus rewritten:

$$(14) \quad y_f = -\frac{\alpha}{\beta} + \frac{1}{\beta} \pi_f$$

can be studied in the (π_f, y_f) space as in Fig.1.

Figure 1. A stable equilibrium: output and productivity growth in the formal sector



¹³ The role played by the two constraints in a one-sector growth model, i.e. the labour supply constraint and the external constraint is analyzed in Pugno (1998).

As the solutions are positive, the equilibrium is also dynamically stable. If the starting values of π_f and y_f , possibly after a shock in the parameters, are off the equilibrium a circular process between the Demand Regime and the Productivity Regime in the formal sector ensues, and productivity and output growth end up converging to the equilibrium values.¹⁴

The solution for employment growth in the formal sector (l_f) can also be derived. From the definition of productivity, i.e. $\Pi_f=(Y_f/L_f)$, let us decompose productivity growth:

$$(15) \quad \pi_f = y_f - l_f.$$

Proper substitutions yield:

$$(16) \quad l_{fe} = -\alpha \frac{1-b}{1-b\beta}.$$

Equation (16) highlights the relevance of the production structure's characteristics and of foreign trade pattern for employment dynamics. In fact, the formal sector exhibits negative or positive employment equilibrium growth rates depending on ($0 < b < 1$ or $1 < b < 1/\beta$) respectively, i.e. depending on income elasticity of imports and the exports rate of growth (see equation (10)). If $b < 1$, a rise in β , which captures the extent of industrial linkages, knowledge diffusion, complementarities and human capital, is beneficial to productivity growth but not to employment growth in the formal sector. This is due to a binding external constraint on output growth. If $b > 1$, a rise in β becomes beneficial for both productivity and output growth, since the external constraint is not so binding.

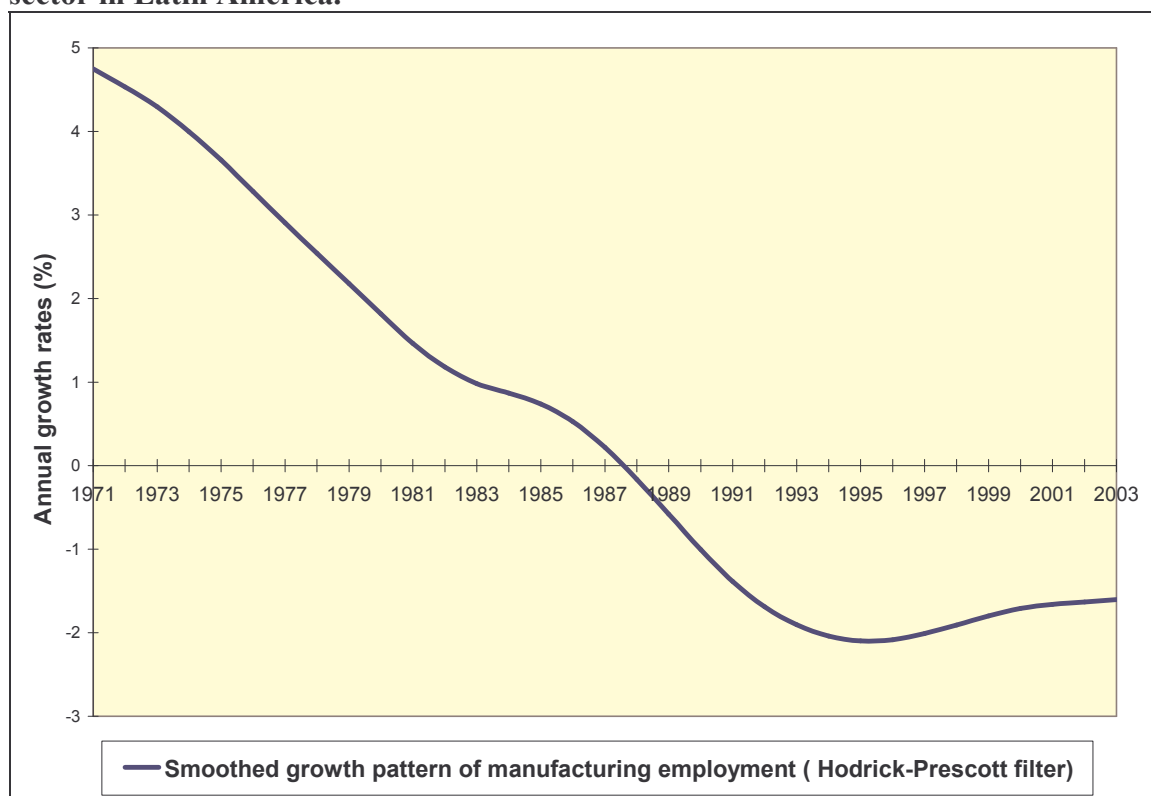
These results are extremely important, because they firstly show that an improvement in international specialization and in participation to international trade in qualitative terms (sectors, industries and products) appears to be a necessary condition for reducing the weight of the informal sector. Secondly, the synchronization of structural changes appears crucial in order to obtain the desired outcome of increasing output, productivity and employment rates in the high-productive sector.

Unfortunately, Latin America experiences the worst pattern of employment dynamics. Figure 2 clearly shows that employment growth rate of manufacturing industry in Latin America drops during the last three decades, becoming negative from the end of the 1980s. This pattern appears anomalous for a developing economy. In South Korea, for example, productivity growth went hand in hand with employment growth in

¹⁴ Paus, Reinhardt, and Robinson (2003) find a substantial two-way causality between productivity growth and export growth for Latin America on the basis of the Granger causality test.

manufacturing during the last three decades (Cimoli, Primi, and Stumpo 2004). The now developed countries exhibited the same pattern during the 1950s and 1960s (Kaldor 1966), and only afterwards the decline in manufacturing employment took place. This process, called deindustrialization, has been accompanied in Europe by reallocation of labor within industries and toward business services, and by substantial local assistance schemes. It is true that the tendency of employment toward services is a worldwide phenomenon, but the drop in manufacturing employment in Latin America appears dramatic and persistent. This suggests that productivity growth in manufacturing has been pursued mostly by firing labor than by endogenous modernization.

Figure 2. The erosion of labor absorption capacity of the formal manufacturing sector in Latin America.



Source: PADI, authors' elaboration.

3. Informality persistence and overall economic performance

The deterioration of employment dynamics of the formal sector has increased unemployment in Latin America, but above all it has increased informality (IADB 2003; Pliego 1997). To capture this fact the model assumes that the residual role of unemployment is played by the informal sector, thus appearing a peculiar “full employment” model. In fact:

$$(17) \quad L = L_f + L_i$$

so that:

$$(18) \quad l = \lambda l_i + (1 - \lambda) l_f \quad 0 \leq \lambda \leq 1.$$

Equation (18) says that the growth rate of labor force (l) is decomposed in the employment growth in the formal sector and in the employment growth in the informal sector, where λ is the share of informal employment in the whole economy. Therefore, since the employment dynamic in the formal sector is already determined, and since growth in the labor force is exogenous, the employment trend in the informal sector can be easily obtained:

$$(19) \quad l_{ie} = \frac{l}{\lambda} + \alpha \frac{1 - \lambda}{\lambda} \frac{1 - b}{1 - b\beta}.$$

This solution says that informal employment rises if $l > (1 - \lambda) l_f$, that is: it is not necessary l_{fe} to be negative for $l_{ie} > 0$.

Hypotheses on the dynamics of productivity in the informal sector are difficult to conjecture; however, one can reasonably consider that productivity growth in this sector may be affected by productivity growth in the formal sector, so that productivity in both sectors may grow at the same rate, or, otherwise, productivity in the informal sector may stagnate completely. Let us consider the range between the two extremes:

$$(20) \quad \pi_i = c \pi_f \quad \text{with } 0 \leq c \leq 1.$$

Hence:

$$(21) \quad \pi_{ie} = \frac{c\alpha}{1 - b\beta}$$

Equilibrium output growth can thus be obtained from equations (19), (20) and the usual decomposition of productivity growth:

$$(22) \quad y_{ie} = \frac{l(1 - \beta b) + \alpha((1 - \lambda)(1 - b) + \lambda c)}{\lambda(1 - b\beta)}.$$

A greater growth in the labor force induces a greater growth in informal output. Also a rise in productivity growth in the formal sector, e.g. a greater α , increases informal output growth, since the firing of formal employment makes more labor available for the informal sector.

The dynamics of informal sector contribute to the worsening of overall economic performance. If b is insufficiently great, e.g. $b < 1$, then the economy becomes more and

more “informalised” in terms of both employment and output. The informalization of employment is clear from equation (19), while that of output is clear from the following:

$$(23) \quad y_{ie} - y_{fe} = \frac{l(1 - \beta b) + \alpha(\lambda(1 - c) + (1 - b))}{\lambda(1 - b\beta)}$$

which is greater than zero.

Therefore, the economy is specializing in the wrong sector, because the informal sector is the low-productivity sector for equation (7). Overall productivity growth declines even in the extreme case where productivity in the two sectors grow at the same rate (case in which $c=1$), because of the composition effect. The more general case of $c<1$ is even worse, since the difference in both output growth and in productivity levels widens (d decreases). At the limit, the economy will tend to the steady state as follows: for $t \rightarrow \infty$, then $l_{ie} \rightarrow l, \lambda \rightarrow 1, y_{ie} \rightarrow l + c\pi_{fe}$, i.e. the economy tends to be completely informal, with productivity growth rate reduced at that of the informal sector.

These conclusions are alternative to the prediction of classical theory that asserts that the informal sector would naturally and gradually disappear as the process of economic development and modernization goes by in a given economy. In effect, according to the model’s dynamics both structural change, i.e. a reorientation of formal sector specialization towards more knowledge intensive production stages or industries, augmented diversification and increasing efforts to stimulate linkages, knowledge diffusion and human capital formation should simultaneously happen in order to generate a virtuous dynamic of formal employment generation together with output and productivity growth. Otherwise, a sort of enclave led growth model may persist, where a modernized and outward oriented formal sector coexists with a persistent, if not rising, informal one, with detrimental effects on overall global performance. And this is just what has been happening in Latin America where modernization has occurred, external trade grew, but productivity rose mostly due to labor force expulsion, and the share of informal employment has not decreased.¹⁵

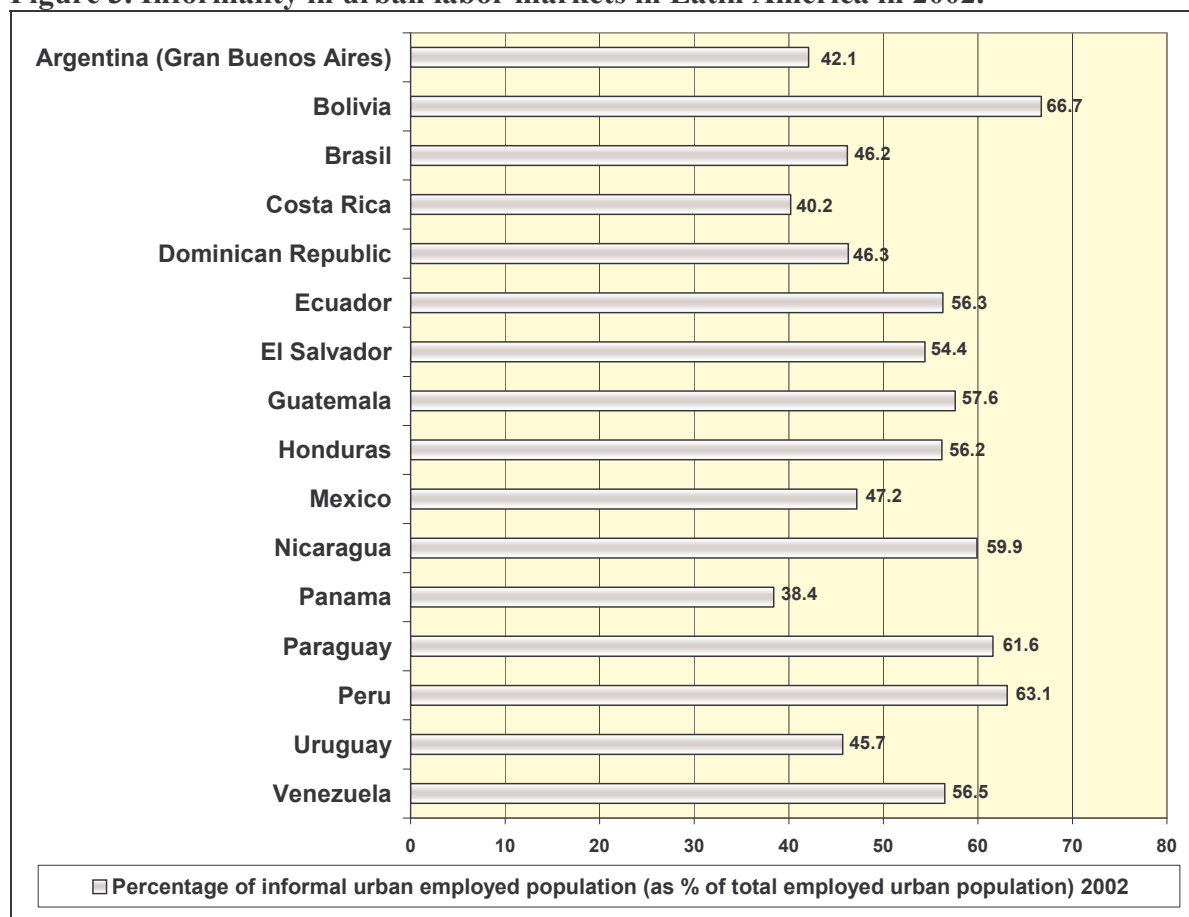
In order to evaluate the dynamics of informal employment in Latin America with respect to its stage of development, let us recall some comparative empirical analysis. Tokman (1982) and Castells and Portes and Benton (1989) compared the dynamics of the informal sector in Latin America and in the United States during two periods, both characterized by

¹⁵ Carillo and Pugno (2004) propose a parallel explanation for persistent informality linked to underdevelopment. They also show that policies oriented to improve the performance of the formal sector are better than policies oriented to legalize informal activities.

rapid industrial expansion. The difference in the dimension of informal employment between the two regions is remarkable. Between 1950 and 1980 in Latin America the proportion of informal workers declined slightly only, passing from 46.5% to 42.2%, while in the USA the percentage of informal workers substantially declined between 1900 and 1930, decreasing from 50.8% to 31.2%.

Figure 3 further shows that most up-to-date statistics on informality in Latin America are not encouraging. Informality still appears to be a persistent structural weakness of the region, and there is no evidence that a decline in the weight of informality within regional labor markets will spontaneously occur. On the contrary, as Table 1 below shows, as well as much literature shows (ECLAC 2002, 2004; Weller 2001), informal employment is increasing.

Figure 3. Informality in urban labor markets in Latin America in 2002.



Source: authors' elaboration on the basis of ECLAC Social Panorama 2003.

Note: Figures are ECLAC estimates based on national households' surveys and refer to urban population employed in low productivity sectors of the labor market.

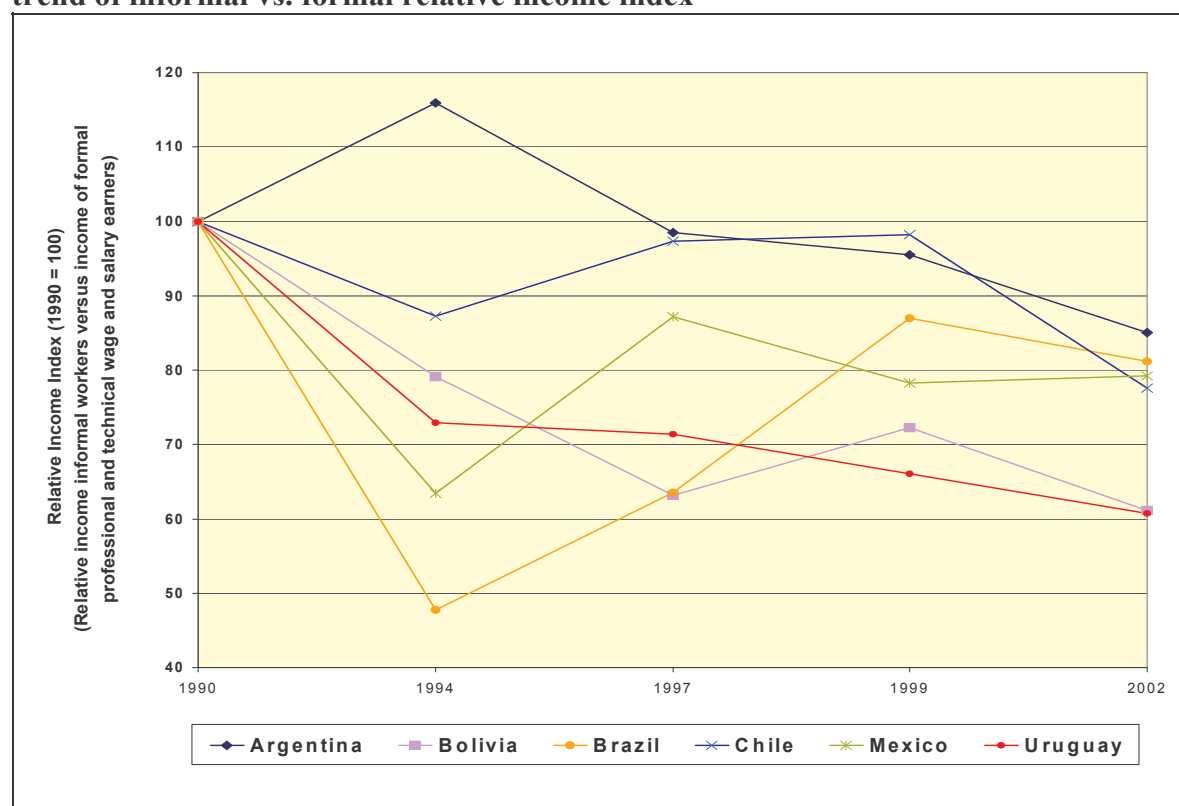
The performance of overall economy worsens also from the equity point of view. In the general case of $c < 1$, the wage gap between the sectors widens, since:

$$(25) \quad w_f - w_i = \pi_f \frac{1-c}{1+d} > 0$$

where the decrease of d contributes to widening the gap.

The evidence confirms this inequality. Indeed in Latin America between 1990 and 2002 the relative income of informal workers with respect to that of salary and wage earners employed in the formal private sector almost monotonically declined. In Latin America average relative income of informal workers with respect to that of formal wage earners in 2002 is approximately one third lower than in 1990. In other words, the decline in informal income occurred at a higher pace with respect to wage decline in the formal sector, thus augmenting wage inequality (see Figure 4). In effect, even though informality, poverty and inequality persistence are three different regional structural problems, they are strictly inter-linked. In point of fact, during the 90's almost 60% of the poor in Latin America was employed in informal activities (Tokman, 1994), and according to an IADB empirical assessment informality accounts for 10% up to 25% of wage inequality in labor markets.

Figure 4. Latin America 1990- 2002: Increasing wages inequality. The decreasing trend of informal vs. formal relative income index



Source: authors' elaboration on the basis of ECLAC Social Panorama 2003.

Note: Figures are ECLAC estimates based on national households' surveys. The series represent the index (base year 1990) of the ration between average income of urban people employed in low productivity

sectors (i.e. informal sector) and the average income of professional and technical urban wage and salary earners employed in the formal private sector).

4. Structural change and comparative dynamic exercises

The Demand and the Productivity Regimes, together with the link between the formal and the informal sector, identify a model of growth where the micro-characteristics of the production structure, i.e. the capacity of generating and transferring knowledge and technology, the specialization pattern, the participation to international trade, and the coexistence of a modern formal enclave and of an informal sector, which both affect overall economy productivity and output growth and which produce and trade following different institutional, organizational and production schemes, determine aggregate growth pattern. Actually, the model helps to clarify which kind of structural weaknesses hampered export led growth in Latin America and identifies key issues that need to be addressed in order to move along the pattern of virtuous structural change, that is pushing at the same time for technological upgrading, increasing the complexity of the production structure and augmenting capacity building initiatives in order to profit from increasing trade liberalization.

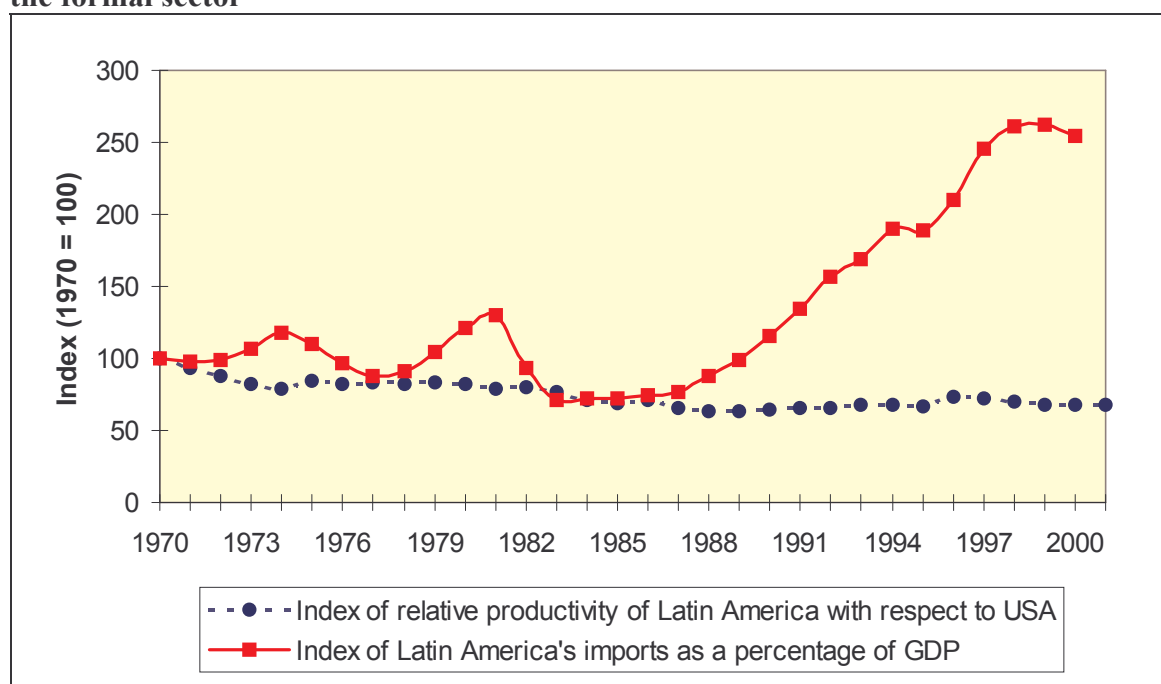
Prebisch (1950), Nurske (1953) and Kuznets (1980) already asserted that trade openness and export promoting strategies would not necessarily imply growth acceleration. Actually, trade may not act as a sustainable engine of growth when domestic markets are not adequately developed. And in Latin America the persistence of informality and the poor complexity and articulation of the production structure are substantial barriers that hamper the possibilities of profiting from potential foreign trade benefits. Moreover, weak domestic technological efforts and lack of domestic capability to capture technological change benefits turn the dependency of external demand into a serious barrier for Latin America long-term growth.

The persistence, and even the worsening, of the weaknesses in the economic structure and economic development of Latin America during the recent decades can be effectively captured by Figure 5. It shows the dynamics of income elasticity of imports, and of the productivity gap with respect to the United States. High technology imports allow modernizing production processes but do not automatically induce the development of endogenous technological capabilities. In fact, after mid-1980s income elasticity of imports skyrocketed, while the productivity gap only slightly declined.¹⁶

¹⁶ In Latin America the so-called trade multiplier, which is the ratio between the technological gap multiplier, that is to say the relative rate of growth of local productivity with respect to that of the technological frontier (of which the USA economy is a good proxy), and income elasticity of imports

Import flows are not sufficiently used to shift the pattern of specialization toward knowledge and value added generating activities. Productivity growth in the formal sector is rather obtained by firing workers. This implies a restructuring of the formal sector itself, which is confirmed by other evidence on the specialization of Latin America in low-knowledge intensive activities, generally participating to international production chains at low hierarchical levels. Therefore, the formal sector becomes even more different from the informal sector, thus justifying the label of enclave-led growth.

Figure 5. Persistent productivity gap and increasing income elasticity of imports in the formal sector



Source: Cimoli, Correa and Primi, 2003

Secondly, the lack of improvement in the pattern of specialization prevents Latin American countries to gain competitiveness and to expand exports, with the consequence of worsening external constraint, and hence overall growth (Cimoli and Correa 2002; Ocampo and Martin 2003). Therefore, the enclave-led economy does not even warrant a high growth pattern.

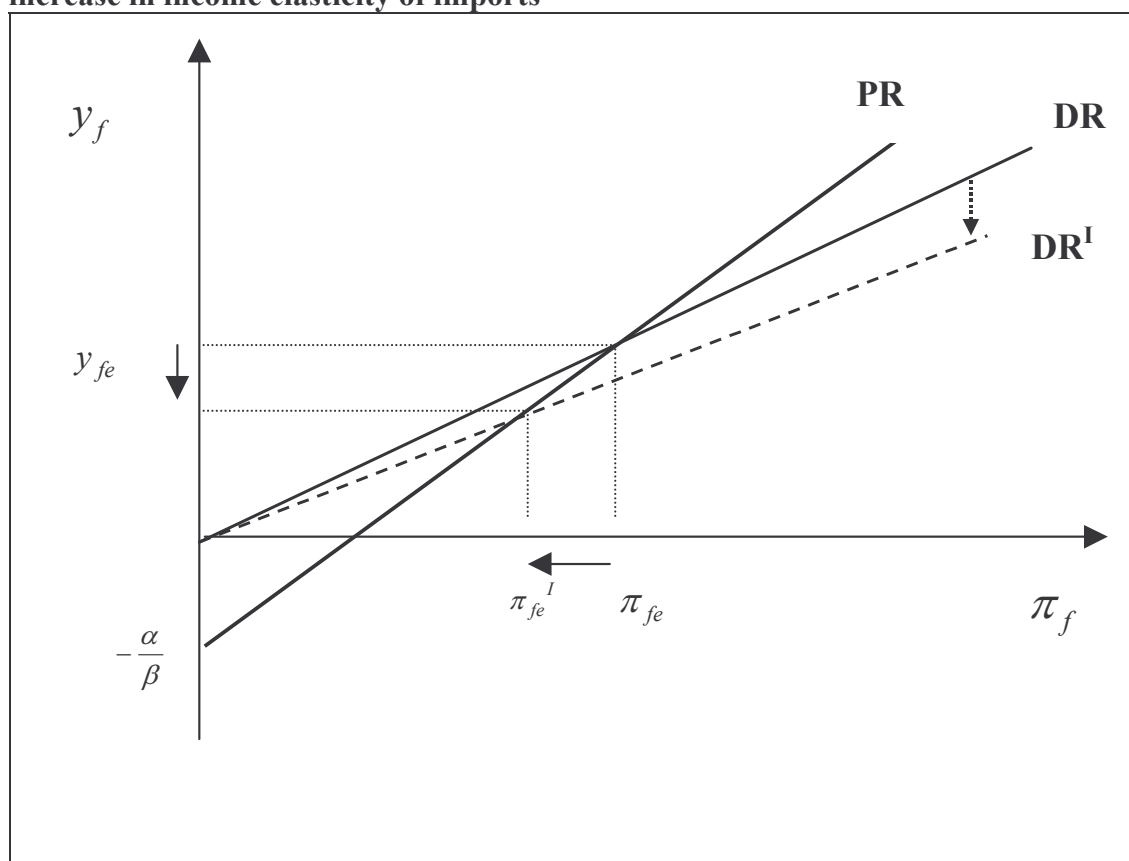
decreased on average after the reforms, shifting from 0.43 to 0.28 thus hampering the export growth effect on output growth (Cimoli, Correa and Primi, 2003).

For most Latin American countries the productivity gap with the frontier is persistent (if not rising) and, most of all, it is affected by knowledge creation and learning dynamics, which on their turn depends on structural characteristics of local production arrangements (Dosi and Freeman, 1992).

In a context characterized by strong structural weaknesses, that is production structure backwardness with respect to the frontier and scant production efficiency, liberalization and increasing foreign trade may lead income elasticity of imports' growth to overweight exports' growth, as it happened in Latin America.

The model can easily study the effects of an increase in the elasticity of imports on the dynamics of the economy. An increase of ε reduces b in equation (10). This rotates clockwise the DR function as in Figure 6, with the consequence that both y_{fe} and π_{fe} diminish. Equations (12) and (13), however, tell us that the major effect is on y_{fe} . In fact $\frac{\partial \pi_{fe}}{\partial b} = \beta \frac{\partial y_{fe}}{\partial b}$, so that employment in the formal sector diminishes, and the informal sector expands. Therefore, productivity and output of the whole economy worsens, since it relatively expands the sector that exhibits the lowest productivity level. The overall economic pattern worsens also because wage inequality widens.

Figure 6. Reduction in output and productivity equilibrium growth rates after the increase in income elasticity of imports



A second exercise can show the effects of losses in local production linkages and in complexity of the local production chains, while increasing the autonomous restructuring

of the production system. A reduction of β rotates the PR function anti-clockwise, and shifts it downward as in Figure 7. The net effect is a reduction in both y_{fe} and π_{fe} . A rise of α shifts the PR function further downwards, with a positive major effect on π_{fe} and a positive minor effect on y_{fe} (in fact $\frac{\partial y_{fe}}{\partial \alpha} = b \frac{\partial \pi_{fe}}{\partial \alpha}$). This change in the pattern of generation of productivity growth is useful for explaining the fact that productivity growth in the formal sector actually raises rather than declines. More precisely, the positive effect of the rise in α on y_{fe} may completely offset the negative effects of the reduction of both b and β on y_{fe} . Appendix II proves that in this case the model still predicts a rise in π_{fe} and hence a reduction in l_{fe} , with all the negative consequences on overall economic performance seen above.

Figure 7. Reduction in output and productivity equilibrium growth rates after the reduction in the endogenous generation of productivity growth

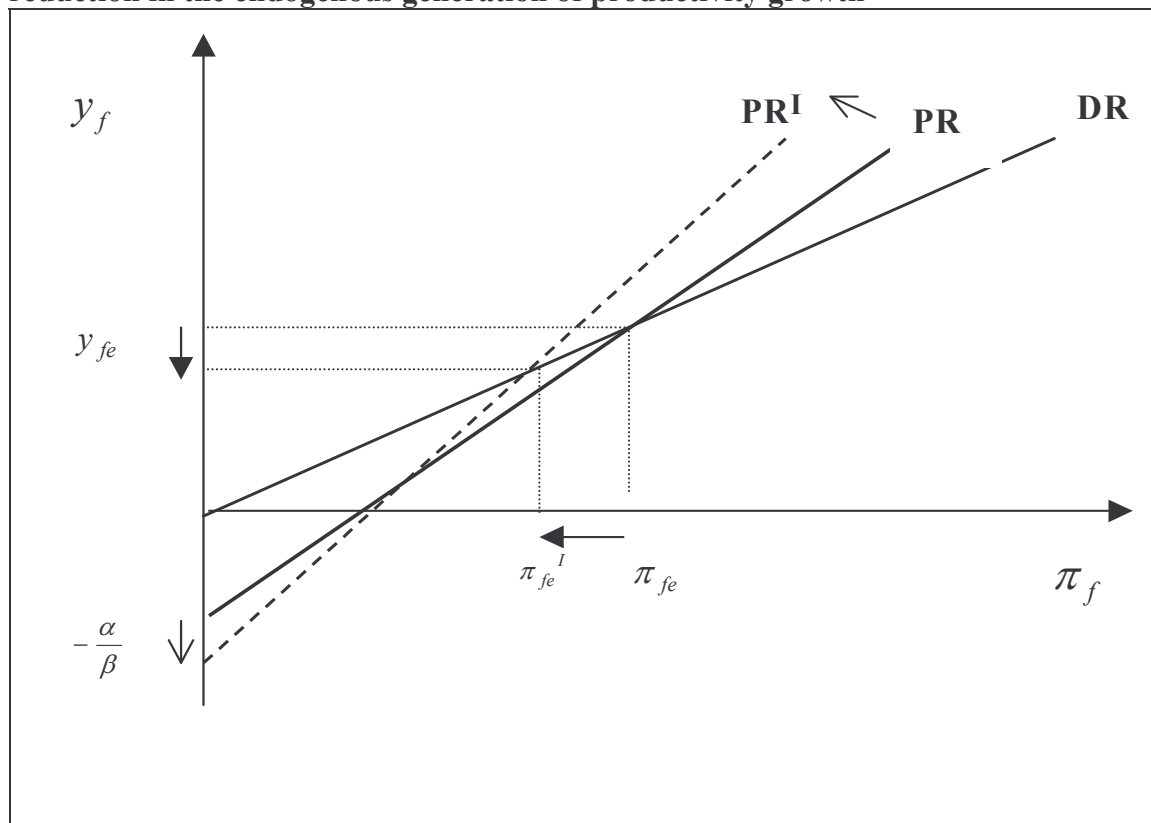


Table 1. Informal and formal sector estimates of employment and productivity

Year	Informal sector	Formal sector
	Employment (percentage of workers)	
1990	44,4%	55,6%
2000	45,4%	54,6%

	Labor productivity (aggregate productivity = 100)	
1990	47,6	141,8
2000	30,5	157,8

Source: Cimoli, Correa and Primi, 2003.

Tables 1 and 2 give further evidence of this worsening in the economic performance of Latin America. The first table shows that Latin America employs an increasing part of its workforce in the informal sector. According to our estimates informal workers represented the 44.4% of total workforce in 1990 and this proportion increased to 45.5% in 2000. This evidence can be linked to that evidence showing that in Latin America between 1980 and 1995 80% of newly generated jobs were informal and, as a consequence of that, almost the half of Latin America's workforce is employed in low productivity, unstable activities (Tokman, 1997).

Table 2. Latin American countries: increasing productivity gap

Countries	Relative productivity of informal sector with respect to the formal sector	
	1990	2000
Argentina	13.3%	19.3%
Brazil	40.3%	20.1%
Mexico	31.9%	28.2%
Uruguay	24.2%	16.9%
Venezuela	39.5%	32.9%

Source: Authors' estimates on the basis of ECLAC figures.

Note: The relative productivity of the informal sector is the ratio between the productivity of the informal sector and the productivity of the formal sector. In the cases of Argentina, Brazil, Uruguay and Venezuela the figures of relative productivity refer to the latest available year that is 1999.

Indeed, we are definitively talking about an enclave led model of growth were a persistent (if not increasing) part of the economy is being absorbed by a residual informal sector, which, furthermore, increasingly loses ground with respect to the formal enclave in terms of productivity. If in 1990 almost half of the workforce was employed in a sector whose labor productivity represented almost 48% of aggregate productivity and around 33% of the formal one, at the end of the decade the picture worsened. In 2000 almost half of the economy belongs to a sector that accounts only for 30% of aggregate productivity and for 20% of the formal one (table 2 shows evidences of the increasing productivity gap between the informal and the formal sector for 5 Latin American countries).

Conclusions

Heterogeneity has been a long-standing structural weakness of Latin America. And the coexistence of a formal and an informal sector, with different production and institutional mechanisms, is an enduring and persistent limitation of Latin American economies. In fact, overall economic performance is pulled down by the informal sectors' dynamics where almost the half of regional workforce is concentrated in, performing low productivity activities.

Regional structural debilities along with the open economies setting and increased trade flows generated adverse incentives and engendered a sort of enclave-led model of growth, where only the formal sector profits from augmented foreign trade and benefits do not spill over to the "rest" of the economy. Furthermore, in the formal sector modernization mostly concerned incremental innovations and upgrading of production processes, rather than increased endogenous technological capabilities and productivity growth, which mostly resulted from labor force expulsion and not by augmented domestic value added.

Latin America should overcome the present enclave-led growth and should be able to shift towards an inclusive export-led growth where the weight of the informal sector within overall economy should monotonically decline since the formal sector modifies the international trade insertion pattern and increases its labor force absorption capacities.

More complex and diversified production structures, with intensified knowledge diffusion and linkages' density, a shift in regional specialization pattern towards more technology intensive production stages and products and intensified human capital formation are required in order to take pressure off the trade balance constraint and to allow output, productivity and employment growth to ensue. In effect, efforts to increase linkages and capacity building activities would allow the informal sector to decline and the formal one to rise only if they are synchronized with production structure transformation and reorientation of regional international specialization.

The problem of informality persistence finds its solution in the transformation of regional production structures together with the repositioning in global trade. In other words, a "high-quality" foreign trade insertion is a requirement to generate a virtuous growth pattern which would lead the informal sector to decline and would prompt the desired threefold outcome of output, productivity and employment growth in the overall economy.

Appendix I

The theoretical background of the Demand Regime (Setterfield and Cornwall 2002) traces back to the concept of the foreign trade multiplier originally developed by Harrod (1933), Kaldor (1966, 1975) and Thirlwall (1979), which asserts that the effect of exports' growth on income growth is hampered by increasing income elasticity of imports. The following versions introduced by Cimoli, Dosi and Soete (1986) and Cimoli (1994) aggregate, to the original expression, the concept of the technological gap multiplier. In effect income growth is not only affected by export growth and by income elasticity of import but also by the ratio between the productivity growth rate of the domestic export oriented formal sector and the one of the technological frontier- that is to say, the technological gap multiplier: $\Psi = \frac{\pi_f}{\pi^*}$.

The Demand Regime is derived starting from a trade balance equilibrium condition, which is expressed by equation (i)

$$(i) \quad M=E$$

where M represents domestic demand for imports and E indicates exports, expressed in the same monetary unit.

According to the standard demand theory domestic demand for imports is a multiplicative function of national income and it is determined by the following expression:

$$(ii) \quad M = Y_f^\varepsilon$$

where (ε) is the income elasticity of imports and (Y_f) represents domestic income generated in the formal sector.

Correspondingly, domestic exports are a multiplicative function of foreign income (Y^*) and are measured by equation (iii)

$$(iii) \quad E = Y^{*\tau\Psi}$$

where (τ) is exports' income elasticity and (Ψ) is the technological gap multiplier.

When equation (i) holds, its dynamic version- expressed by equation (iv)- stands as well:

$$(iv) \quad m = e$$

where m is domestic import growth rate and e stands for export growth rate. Therefore, by differentiating equation (ii) and (iii) and substituting them into equation (iv) we obtain equation (v) that expresses the dynamic version of the trade balance equilibrium condition.

$$(v) \quad \varepsilon y_f = \tau \Psi y^*$$

Assuming that (x) is the export growth explained by foreign income's growth

$$x = \tau y^*$$

and substituting equation (vi) into equation (v) and bearing in mind that $b = \frac{x}{\varepsilon \pi^*}$ we

obtain the following multiplicative expression, which is just like the Demand Regime specified by equation (10):

$$(vii) \quad y_f = \frac{\Psi}{\varepsilon} x = \frac{\pi_f}{\varepsilon \pi^*} x = b \pi_f$$

Appendix II

In order to prove that a contemporaneous rise in α and reductions of both b and β can yield a constant y_{fe} and a rise in π_{fe} , let us proceed in two steps. Firstly, let us prove that a contemporaneous rise in α and reduction of b can yield a constant y_{fe} and a rise in π_{fe} .

From the condition of zero net effect on y_{fe} , i.e. $\frac{\partial y_{fe}}{\partial \alpha} \Delta \alpha + \frac{\partial y_{fe}}{\partial b} \Delta b = 0$, let us derive that

$\frac{\Delta b}{\Delta \alpha} = -b \frac{1-b\beta}{\alpha} < 0$. Then, derive the direct and indirect change in π_{fe} for a unitary $\Delta \alpha$, i.e.

$d\pi_{fe} = \frac{\partial \pi_{fe}}{\partial \alpha} + \frac{\partial \pi_{fe}}{\partial b} \Delta b = \frac{\partial \pi_{fe}}{\partial \alpha} - \frac{\partial \pi_{fe}}{\partial b} b \frac{1-b\beta}{\alpha} > 0$. Secondly, let us prove that a

contemporaneous rise in α and reduction of β can yield constant y_{fe} and π_{fe} . With analogous procedure, let us derive $\frac{\Delta \beta}{\Delta \alpha} = -\frac{1-b\beta}{b\alpha}$, and then: $d\pi_{fe} = \frac{\partial \pi_{fe}}{\partial \alpha} + \frac{\partial \pi_{fe}}{\partial \beta} \Delta \beta = 0$.

Therefore, a rise in α and opportune reductions of b and β can yield a constant y_{fe} and a rise in π_{fe} .

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