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Labor market distortions in major emerging-market economies: Some CGE estimates

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Abstract

Purpose — In the present study, the effects of labor market distortions on economic structure and efficiency are estimated for seven emerging-market countries: Brazil, China, Indonesia, India, Mexico, Russia, and Turkey.

Methods — The estimates are based on a computable equilibrium (CGE) model that allows simulation of the inter-industry links of 56 industries plus a sector representing the rest of the world from data collected in the World Input-Output Database (Release 2016) for the period 2000-2014.

Findings — The results show that wage differentials appear to be distortionary, especially in the cases of countries with high wage-income inequality. Moreover, it seems that labor market distortions in emerging-market countries are subject to the rural-urban dichotomy and urban labor-market imperfections. Finally, the results show that the removal of wage differentials affects the terms of trade, which are improved in most but not all cases.

Implication —The conclusions of the present study have policy implications. In countries where the rural-urban dichotomy is the main distortion in labor markets, increasing urbanization can stimulate efficiency; when this is not the case, further reform of urban labor markets is needed. However, it cannot be ruled out in advance that a policy aimed at enhancing labor mobility may have a negative impact on the terms of trade.

Originality — The estimation method used in the present study presents certain advances over others found in the literature, as it becomes possible to estimate the effects of labor-market distortions while considering the interdependencies between different sectors, as well as to plausibly estimate the effects on trade. The present study also uses a large quantity of data, which is expected to add robustness to the study's conclusion.

Keywords — Emerging-market countries, labour market distortions, input-output tables, computable general equilibrium models.

Introduction

In the competitive society assumed by economic theory, homogeneous labor units are paid equally, regardless of the industry or firm that employs them. In the absence of market imperfections, arbitrary differences in wages are not expected to last as laborers move from one job to another. However, significant differences exist across all societies among the wages paid within distinct industries and firms, and these differences are especially large in less-developed countries (Freeman & Oostendorp, 2002; Liboreiro, 2022a).

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Sometimes, the large wage differences observed in less-developed countries are considered ‘endogenous’ (i.e., due to market imperfections in a ‘laissez faire’ context). Thus, many studies have found wage differentials to be caused by unobserved differences in the skills of laborers or the disutility associated with particular industries or regions (Pratap & Quintin, 2006; Rosenzweig, 1988). However, wage differentials can also be ‘exogenous’ (i.e., due to non-market imperfections, as they result from institutional elements typical of less-developed countries), whether ‘autonomous’ in origin or ‘policy-imposed.' The causes of these differentials include the lack of freedom of registration, monopoly power through unionism, and/or the urban-rural dichotomy, among other factors (Günther & Launov, 2012; Jha & Hasan, 2022; Magee, 1973).

Ever since the existence of large wage differentials in less-developed countries became known, and data was made available, scholars have wondered about their effects on efficiency. Given the emphasis of economic theory on the allocation of resources, it seemed reasonable to consider that the existence of wage differentials would lead to a misallocation of labor among industries and firms, thereby reducing efficiency. Wage differentials in less-developed countries were therefore expected to be distortionary –especially when regarding ‘exogenous’ wage differentials.[1] However, the earliest theoretical studies on this matter showed that the effects of wage differentials on efficiency might prove insignificant (Fishlow & David, 1961; Johnson, 1966) and that their removal may even have perverse effects (Bhagwati, 1968; Bhagwati & Ramaswami, 1963) in the event of foreign trade or economic rigidities. Subsequently, pioneering empirical studies concluded that wage differentials appear to have a negative (but small) impact on efficiency in less-developed countries (de Melo, 1977; Kwon & Paik, 1995).

Lately, the initial skepticism among scholars has given way to effusive optimism. Indeed, recent contributions have led to some consensus on the hypothesis that factor-price differentials explain a significant part of the income differences between countries (Hopenhayn, 2014; Restuccia & Rogerson, 2017). Studies, both theoretical and empirical, that offer evidence in favor of this hypothesis are based on models of monopolistic competition involving heterogeneous firms, in which a large set of firms are assumed to use primary inputs for the provision of differentiated goods. As long as the elasticity of substitution between varieties of the same good is assumed to be great, and the use of intermediate inputs and other rigidities are not regarded, it has been found that the impact of factor-price differentials on efficiency can be considerable. Specifically, based on these assumptions, certain empirical studies estimate that the removal of wage differentials in emerging-market economies such as India or China can increase efficiency by a factor of two (Aoki, 2012; Hsieh & Klenow, 2009; Zhang et al., 2023).

Given the astonishing results obtained by this recent framework, a question arises: Is it possible to obtain similar results from different assumptions and data sets? Recent studies in this regard have focused on analyzing firm-level data for a single industry (typically manufacturing) and have heavily relied on evidence provided by the ‘love-of-variety models’ (Broda & Weinstein, 2006; Hendel & Nevo, 2006). In the present study, an alternative perspective is proposed by estimating the effects of wage differentials from a computable general equilibrium model, relying on evidence gathered using recent developments in input-output accounting (Dietzenbacher et al., 2013; Liboreiro, 2022b).

The proposed computable general equilibrium model is formulated in such a way that allows simulation of the inter-industry links of many industries plus an additional sector that represents the trade relations between each country and the rest of the world, assuming that a given country’s exports are all intermediate goods. In addition, the demand is modeled as a linear expenditure system with a basic consumption basket composed of goods according to their income elasticity. To calibrate the model and perform simulation exercises, data were taken from the 2016 Release of the World Input-Output Database (Timmer et al., 2015) for seven emerging market countries (Brazil, China, Indonesia, India, Mexico, Russia, and Turkey) and 56 industries plus a composite sector comprising the rest of the world, for the period 2000-2014. The effects of removing wage differentials on efficiency, output, employment, and trade were then estimated using U.S. wages as a 'benchmark.'

[1] It is worth noting that ‘differential’ is a purely descriptive term, while ‘distortionary’ denotes that a differential has implications for efficiency (Bhagwati & Ramaswani, 1963).

The main conclusion of the study is that wage differentials in emerging-market countries appear to be distortionary, although they appear to be less distortionary than certain recent studies conclude (Aoki, 2012; Hsieh & Klenow, 2009; Zhang et al., 2023). Indeed, the efficiency gains of removing wage differentials appear higher for countries with high wage-income inequality. Furthermore, in many emerging-market countries, the main distortion in the labor market remains the urban-rural dichotomy, while major labor market distortions in other economies involve imperfections within urban labor markets. Additionally, the removal of wage differentials has effects on the terms of trade, which are improved in most but not all cases. In countries where the rural-urban dichotomy is the main distortion in labor markets, increasing urbanization can stimulate efficiency; when this is not the case, further reform of urban labor markets is needed. However, it cannot be ruled out in advance that a policy aimed at enhancing labor mobility may have a negative impact on the terms of trade, giving rise to a process of 'immiserizing growth.

The novelty of this study, compared to others found in the literature, lies in its estimation of the effects of wage differentials in emerging-market economies in view of empirical evidence recently gathered using input-output accounting. To date, and to the author's knowledge, only a few relevant studies have employed this methodology. Indeed, since the seminal contributions of de Melo (1977) and Paik (1995), no new progress has been made in estimating the effects of wage differentials using data from input-output tables in computable general equilibrium models. In addition, the estimation method used in this study presents certain advances over former methods, as the model endogenizes the relations of the economic system with the rest of the world. Then, employing this method, it becomes possible to estimate the effects of removing labor-market distortions while considering the interdependencies between different sectors, as well as to plausibly estimate the effects on trade. The present study also uses a large quantity of data, calculating estimates for seven countries across 15 years and considering the inter-industry links of 56 industries plus a composite sector comprising the rest of the world for each country and year. This breadth of purview is expected to add robustness to the study's conclusions and to permit generalization of the results obtained.

Methods

The method employed for estimating the effects of removing labor market distortions is to use a computable general equilibrium model capable of analyzing the data available in a standard input-output table. For this, it is first necessary to characterize the market behavior of the different agents that coexist in the economic system so that a system of equations can be obtained and solved using the fixed-point method.

Suppose, then, an economic system composed of $j = 1, \dots, N$ industries, producing $j = 1, \dots, N$ homogeneous commodities, plus $N + 1$ sector representing the rest of the world and producing a single composite good whose composition does not change with small changes in output. Both the N domestic industries and the $N + 1$ rest-of-the-world sector use as inputs the production factors and commodities produced by any of the $N + 1$ sector According to the available estimates derived from data from input-output tables, the values of the substitution elasticities between capital and labor σ_{KM}, between factors of production and intermediate inputs σ_{VM}, and between different intermediate inputs σ_{MM} are all between 0 and 1 for almost all the industries and countries analyzed (Kemfert, 1998; Koesler & Schymura, 2015; Okagawa & Kanemi, 2008; van der Werf, 2008).[2] Therefore, the most flexible production technology that can be expected is one in which $\sigma_{KL} = \sigma_{VM} = \sigma_{MM} = 1$, so it is reasonable to represent the behavior of the producers in the following manner:

[2] In the estimate by Koesler and Schymura (2015), still among the most complete using input-output tables, the authors found that the elasticity of substitution between capital and labor is significantly greater than 1 in only two of 35 sectors (Water Transport and Post & Telecommunications). Also, these authors found that the elasticity of substitution involving intermediate inputs is significantly greater than 1 in only one of 35 sectors (Water Transport) and only for the case of substitution between energy and primary factors.

$$X_j = \Xi_j K_j^{\beta_{Kj}} L_j^{\beta_{Lj}} X_{1j}^{\alpha_{1j}} \dots X_{ij}^{\alpha_{ij}} \dots X_{Nj}^{\alpha_{Nj}} X_{N+1j}^{\alpha_{N+1j}} \quad (1)$$

In this configuration, X_j is the output of industry j, K_j is the capital stock of industry j, L_j is the amount of labor employed in industry j, and X_{ij} is the output of industry I, which is used as an intermediate input in industry j. This is a Cobb-Douglas production function, including both primary factors of production and intermediate inputs. It represents the case in which substitution between capital and labor is possible, as is substitution among intermediate inputs and between intermediate inputs and production factors.

According to the available empirical estimates, actual technologies will be at most as flexible as (1). Therefore, it seems reasonable to use such production functions to find plausible estimated values. Assuming profit maximization and perfect competition, the input demand expressions corresponding to such a specification of the production function can then be deduced. Thus, when considering (1), the demand for production factors and intermediate inputs is:

$$L_j = \beta_{Lj} \left(\frac{W_j}{P_j}\right)^{-1} X_j, X_{ij} = \alpha_{ij} \left(\frac{P_i}{P_j}\right)^{-1} X_j \quad (2)$$

where P_j is the commodity price produced by industry j, and W_j is the wage of laborers employed in industry j.

Additionally, it is assumed that the relative wages $j = 1, \dots, N$ are exogenously given and can be expressed as a premium over the farm wage (industry 1), so that the wage paid in industry j can be expressed as:

$$W_j = \pi_j W_1 \quad (3)$$

where π_j represents the premium or discount paid to workers employed in industry j over the farm wage (W_1). The wage paid by the rest of the world can also be represented as the premium or discount over the farm wage:

$$W_{N+1} = EW_1 \quad (4)$$

The symbol E represents the exchange rate in this model, and, unlike the $j = 1, \dots, N$ wage differentials, it is not assumed to be exogenously given.

The set of equations (1) to (4) characterize the market behavior of producers according to two alternative assumptions regarding the technologies they use. To characterize the market behavior of consumers, a stylized fact can be accepted: the existence of a minimum consumption basket that is insensitive to changes in relative prices. Therefore, it is assumed that the welfare of consumers can be represented as:

$$U = \sum_{i=1}^{N+1} \mu_i \, log(C_i - \theta_i)$$

Under the assumption of welfare maximization, the result is a linear expenditure system:

$$C_i = \theta_i + \frac{\mu_i(D - \sum_k P_k \theta_K)}{P_i} \quad (5)$$

where C_i is the consumption demand of commodity i, θ_i represents an absolute minimum level of consumption of commodity i, μ_i is the marginal budget share of commodity i, and D is the total consumption expenditure ($D = \sum_i P_i C_i$). In actuality, there is an important relationship between μ_i and θ_i:

$$\theta_i = \left(\frac{D}{P_i}\right) [\phi_i - \mu_i \sigma_C]$$

where ϕ_i is the budget share of commodity i ($\phi_i = \frac{P_i C_i}{D}$), and σ_C is the supernumerary-income ratio. In addition, the marginal budget shares result from:

$$\mu_i = \eta_i \phi_i$$

where η_i is the income elasticity of commodity i. It is then observed, as expected, that the lower the income elasticity, the greater the share of the inelastic component in the consumption of commodity i. Therefore, using the set of equations (5), it is possible to regard different income elasticities for different goods and services in a tractable way.

Since the assumed economic system allows foreign consumption in addition to domestic consumption, it becomes necessary to characterize foreign consumption demand as well. This can be done in two ways: by assuming a different utility function (characterizing rest-of-the-world preferences) or by assuming that preferences are the same in all countries. Since the latter assumption is clearly far from reality, given the non-negligible 'home bias' in consumption, the first option seems the most reasonable. However, this implies that demand equations cannot be assumed to derive from one aggregated consumer, so there is no guarantee that solution prices will be unique (Arrow & Hahn, 1971). To avoid such confusion, it can be further assumed that the consumption demand from the rest of the world is the same as the demand for intermediate inputs. Therefore, the rest-of-the-world consumption demand of commodity i is included in the demand for intermediate inputs from the rest of the world $X_{N+1,i}$. This is equivalent to assuming that a country exports only intermediate goods to the rest of the world, although it also imports both final and intermediate goods from the rest of the world.[3]

Then, from this simplified characterization of the market behavior of producers and consumers, it is possible to characterize the market equilibrium of the whole economic system. For this, it is necessary to introduce additional restrictions that allow a determined system of equations to be obtained. One of these restrictions is the input-output balance of the economic system (or material balance), which resumes the supply-demand balance:

$$X_i = \sum_{j=1}^{N+1} X_{ij} + C_i + \bar{Z}_i \qquad (6)$$

where $\overline{Z_\iota}$ is investment demand and government purchases of commodity i, which are assumed to be exogenously given. Additionally, the total number of employed laborers is in any case required to be equal to the number of currently employed labourers within the country, that is:

$$\sum_{j=1}^{N} L_j = \bar{L} \qquad (7)$$

where $\bar{L}$ is the actual amount of labor employed in the country.[4] This restriction is a necessary requirement for the present estimation since we are interested in estimating the effects of distributing the same amount of labor alternatively to the actual case.

In addition to conditions (6) and (7), it is necessary to introduce a condition of price normalization:

$$\sum_{j=1}^{N+1} P_j^{*1} X_j^0 = \sum_{j=1}^{N+1} P_j^{*0} X_j^0 \qquad (8)$$

with P_j^* representing the net price of commodity j, which is equal to:

$$P_j^* = (\beta_{K,j} + \beta_{Lj}) P_j \qquad (9)$$

In summary, equations (1) to (9) make up a system of equations comprising $7(N+1) + (N+1)^2 + 2$ equations, $7(N+1) + (N+1)^2 + 2$ dependent variables (i.e., X_i, X_{ij}, P_i, P_i^*, W_i, C_i, E, D), $2(N+1)+1$ independent variables (i.e., $\overline{K_\iota}$, $\overline{Z_\iota}$, $\bar{L}$), and $5(N+1) - 1 + (N+1)^2$ parameters (i.e., β_{Kj}, β_{Lj}, α_{ij}, π_j, μ_i, θ_i). The result is a nonlinear system of equations, the solution of which requires some algorithm. In the present case, the following strategy was followed. First, it should be noted that according to the stated model, the farm wage W_1 can be taken as numeraire so that its value is arbitrary (e.g., $W_1 = 1$). Subsequently, instead of D, it is convenient to introduce an instrumental parameter λ by which consumption demand can be represented as:

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[3] This assumption is consistent with the facts since, for all countries in the sample, exports of intermediate goods represented over half of all their total exports in the period analyzed.

[4] This equilibrium condition is equivalent to assuming that labor employment in the rest of the world can vary to accommodate small increases in output (i.e., that L_{N+1} can vary to a small extent).

$$C_i = \theta_i + \frac{\lambda\mu_i\left(Y - \sum_{k=1}^{N+1} P_k\theta_K\right)}{P_i}$$

where:

$$Y = \sum_{j=1}^{N} P_j^* X_j$$

That is, instrumentally, it can be assumed that consumption represents an arbitrary constant fraction of a country's income, Y. This way, λ can be understood as the 'marginal propensity to consume.' Then, the system of equations can be rewritten so that a set of equations is obtained depending only on prices, on the 'exchange rate' E, and on the 'marginal propensity to consume' λ. That is:

$$F_j\left(P_j, \lambda, E\right) = 0$$

Now, assuming arbitrary starting values of λ and E, the system of equations can be solved by Newton's method once the respective Jacobian matrices have been calculated. The results obtained must then be compared with conditions (7) and (8), and both parameters λ and E must be alternately changed until both conditions are met with an acceptable relative error (0.5% in the present study). In this sense, solving the system of equations F_j consists of finding the values of the marginal propensity to consume λ and the exchange rate E, for which equilibrium conditions (7) and (8) hold.

Once the algorithm to solve the general equilibrium model has been found, it is possible to estimate the effects of removing wage differentials by means of the standard method found in the literature (Hsieh & Klenow, 2009). First, the model is calibrated so that if actual wage differentials π_j^0 are assumed, then actual prices P_i^0 and output X_i^0 are obtained. Next, another set of wage differentials π_j^1 is considered, and these are assumed to be representative of a labor market free of imperfections. These differentials are usually taken from the available data of some developed country, typically the U.S. Then, once the set of parameters π_j^1 has been considered, the model is solved again, generally obtaining different prices P_i^1 and output X_i^1. Finally, the actual values are compared with these hypothetical values, and the effects on efficiency and economic structure are obtained.

The method was applied to the data available in the World Input-Output Database (Release 2016) for seven emerging-market economies (Brazil, China, Indonesia, India, Mexico, Russia, and Turkey) from 2000-2014. The data have been considered for the 56 industries of each country, also adding all others into a rest-of-the-world sector so that virtually all the information contained in the World Input-Output Tables has been taken into account. Furthermore, the relative wages of the United States appearing in this same database for 2000 have been taken as a 'benchmark.'[5] Thus, it has been assumed that wage premia over the farm wage found in the U.S. represents the case of a labor market without imperfections. Then, for each country in the sample, an evaluation was made of how that country's efficiency and structure would change were its wages altered to resemble those reported for the U.S.

In terms of the income elasticities characterizing consumer demand, it was decided to use a stylized fact. Indeed, empirical studies on developing countries agree that the income elasticity of consumer demand for food products is less than 1, whereas the income elasticity of consumer demand for foreign goods is usually found to be greater than 1 (Emran & Shilpi, 2010; Faini et al., 1988; Hong, 2001; Muhammad et al., 2011). Therefore, a value of $\eta = 0.5$ was assumed for the income elasticity of the consumer demand for the sectors of agricultural, forestry, and fishing products, as well as food and beverages. Moreover, a value of $\eta = 1.5$ was assumed for the income elasticity of consumer demand for foreign goods. Then, the income elasticity of consumer demand

[5] The year has little relevance since the wage structure in the U.S. varies little over time.

for the remaining goods was assumed to be the same, and this was obtained from the Engel aggregation condition:

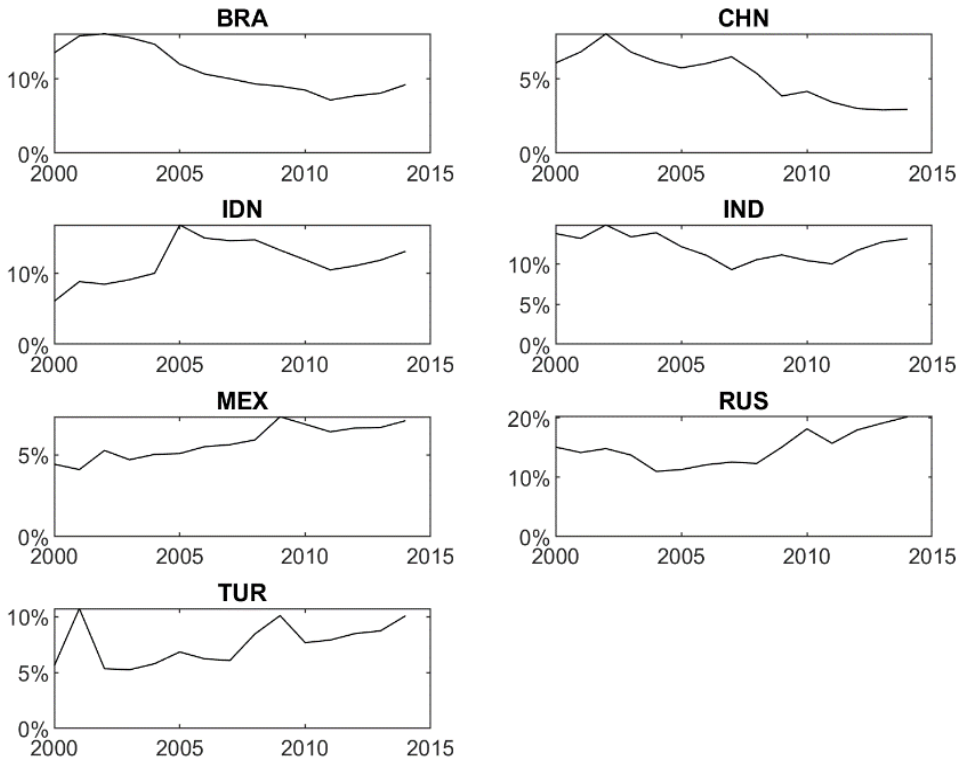
$$\sum_{i=1}^{N+1} \phi_i \eta_i = 1$$

Details of the results of this experiment are discussed in the next section.

Results and Discussion

The computable general equilibrium model presented was calibrated for each country and year of the sample, considering 56 industries plus a composite sector comprising the rest of the world (i.e., $N + 1 = 56 + 1$). The model was calibrated and then solved under the alternative assumption that relative wages are equal to actual wages or those of the U.S. The effects on major indicators of removing wage differentials are presented in Figures 1 to 6.

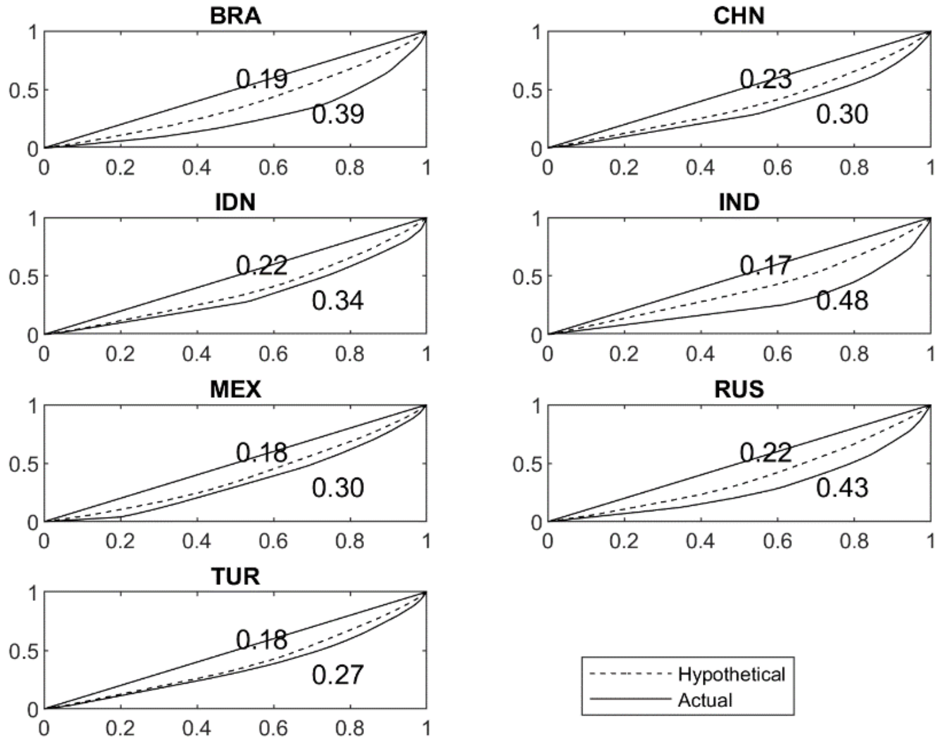
Figure 1 represents the effects on efficiency of removing wage differentials, estimated as the effects on GDP measured at constant net prices. In the results presented in Figure 1, differences can be observed in the effects on the efficiency of removing wage differentials depending on the country considered. Specifically, it is observed that for four countries in the sample (Brazil, Indonesia, India, and Russia), the efficiency gains of removing wage differentials are between 8% and 20% for all the years considered. In addition, for three countries in the sample (China, Mexico, and Turkey), the efficiency gains do not exceed 8% for any year. So, from these results, two issues can be observed. On the one hand, for no country in the sample does it appear that the removal of wage differentials would negatively affect efficiency; thus, their effect seems to be distortionary in all cases. On the other hand, these results seem more pessimistic than those offered by certain recent studies (Bartelsman et al., 2013; Bento & Restuccia, 2017; Hsieh & Klenow, 2009; Zhang et al., 2023) and yet more optimistic than those of the first studies on this matter (de Melo, 1977; Kwon & Paik, 1995).



Notes: The effects on the efficiency of removing wage differentials were calculated as the difference between hypothetical and actual GDP to actual GDP at constant net prices.

Figure 1. Effects on the efficiency of removing wage differentials

In addition to the effects on efficiency, the removal of wage differentials in emerging-market countries has an obvious impact on income distribution, as shown in Figure 2, which presents the effects on wage-income distribution of removing wage differentials as measured from the Gini index resulting from the Lorentz curves. Figure 2 shows that the effects on wage income distribution by removing wage differentials are greater in those countries where the distribution of wage income is more unequal (not surprisingly). This is the case in some countries (Brazil, India, Russia), for which it is estimated that removing wage differentials would have a drastic impact on the distribution of wage income. In other countries (China, Mexico, Turkey), this effect would be smaller but significant.



Notes: Lorentz curves for wage income were calculated for the case of the central year of the sample (2007).

Figure 2. Effects on wage-income distribution of removing wage differentials

Relating the results of Figures 2 and 1, a certain relationship emerges according to which the greater the wage inequality, the greater the efficiency gains of removing wage differentials. If the efficiency effects of removing wage differentials are plotted as a function of the Gini coefficient of the wage-income distribution, this relationship seems fairly evident. This is precisely what Figure 3 shows, which can be seen as an estimate of the 'trade-off' between wage inequality and efficiency gains. Thus, for every 0.1 point that wage dispersion decreases in the sample countries, efficiency increases by 5%. This is not an easy 'trade-off' since a change of 0.1 points in the Gini dispersion coefficient implies a drastic change in the income distribution, while efficiency gains of 5% do not seem a great reward.

Taking the analysis further, toward the details of the economic structure, some features can be discerned in the sample countries as regards the effects on output of removing wage differentials. This can be seen in Figure 4, which depicts the changes in output of four aggregate sectors, measured at constant prices, as a percentage of actual output. In all the countries in the sample, the removal of wage differentials implies an increase in the output of urban-based industries related to trade and services. In addition, the mining and manufacturing and the public utilities and transportation sectors seem to increase in many cases – sometimes more than the trade and services sectors (e.g., China and Turkey). On the contrary, rural-based activities devoted to agriculture, forestry, and fishing seem to decrease in many cases (e.g., Indonesia, India, Mexico, and Russia). Thus, it can be claimed that wage differentials influence relative prices so that the output of many urban-based industries (trade, services, public utilities) is lower than it would be without labor market distortions. In comparison, the agricultural (and sometimes manufacturing) output is higher when compared with a hypothetical non-distortionary case.

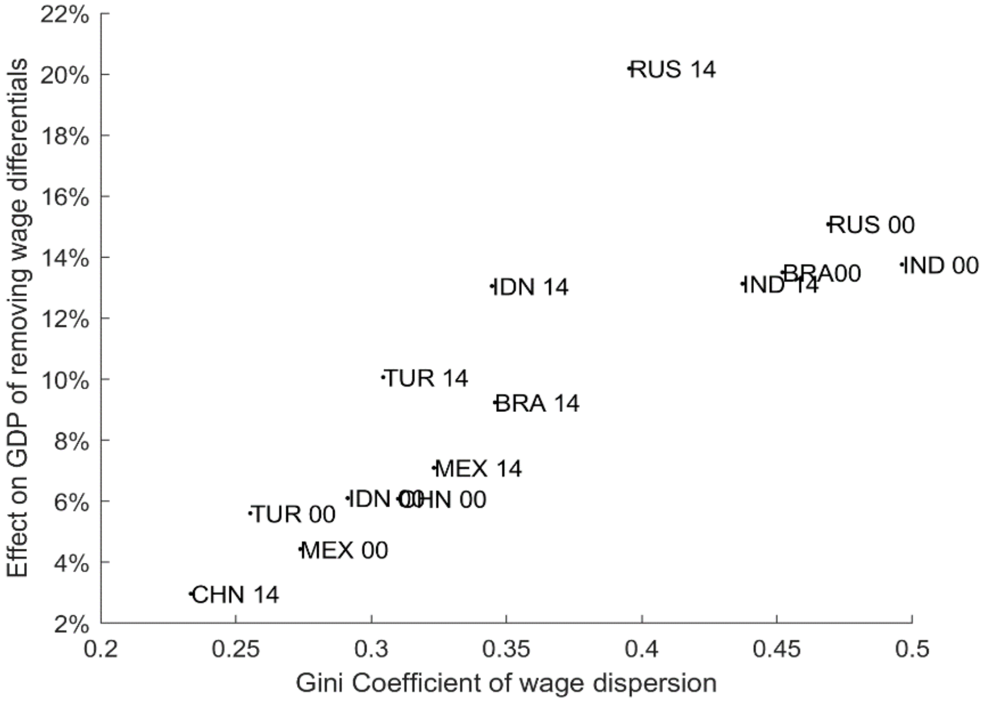
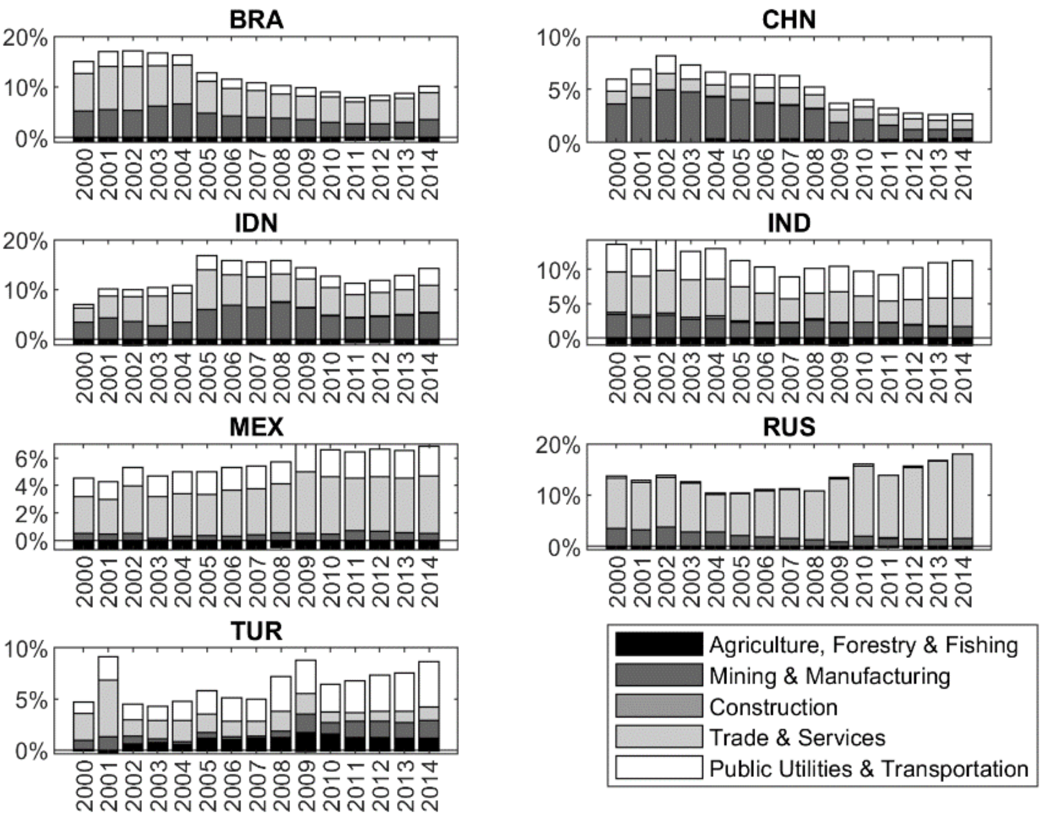


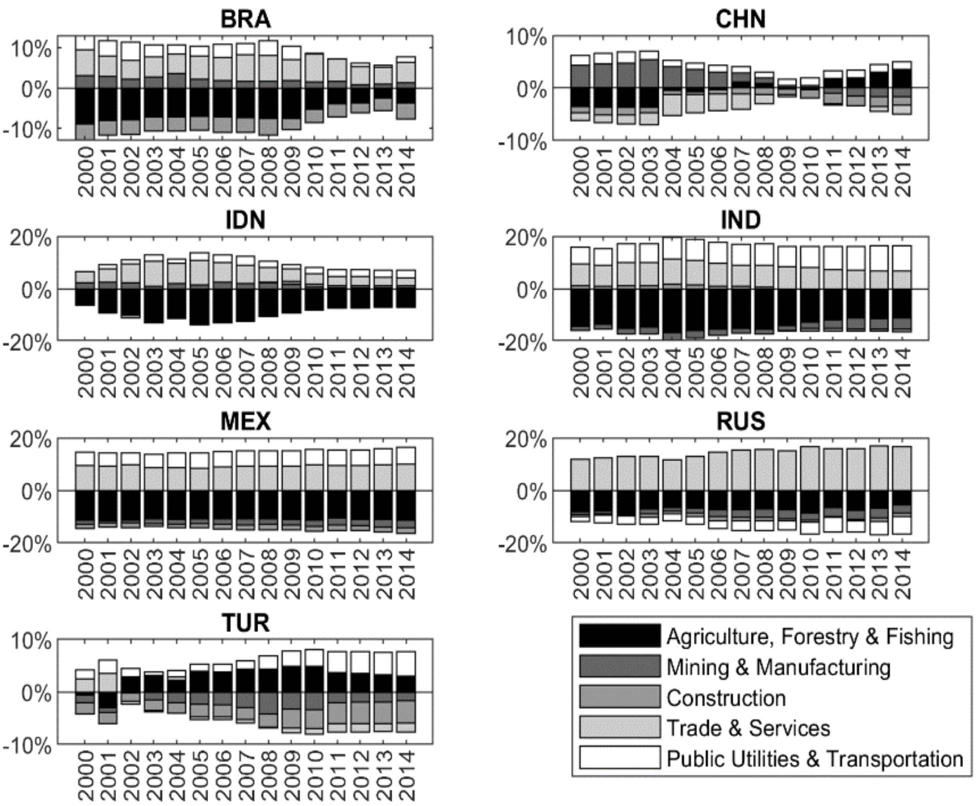
Figure 3. Effects on the efficiency of removing wage differentials as a function of the Gini coefficient of wage dispersion.



Notes: The effects on output of removing wage differentials were calculated as the difference between hypothetical and actual output, by sector, to actual output, after aggregating the 56 industries in 4 sectors.

Figure 4. Effects on the output of removing wage differentials.

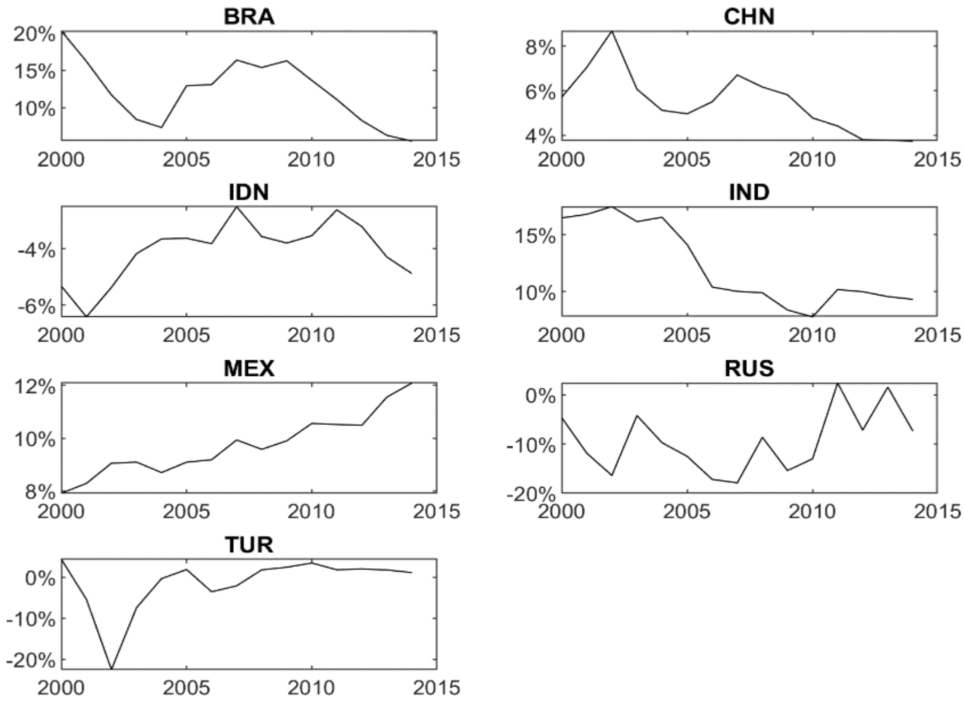
Both the efficiency (Figure 1) and output (Figure 2) effects of removing labor market distortions are ultimately due to the transfer of labor between industries that would occur in a hypothetical non-distortionary scenario. Such changes in labor employment are represented in Figure 5, which shows the change in employment by sector as a percentage of total employment. According to Figure 5, it can be observed that if wage differentials were removed, a significant amount of laborers would change their occupations. This amount ranges from around 5% (e.g., China, Turkey) to 20% (e.g., India). In many cases (Brazil, Indonesia, India, Mexico), such a change in employment structure implies a large transfer of laborers from agriculture, forestry, and fishing to urban-based sectors devoted to trade, services, or public utilities. This indicates that, in such cases, the main distortion of the labor market is the urban-rural dichotomy. However, in other cases (China, Russia, Turkey), the removal of wage differentials implies labor transfers between urban sectors (e.g., from construction to public utilities and services) so that labor market distortions seem to derive less from the urban-rural dichotomy than from imperfections in urban labor markets.



Notes: The effects on employment of removing wage differentials were calculated as the difference between hypothetical and actual employment, by sector, to total employment after aggregating the 56 industries in 4 sectors.

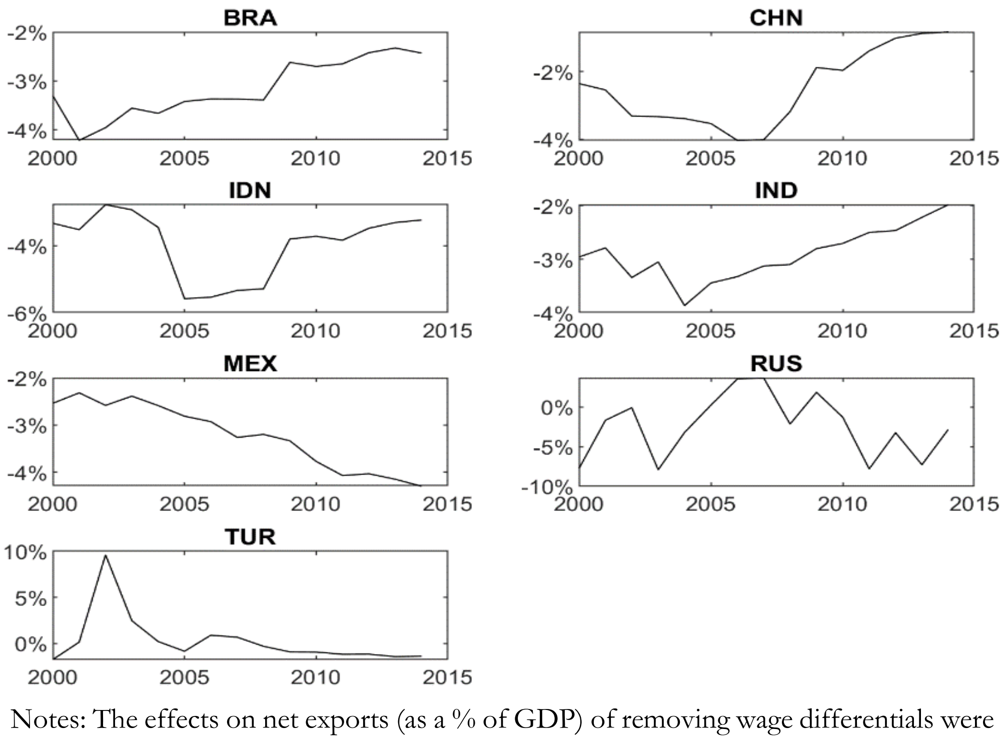
Figure 5. Effects on employment of removing wage differentials

As wage differentials affect relative prices, thus influencing the structure of output and employment, they also affect the terms of trade. In this sense, Figure 6 shows that the effects on the terms of trade of removing wage differentials vary, both in magnitude and direction, depending on the country considered. Thus, in four of the seven sample countries (Brazil, China, India, and Mexico), removing wage differentials improves the terms of trade, regardless of the technologies used. On the contrary, the case is exactly the opposite in two countries of the sample (Indonesia and Russia), while in Turkey, the results are ambiguous. These results have important implications for understanding the role that labor market distortions play in an open economy. Indeed, for many countries, labor market distortions imply an income transfer to the rest of the world. While this transfer is not negligible in some cases (e.g., Brazil, India, Mexico), in other countries, such labor market distortions prevent income transfer, in some cases to a significant degree (e.g., Indonesia, Russia). Thus, for the latter group of countries, removing wage differentials could imply 'immiserizing growth' in some way, with efficiency increasing at the cost of an income transfer to the rest of the world. This is a perverse effect that was predicted theoretically (Bhagwati, 1968) but which had yet to appear in the estimates made.



Notes: The effects on the terms of trade of removing wage differentials were calculated as the difference between hypothetical and actual terms of trade to actual terms of trade.

Figure 6. Effects on the terms of trade of removing wage differentials



Notes: The effects on net exports (as a % of GDP) of removing wage differentials were calculated as the difference between hypothetical and actual next exports, as a percentage of hypothetical and actual GDP, respectively.

Figure 7. Effects on net exports on removing wage differentials

In addition to this hypothetical phenomenon of income transfers, the effects on the terms of trade of removing wage differentials have implications for the trade balance. In this sense, Figure 7 shows the effects on net exports (as % of GDP) of removing wage differences, and it can be seen that for countries where the terms-of-trade effects of removing labor market distortions are positive (i.e., Brazil, China, India, Mexico), net exports would decrease. On the other hand, the countries in which the effects on the terms of trade were estimated to be negative (Indonesia and Russia) show that a very large deterioration in the terms of trade may not be enough to avoid a lower trade balance in a context where import demand increases due to efficiency gains and the elasticity of substitution for intermediate inputs is not greater than 1.

Conclusion

Using the data available in the World Input-Output Database (Release 2016) for seven emerging-market economies (Brazil, China, Indonesia, India, Mexico, Russia, and Turkey) and the rest of the world, it is possible to estimate the effects on efficiency and economic structure of removing wage differentials in an open economy by means of a computable general equilibrium model. The model consists of a set of nonlinear equations that comprise 56 industries of each country plus a composite sector in which the links of each economy with the rest of the world are lumped, thus endogenizing the relations of the economic system with the rest of the world.

The conclusions of the present study are four in number. First, it is observed that wage differentials appear to be distortionary, although they seem less distortionary than certain recent studies conclude (Aoki, 2012; Hsieh & Klenow, 2009). Second, a relationship emerges according to which the greater the wage-income inequality of the countries, the greater the efficiency gains that would be obtained by removing labor market distortions. Third, it is observed that in many emerging-market countries, the main distortion in the labor market remains the urban-rural dichotomy. However, in others, the main labor market distortion involves imperfections in urban labor markets. Fourth, the present estimate indicates that labor market distortions have effects on the terms of trade. Specifically, in most cases, labor market distortions imply a transfer of income from the rest of the world. However, cases appear to exist in which removing labor market distortions can lead to 'immiserizing growth.

The present study has policy implications. Indeed, it can be seen that in countries with large wage inequality, greater labor mobility can be an important source of efficiency (Figure 3). Thus, it seems that in countries such as Brazil or India, the enhancement of greater labor mobility can have a significant impact on efficiency, even in a context of rigid production technologies. Furthermore, it seems that in many of these countries (e.g., Brazil, Indonesia, India), one of the most significant causes of labor market distortions is the urban-rural dichotomy (Figure 4 and Figure 5). For these countries, increases in urbanization can be a stimulus to efficiency insofar as it encourages the transfer of laborers from rural-based industries such as agriculture or fishing to urban-based industries such as public utilities and services. However, this is not always the case, since in quite a few countries (e.g., China, Russia), labor market distortions derived from imperfections in the urban labor market, so increasing urbanization does not promise a further stimulus to efficiency. Only reforming urban labor markets could favor labor transfer between industries needed to increase efficiency and welfare.

The conclusions of the present study are far from the conclusions of some of the most recent studies on these matters (Aoki, 2012; Hsieh & Klenow, 2009; Zhang et al., 2023). This discrepancy is due to the different sets of assumptions and data considered. Specifically, most recent studies start from firm-level data for a single industry – usually manufacturing – and assume that this industry is comprised of a set of firms that use only primary inputs and that compete monopolistically with each other in the face of relatively elastic demand. On the contrary, the present study starts from input-output data for a set of industries and assumes that each industry uses both primary and intermediate inputs in a relatively rigid manner. In this sense, it seems that further research is needed in which, perhaps, both data from input-output tables and data at the firm level can be taken into account simultaneously. This would seem a formidable task, especially if the intention is to solve such a system of equations using a fixed-point method. In any case, there will be two versions of the same story: one told by the followers of the 'love-of-variety models' and another by input-output practitioners.

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