IMPACT OF TRADE LIBERALISATION ON LABOUR CONDITIONS ON THE TEXTILE SECTOR OF MAURITIUS: THE FATE OF FEMALE WORKERS
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Abstract
Trade Liberalisation is believed to have major implications for factor markets through re-allocation of inputs across sectors. Current empiricism reveals a paucity of research and literature with respect to the gender implications within some developing countries. In certain economies, female workers are affected dis-proportionately as they constitute a major chunk of the workforce of impacted industries. Within this purview, our paper extends the current literature to fill-up this gap. A partial equilibrium approach is reckoned to assess the impact of trade liberalization via the demand elasticity of labour in the wearing apparel industry in Mauritius, particularly dominated by female workers. Our findings reveal that trade liberalisation would make it more difficult for female workers to negotiate wage increases in the long run as these may entail significant employment cuts in the (Export Processing Zone) EPZ. This is due to the increased elasticity of demand for female employment and prevalent trade liberalization environment that would result in a more than proportionate increase in lay-offs, among unskilled workers in the manufacturing sector, should wage increases be claimed.

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Key Words: Trade Liberalisation, Female Employment.

1. Introduction
An important mechanism through which foreign shocks are translated into poverty impacts is through factor markets, in particular, the labour market. Indeed, obtaining employment is one of

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the surest ways out of poverty, assuming all in all that the salary obtainable at least exceeds the minimum wage. In addition to the structure of the labour market, the demographic profile of the unemployed is also a crucial element to ascertain how trade liberalization would induce wage and employment changes and hence impact on the welfare of workers.

Conventionally, Heckscher-Ohlin theory is often used to analyse the impact of trade liberalisation but it is confined to a scenario of two countries, two goods and two factor inputs (including a number of other assumptions about identical technology and preferences). It shows that each country will export the good which intensively uses its most abundant factor (and import the other one). Given that developing countries tend to be relatively abundant in labour, the comparative advantage lies in labour intensive activities. Hence, the principal beneficiary of trade liberalisation and export-led growth should be labour. However, in certain developing countries, in which the comparative advantage arises from their relatively rich endowment with natural resources, export orientation causes a specialisation in the area of so-called Ricardo goods (agricultural, mineral and fossil raw materials). Owing to a low rate of growth in demand, these goods may not provide a basis for lasting growth. Indeed there may be adverse terms of trade effects.

In contrast, if a labour-intensive product has a high income elasticity of demand, then its prices are likely to rise over time, beneficial Stolper-Samuelson effects apply with an increase in the price of labour-intensive goods raising real labour incomes. Poverty may even be alleviated, only when poor households constitute a large component of unskilled wage earners. However, labour markets in developing countries are often characterised as being perfectly elastic supply. With large pools of unemployed or under-employed labour, an expansion in the export sectors will not result in rising wages for labour intensive activities. At best, employment will grow in these sectors. New employment prospects in the export sectors can result in an increase in the rate of employment of women. In general,
though, these are low-paying jobs requiring little qualification and are typified by poor working conditions.

Labour markets may be segmented for legal or institutional reasons. If the informal sector faces an enforced minimum wage (above poverty levels), at which there is excess supply, poverty would thus be affected by a trade shock. If it raises the value of the marginal product of labour in the formal sector, trade liberalisation reduces the cost of the minimum wage enforcement and alleviates poverty among women, whenever the latter disproportionately work in the impacted industries. If, on the other hand, it reduces the value of the marginal product and thus reduces employment, it has adverse consequences.

Even when trade reforms tend to benefit some workers, this may be restricted by specific sectors. Capital and labour, in sectors with the highest protection, may share the benefit of higher domestic prices. The expansion of exports that follows reforms is likely to be spread throughout the economy, often with new or sometimes unexpected industries arising. It is even often difficult to identify future exports and exporters. Thus, the employment and income gains from trade reforms are likely to be diffused. Moreover, within those countries, it may not be clear that the least-skilled workers, and thus the most likely to be poor, are the most intensively used factor in the production of tradable goods. Thus while, for example, the wages of workers with completed primary education may increase with trade liberalisation, those of illiterate workers may be left behind or even fall.

As far as empirical evidence is concerned, Rama (1994), applying a model of monopolistic competition to a panel of 39 sectors in Uruguay over 1979-86, found a significant positive relationship between protection and employment in manufacturing but no significant effects on real wages. Revenga (1997), on the other hand, attributed the low employment effects on Mexican trade reforms to factor market imperfections. She found no effect on employment from tariff cuts and a statistically significant but small negative response to quota abolition. Similarly, small employment effects
elsewhere in Latin America are reported by, for example, Marquez and Pages-Serra (1998) for Latin America and the Caribbean in general, Levinsohn (1999) for Chile and Moreira and Najberg (2000) for Brazil.

There is always a possibility of temporary unemployment as a liberalising economy adjusts to new prices. This adjustment process will be associated with some transitional unemployment as workers lose one job and require time to find another. In Chile, for instance, Edwards and Edwards (1996) found a positive association between the degree of liberalisation a sector experienced and the extent of lay-offs; the sectors experiencing the greatest liberalisation were also the ones where the duration of unemployment was longest. However, the available studies do not answer the question of whether those laid off, following trade liberalisation, are disproportionately poor. To answer this would require information on the characteristics of those losing their jobs, including their re-employability.

Matusz (1994) found that, in the presence of wage rigidities, trade liberalisation would have mixed impact on employment. He further argued that, in a world of monopolistic competition, if firms pay efficiency wages, such liberalisation would indeed increase employment (the efficiency premium is smaller) and so has greater benefits than in a competitive model. Similarly, Davidson, Martin and Matusz (1999) found that unemployment can go either way after liberalisation. Case studies of developing countries in Roberts and Tybout (1996) also show that industry exit and entry (one indicator of inter-sectoral reallocation of labour) generally does not increase with import competition after controlling for demand shocks. Tybout (1996) found that more plants were exiting manufacturing than were entering in Chile during 1979-1982, despite the growth in productivity. The size of entrants tended to be larger than those exiting, however, so the overall impact on employment remains unclear (Goldberg and Pavcnik, 2004).

Wacziarg and Wallack (2004) is a recent cross-country study of the effects on labour of trade reform episodes across a number of
developing countries. They conclude that liberalisation episodes are followed by a reduction in the extent of inter-sectoral labour shifts at the economy-wide one-digit level of disaggregation. Liberalisation has a weak positive effect at the three-digit level, but it is small in magnitude and not robust. There is no evidence of trade-induced structural change at the more disaggregated four-digit industry level.

Goldberg and Pavcnik (2005) investigated the relationship between trade liberalisation (protection) in Colombia and industry wage-premium. Controlling for unobserved time-invariant industry characteristics through fixed effects (interpreted as reflecting the prevailing mix of political economy forces), workers in protected sectors earn more than workers with similar observable characteristics in unprotected sectors. This positive relationship persists when they instrument for tariff changes. In the last 40 years of the 20th century, several countries have been highly successful in increasing incomes and improving the welfare of many workers. Most notable has been the experience of the South-East Asian economies, especially Singapore, Hong Kong, Japan, Taiwan (China) and Korea.

In the final 15 years of the century, Mauritius also saw substantial increases in income. All of these countries dramatically increased their exports (and trade to GDP ratio), raised incomes and are now active participants in the global trading environment. Although export expansion is the common element to these success stories of poverty reduction, there are considerable differences in the models of trade policy that these countries have adopted. The experience of Mauritius provides an example of a country that expanded exports significantly through Export Processing Zone (EPZ). The latter has been contributing enormously towards higher per capita income and growth rate after 1983, the benchmark year indicating inception of prospective reforms. However, there exists no study that has exclusively analyse the potential impacts that trade liberalization has had to date on the structure of demand for labour or its elasticity. The case of Mauritius is interesting because the major constituent of those working in the manufacturing sector (textile) is female labour. Studying demand elasticity, particularly, in the presence of inter-
sectoral shifts in labour supply would clearly indicate the long run effects of trade liberalisation on female employment and wage rates in this sector.

This paper therefore tries to fill up an important gap in trying to ascertain the effect of trade liberalization through the elasticity of demand for female labour on wage and employment conditions from short to medium run. All in all, it would enhance the existing wisdom by capturing an important gender issue very much undermined by the current literature. Moreover, the paper would be providing useful insights into the vulnerability of these workers towards obtaining lower incomes in future. Hence, rest of the paper is organized into 3 additional sections. The next section deals with features of the Mauritius Exports Processing Zone and this is followed by a theoretical framework to measure the demand elasticity in question. Section 4 discusses the empirical findings, while the last section concludes.

2. Features of Trade Liberalisation and the Textile Sector in Mauritius

In 1968, Mauritius was a poor country, with per capita income around $300. The eradication of malaria had led to rapid population growth that threatened to overwhelm a stagnant sugar economy. Its labour force was expanding at 3 percent annually, and unemployment was estimated to be about 16 percent. Per capita income was actually falling. Since independence, the long term objective of successive governments of Mauritius has been to ensure a reduction in poverty through employment creation and to provide better quality of life for its population while maintaining social cohesion. As a result, government formulated development plan as early as 1970, and followed a mixed strategy of import-substitution coupled with incentives for exports through the export processing zone (for e.g duty-free access to raw materials for exports; low corporate tax rates; free repatriation of capital, profits and dividends; and permanent residence permits). These two trade regimes co-existed, differently for the small home market and those producing for export.
One of the distinct features of trade liberalisation in Mauritius was its approach to reducing import protection and reforming other aspects of its industrial regime. From the period 1979-1983 when emphasis was on macroeconomic stabilisation and exchange rate adjustment, trade policy was used in a more restrictive manner, with stamp duty on imports progressively increased. The initial period of trade liberalisation between 1983 to 1985 was concerned mainly with some liberalisation of foreign exchange and of import licensing restrictions. However, import duty charges were increased further in 1984 and 1985 for fiscal reasons. The main phase of import liberalisation and reduction of protection for local firms came in the period 1985-1987 with the progressive dismantling of quantitative imports restrictions.

The late 1980s and early 1990s saw a gradual reduction in the effective protection of industry and more vigorous export promotion through preferential interest rates on development loan, tax concessions and the establishment of the Mauritius Export Development and Investment Authority to provide overseas marketing support. According to the Fund Index, Mauritius obtained a rating of 10, the highest possible category of policy restrictiveness during the early 1990s. It was only by mid-1990s, that conventional measures of trade protection began to decline.

In 1994, following the conclusion of the Uruguay Round, Mauritius consolidated its general preferential and fiscal duties, reduced the number of tariff rates from 60 to 8 and lowered duties on more than 4,000 items. Tariffs for agricultural products were bound at a ceiling rate of 122 per cent with exception of certain major imports including such items as frozen beef, dairy products and certain grains. As regards to trade in services, Mauritius made market access commitments to foreign service-suppliers in the tourism and telecommunications sectors. Alongside, the economy experienced a fall in poverty rates. Quality of life in Mauritius has significantly improved. The Gini coefficient declined from 0.5 in 1962 to 0.42 in 1975, 0.39 in 1996-97 to reach 0.37 in 2001-02. By the late 1990s, 84 percent of household had pipe-water and 99 percent had
electricity. Life expectancy at birth increased from 63 years in 1972 to 72 in 2000 (CSO).

So much said; in fact, there has been little work on the effects of trade policy on the structure of demand for employment, in particular, women’s. There are many studies of the labour markets effects of trade reforms, but most of them presume segmented markets and deal only with the manufacturing sector. The present paper takes a step towards filling this gap. In particular, a partial equilibrium approach is used to identify the link between changing structure of the demand for female employment, labour market conditions of women in the EPZ and trade liberalisation in the short-to-medium-run. The analysis also pertains to the relationship between trade liberalization and the welfare of those whose standard of living is below a suitable poverty line via the employment channel.

By focusing on the labour income channel, the study abstracts from the effects that trade policy may have had on the poverty through the consumption or household production channels. Given that trade policy affects goods prices, and that both consumption and household production decisions are a function of these prices, these channels are potentially important. Furthermore, the partial equilibrium approach allows us to link up wage-employment conditions with trade liberalisation using plausibly exogenous variation in trade policy over time, so that identification of the pure trade policy effects is arguably more compelling. Given that the adjustment costs associated with trade liberalisation are potentially high, a study of the short-or medium-run effects is important from a policy point of view, especially since the negative stance towards free trade is often attributed to the negative effects that reforms are expected to have ultimately.

3. A Model of Trade Liberalisation and Labour Demand Elasticity.
The impact of trade liberalisation on female employment elasticity will be undertaken in the Wearing Apparel industry. Most of the poor
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and vulnerable groups (especially women) work in this industry in Mauritius (operating under the EPZ sector). Studies have been carried out regarding the impact of trade liberalisation on labour market in Mauritius (Milner and Wright, 1998), but not necessarily addressing the gender issue and the vulnerability of women losing their jobs or becoming poor.

A more liberal trade policy is expected to raise labour demand elasticity and thereby make those working in the sectors affected trade liberalisation, more vulnerable and hence more likely to fall in the poverty cycle. To demonstrate theoretically how trade liberalisation can affect the labour demand elasticity and to establish theoretical underpinnings for the empirical work to follow, a model of monopolistic competition is used, where each firm faces its own less than infinitely elastic demand curve and where there is assumed to be no strategic interaction between firms. Thus, any firm i in industry j is assumed to face an inverse demand curve of the type:

\[
P_{ij} = \frac{\partial}{\partial P_{ij}} Q_{ij}^{-\frac{1}{\varepsilon}}
\]  

(1)

where \( P_{ij} \) denotes own price, \( P_j \) denotes industry average price, \( \partial \) is a scaling factor, \( Q_{ij} \) denotes firm output and \(-\frac{1}{\varepsilon}\) denotes constant price elasticity of demand. The production function is assumed to be a Cobb-Douglas type (in variable inputs), and given by:

\[
Q_{ij} = \prod_{k=1}^{n} V_{kij}^\alpha
\]

(2)

where \( V_{kij} \) denotes kth input in use here and \( \alpha \) is the impact elasticity.

The firm is assumed to face infinitely elastic factor supply, i.e, it takes factor prices as given. After partial differentiation, some substitution and some other mathematical exercises\(^1\) and applied to the case where the only inputs are labour and capital, the log labour

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\(^1\) Derivation of equations can be obtained upon request from the author.
demand function (on which the study focuses as opposed to that of other factor inputs) is then given by:

\[ l_{ijt} = \delta_0 + \delta_w w_{ijt} + \delta_r r_{ijt} + \delta_m m_{ijt} \]  

(3)

Thus, our final estimating equation is:

\[ l_{ijt} = \delta_0 + \delta_w w_{ijt} + \delta_r r_{ijt} + \delta_m m_{ijt} + e_{ijt} \]  

(4)

where \( w \) is the wage rate, \( r \) is the rate of interest, \( m \) is the cost of raw material and \( e \) is the error term that allows for random shocks to affect the firm’s demand for labour.

The data sources include UNIDO industrial Statistics and also various reports published by the Mauritius Export Processing Zone Association (MEPZA). There is a panel of 43 firms all operating in the Wearing Apparel industry (only firms which are members of MEPZA are included since they represent around 96% of all firms operating in this industry). The Wearing Apparel industry was chosen as it represents around 89% of total employment in the EPZ sector and is an industry which is more vulnerable to trade liberalisation and also given the fact that Multi-Fibre Agreement (MFA) just phased out in January 2005. Since both cross-section and time series data are available, a panel data framework is used estimate equation (4).

The dependent variable is measured as total employment in each firm (excluding foreign workers). For robustness, equation (4) is also estimated by categorizing labour in terms of female workers and male workers since the male-to-female ratio will affect labour demand in Mauritian economy given that the wage rate for a woman is lower than her male counterpart. Wage \((w)\) is the average of all wages and salaries including payroll taxes per worker. It is obtained by dividing total wages in each firm by the total number of employees in that firm. Thus, the wage variable is firm specific. The average wages are then transferred to fixed 1971 prices using the producer price index.
Without adequately controlling for other policies, one risks confounding the effects of trade liberalisation with other structural reforms. Also, there may be endogeneity problems- unobserved demand shocks may not be orthogonal to trade intensity so that OLS estimate may be biased and inconsistent. This requires the use of a fixed effects model. To take into account the unobserved variation firm-specific fixed effect dummies are used. The effects of trade liberalisation on the parameters in (4) are captured, by the use of a liberalisation dummy, which takes the value 0 up to 1983 and 1 thereafter. The sample period is from 1976 (creation of MEPZA) to 2003.

4. Empirical Findings
The following table presents the results for labour demand elasticities with respect to wages and by worker type and their changes in the Wearing Apparel industry, under both the OLS and the fixed effects.

<table>
<thead>
<tr>
<th>Variable</th>
<th>OLS Estimates</th>
<th>Fixed Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Coefficients</td>
<td>T-ratios</td>
</tr>
<tr>
<td>$\delta W$</td>
<td>-0.197</td>
<td>(-0.010)</td>
</tr>
<tr>
<td>$\Delta \delta W$</td>
<td>0.042</td>
<td>(0.046)</td>
</tr>
<tr>
<td>$\delta W_f$</td>
<td>-0.201</td>
<td>(-1.254)</td>
</tr>
<tr>
<td>$\Delta \delta W_f$</td>
<td>-0.008</td>
<td>(-0.667)</td>
</tr>
<tr>
<td>$\delta W_m$</td>
<td>0.053</td>
<td>(0.070)</td>
</tr>
<tr>
<td>$\Delta \delta W_m$</td>
<td>0.011</td>
<td>(0.002)</td>
</tr>
</tbody>
</table>

Note: t-ratios are in parentheses. Source: Authors’ computation.

The parameter of interest here is elasticity change, i.e., the parameter corresponding to the wage variable interacted with the liberalisation dummy ($\Delta \delta w_f$). The estimates of the interaction term involving wages and the post-1983 dummy, obtained from the OLS procedure, are small in magnitude and largely insignificant. Even when labour is categorised in terms of female ($\Delta \delta w_f$) and male workers ($\Delta \delta w_m$), OLS estimates indicate that the null hypothesis of a change in
elasticity after the reforms is zero cannot be rejected at the 5% level or indeed in most cases at even a higher level of significance.

The results from the fixed effects model reveal another scenario. Overall the demand for labour in the Wearing Apparel industry has become more inelastic with respect to a change in the wage rate after the trade reforms and is statistically significant at the 1% level. In the case of female and male employment, after trade liberalisation demand for female workers has become more elastic while that of male workers more inelastic, though such a change is statistically insignificant in the latter case. Thus, the results suggest that there is no evidence that trade liberalisation has increased the overall labour demand elasticity with respect to wages. However, it has done so in the case of female workers who are now more vulnerable (due to lack of skill so that they cannot be easily retrained and be redeployed to shift to other more remunerating and expanding sectors such as the services sector) to losing their jobs and worsening their financial status.

It should be noted that the higher responsiveness of female labour demand elasticities to trade liberalisation was expected. In fact, 70% of the workforce are female workers and in this industry workers did not have the right to unionize or to strike and firms could lay off workers without notifying the board of Termination of Contracts and without paying severance allowances. The figure below takes a step ahead of explaining the vulnerability of women in this sector after two phases of trade liberalization. As indicated previously, the first phase occurred during the mid-1980s when tariffs were significantly reduced as well as imported restrictions, while the second phase was marked by the dismantling of the MFA in 2005 and its aftermath.

The figure clearly indicates the changing structure of demand for female employment in the EPZ following the first phase of trade liberalization. In particular, this is reflected by the increase in elasticity of demand, shown by the rotation of the $D_i$ curve to $D_e$. 

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Now, with further trade liberalization and the dismantling of MFA, the predictions for wage rates and employment levels are very dire for female workers of the EPZ. Moreover, this diagram provides a neat picture of the implications of higher wage rates, say from $O{W_0}$ to $O{W_1}$, which would result in much lower employment level, $O{L_e}$ instead of $O{L_i}$. As it is, wage rates are already considered to be too high in this sector leading to a comparative disadvantage for Mauritian textile manufacturers and labour. Foreign direct investors are considering prospects to move from Mauritius to other cheaper destinations such as Mozambique, Madagascar and Bangladesh to avoid the high cost of Mauritian labour in the textile sector (see for instance Sobhee (2008) and Ancharaz and Sobhee (2005)). Worse, the trend continues; the average wage rates rose from Rs 6,159 in 2000, to Rs 7,924 in 2006 and Rs 8,649 in 2007 and this has been accompanying declining employment levels for the same sector, more so for female workers. In 2007, female unemployment was 20% higher than its male counterpart and this was basically due to declining employment among female workers from the EPZ. Besides, it is worth noting that more recent years, over 2006-2007, have witnessed an increase in the employment of foreign workers who have been recruited obviously at lower wage rates than their
local counterparts. While female recruits have increased from 8,400 to 9,500, male counterparts have witnessed an even sharper rise from 8,300 to 12,100 over the said period.²

Such situation is of major concern for such women, who are basically cornered; on the one hand, by employers not at all keen to raise labour costs for fear of losing their competitiveness, and on the other hand, by the threat of losing their jobs. As the redeployability of these workers remains problematic, it is disheartening to observe that they would have to accept declining real wages in an environment of increasing cost of living. Even with respect to the demand for these workers, there would be sluggish growth since the prices of the final products they sell face fierce competition on the international market and may not be easily increased. Higher prices of textile products are not rare; however, they relate to exceptional circumstances such as high quality of final goods or products that display high value added conditional on the expertise absorbed in the production process. These are far beyond the case of unskilled workers who lack creativity as it stands in the context of Mauritius thereby restricting the possibility of shifting demand through higher prices of garments.

5. Conclusion
While economic theory has long advocated openness to trade as an important element of sound economic policy, the empirical evidence on the actual effects of trade liberalisation on income distribution and welfare have been difficult to measure. Recently, the debate on the effects of globalisation on poverty has rekindled the debate. At any analytical level, it is recognised that one must trace through the effects of trade policy changes on household welfare via wage rigidity and employment variations.

This paper assessed the impact of trade liberalisation on the characteristics of female employment under potential changes in

² These figures pertain to all sectors combined, but recent trends show that workers particularly foreign women workers are recruited in the textile sector.
wage structure. Hence, to ascertain the bargaining power of workers in claiming higher wage rates in an environment where trade liberal measures dominate, it was important to analyse the changing structure of demand for female employment under varying conditions of trade liberalisation as experienced by Mauritius over the last three decades. In this context, a partial equilibrium framework was proposed to analyse the overall change in the demand for labour and the employment implications of varying wage rates. An empirical exercise was undertaken to assess the effect of trade liberalization on demand elasticities of workers in the Wearing Apparel industry, where in general, most of the workers are female-dominated. The findings disclose no evidence that trade liberalisation has increased demand elasticity of labour with respect to wages for all workers. However, it has been uncovered that trade liberalization has increased the demand elasticity for female employment within the sector in question. Such finding corroborates that in the long run, with increasing competition, it would be really difficult to adopt increases in wage costs to compensate workers against inflation and exchange rates movements. As it is, wage costs in the EPZ sector are considered as being high and uncompetitive compared to other regional albeit less developed economies. If trade liberalisation deepens, any increase in average wage rate would result in a more than proportionate decline in employment among EPZ workers. The latter are cornered because they should choose between either losing their job or accepting declining purchasing power of their earnings.

References


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