The Economic Research Guardian – Vol. 16(1)2026
Semi-annual Online Journal, www.ecrg.ro
ISSN: 2247-8531, ISSN-L: 2247-8531
Econ Res Guard 16(1): 70-83

Tariff Liberalization and Economic Outcomes of a Dual Economy: A General Equilibrium Analysis

Rupon Bhowmick
Deptartment of Economics, North-Eastern Hill University, Shillong, India
Email: ruponbhowmick@gmail.com

Abstract

This article makes an attempt to examine the impact of tariff liberalization in agricultural sector (the rural or traditional sector) of a dual economy. The theoretical model of the study captures two key characteristics of a dual economy is: presence of unemployment with rural-urban labour migration and interlinked between the two sectors are traditional rural (agricultural) sector and urban manufacturing sector. The traditional sector is the backbone of the economy. It supplies inputs to the manufacturing sector and also participates in the export markets. The considered model in this present study evaluates the potential economic outcomes due to tariff liberalization in agricultural sector. The findings indicate that liberalizing trade (tariff reduction) in the traditional sector leads to a decline in rural wages as result rural-urban wage gap increases but simultaneously contributes to fall in unemployment. The fall in unemployment is executed by the expansion of the manufacturing (urban) sector after the tariff liberalization. The manufacturing sector is benefited from fall in raw materials and absorbs displaced labour from the rural sector during post tariff reform period. However, the rural sector contracts as a consequence of international competition in post tariff liberalization period. Overall study highlights that how trade liberalization in agricultural sector can alter labour market dynamics by boosting manufacturing output and mitigating unemployment in a dual-sector developing economy.

Keywords: Tariff, Traditional sector, Manufacturing sector unemployment, Dual economy

JEL Code: 110, 160

Received: 25 January 2026; Received in revised form: 09 February 2026; Accepted: 11 February 2026

1. Introduction

International trade (foreign trade) is widely recognized as an important contributor to economic growth. Whereas trade liberalization policies (tariff and quota reduction) facilitates in cross-border exchange and economic integration. Thus, trade liberalization policy directly promotes international trade. Trade openness (trade liberalization) contributes to the economic growth via main two channels. One is investment and another is productivity gain. Trade openness initially stimulates investment which leads to higher savings and capital accumulation, while productivity enhances due the inflow of new technologies. Together, these two channels play a significant role in driving economic growth during the post-tariff liberalization period (Panagariya, 2019). Trade openness has become widely accepted as a catalyst for economic growth (Falvey et al., 2012; Atiq-ur-Rehman et al., 2021; Ahmadi et al., 2025). It facilitates the flow of technology, encourages economies of scale and helps nations to get benefit from their comparative strengths. That's why

reduction of trade restrictions become a strategic priority for a developing and emerging economies. It allows them to become more integrated into the global economy and to a better leverage their unique sectoral advantages for sustained development. Thus, foreign trade and trade liberalization are closely interconnected in determination of economic growth.

Trade liberalization leads to integrate the developing economies into the global market. Classical and neoclassical economists stressed its importance and highlighted the importance of trade liberalization for larger global market. They mentioned that free trade (without any financial or physical trade restriction) makes division of labour and improves productivity through specialization. The key idea from this tradition is comparative cost advantage. The comparative cost advantage allows the countries to use their resources more efficiently. By adopting trade liberalization policy, developing countries can adopt advance technologies from leading economies and optimize their resource allocations based on comparative advantage (Grossman and Helpman, 1991; Romer, 1993). Openness to foreign trade not only helps in expanding domestic markets but also transfer knowledge and drives new innovations and increases competition which support to the development of new products (Krugman, 1979).

In the post-war era, the global was pushed for trade liberalization and it began with the establishment of the 'General Agreement on Tariffs and Trade (GATT)' in 1947, aiming to reduce trade barriers and promote international cooperation. This effort was further institutionalized with the formation of the 'World Trade Organization (WTO)' in 1995, which strengthened the commitment of member countries to lower tariffs, quotas and other protectionist policies. By the 1980s, many countries (especially developing countries) began to move away from inward-looking import substitution policies. Because import substitute policy failed to generating long-term economic growth. Hence, countries adopted outward-oriented trade policies, believing that trade openness would boost economic performance. After adopting trade liberalization, economies like India, China, Japan etc. experience higher economic growth after. That's why trade liberalization has emerged as a central policy instrumental for economic growth in modern economies.

A positive externality of foreign trade is increase in production and business activity in post liberalization period and higher production always provides new employment opportunity. Further, trade liberalization provides modern technology and inputs of production at competitive price and also provides large market to comparative advantage industries for that employment increases. Both the export and import enhance the employment level of traded countries (The World Trade Report, 2017). Several studies (Chao and Yu., 1997; Marjit et al. 2007; Ghosh et al., 2018) support this positive externality of foreign trade liberalization. Chao and Yu (1997) found trade openness enhances employment of the economy. Marjit et al. (2007) showed tariff liberalization in import competing sector rises the employment in informal sector. Ghosh et al. (2018) found positive impacts of trade liberalization on employment.

Further, trade liberalization not only influences on employment but also impacts on the functional income distribution through changes in relative prices of traded goods. Neoclassical trade theories (Stolper-Samuelson, 1941 and Samuelson, 1948) showed the effect of tariff liberalization on factor prices. They argued that tariff liberalization increases the real return of abundant factors and factor price inequality reduces in traded countries. Later, Jones (1965) constructed simple general equilibrium model and supported the arguments of HOS theorem. However, the implications of trade liberalization for labour market outcomes like wage and employment remain deeply contested especially in the context of dual economies where low wage traditional sector coexist with high wage urban industrial sector. In this line of the study, different theoretical research (Marjit et al., 2007; Marjit and Kar, 2009; Choudhuri and Yabuuchi, 2007) are shown interest to evaluate the

effect of foreign trade liberalization on the variation of wage. Like, Marjit et al. (2007) showed that trade liberalization of import competing sector rises the informal wage. Marjit and Kar (2009) found tariff liberalization can enhance wages in the informal sector, particularly when capital mobiles between two sectors. But, Chaudhuri and Yabuuchi (2007) showed tariff liberalization increases the wage of skilled labour and reduces the unskilled labour. Thus, in a developing or under developing economy where labour market are characterised by structural rigidities and sectoral imbalances, the trade liberalization policy extends beyond output and efficiency gains to crucial labour market outcome such as employment and wage distribution. Understanding these dynamics, it is particularly important in economies with a large informal sector, persistent rural-urban wage differential and surplus labour in traditional sector.

Although trade liberalization is intended to create fair opportunities, but developing countries often encounter hidden barriers such as strict product standards, complex customs procedures and export restrictions. Additionally, developed countries provide subsidies to their domestic producers, particularly in agriculture sector. But, it makes difficult for farmers in developing nations to compete effectively in world market. These practices often limit the actual benefits that developing or under developing economies can derive from global market. Against this backdrop, the present study aims to examine the effect of tariff liberalization in traditional rural sector (backbone sectors) of a developing economy.

To understand this dynamic, informal traditional sector (agricultural sector) is considered in this study which plays significant role. In the present model agricultural sector provides employment and supplies inputs to the manufacturing sector as well as export agricultural product. Further to consider the labour migration from to rural sector to urban sector, Harris–Todaro migration concept is used but in this model rural sector also supplies raw material to the urban sector. In such context, our study develops a static general equilibrium model to analyse the effects of tariff liberalization in rural agricultural sector on wage, output, employment and export. Thus, presented model examines the economic outcomes of a dual economy due tariff reduction in agricultural sector.

The rest of the study is organized as follow. Section 2 describe the relevant literatures. Section 3 describe the model. Section 4 intuitively explain all considered propositions of the study, and section 5 conclude the study.

2. Literature review

Trade liberalization can be in the form of reduction of tariff and quota restriction for export and import. Both these form trade liberalization plays a crucial role in determination of employment; specially in the developing economy where traditional informal sector plays an important role. Trade liberalization in the form of tariff reduction improves the potentiality of foreign trade and generate more employment opportunities. In this context, several studies (Marjit et al., 2007; Marjit and Kar, 2009, Ghosh et al., 20018) found that tariff liberalization reduces unemployment problem in developing economy. However, quota liberalization also improves employment in a dual economy (Chao and Yu, 1997).

The impact of foreign trade liberalization in dual economy is evaluated by several studies (Corden and Findlay, 1975; Chao and Yu, 1997; Gupta, 1997; Chaudhuri, 2003; Chaudhuri and Mukhopadhyay, 2009; Ghosh et al., 2018; Dutta and Ghosh, 2021). They developed their models with incorporating the presence of Hariss-Todaro (H-T) types unemployment in the economy to

show the impact of trade liberalization and trade protection on both wage and unemployment. These studies extend the insight by using Harris-Todaro type unemployment models, which account for labour migration and rural-urban wage disparities. Though all these models are capturing the unemployment problem of developing economy but the conclusion of the studies are heterogeneous. Like the studies of Chao and Yu (1997), Ghosh et al. (2018) are found positive impacts of trade liberalization on wage and employment. Whereas, studies like Chaudhuri (2003); Chaudhuri and Mukhopadhyay (2009) found negative impact.

In the contrast of trade liberalization, several studies (Corden and Findlay, 1975; Gupta, 1997; Helpman et al., 2010; Dutta and Ghosh, 2021) found positive impact of trade protection on labour market outcomes. In a dual economy, trade protection can improve the labour market outcome under the specific conditions. For instance, when the rural sector is vulnerable to import competition, protective tariff can help to stabilize prices and preserve employment in traditional sector. Additionally, trade protection can serve as a temporary buffer when urban industrial sector is lack of capacity to absorb the displaced rural worker. In such satiation trade protection actually helps to mitigating urban unemployment problem. Furthermore, if wage rigidity exists in the urban sector then trade protection can reduce the pressure on fixed urban wages employment and reduce the inflow of rural labour in urban sectors. In all these situations, protecting competition through trade restriction may indirectly support employment in the rural and urban sectors. Especially in the short run, until structural reforms or productivity gains enhance the adjustment capacity of the economy.

Further, tariff liberalization does not always lead to improvements in labour market outcomes (Chaudhuri, 2003; Chaudhuri and Yabuuchi, 2007; Chaudhuri and Mukhopadhyay, 2009). For instance, trade liberalization may yield short run unemployment and wage inequalities. Helpman et al., (2010) found that trade liberalization improves the wage and employment of productive firms but it yields short run unemployment and wage inequality. Chaudhuri (2003) showed that tariff liberalization may hurt the unskilled labor due to shifts in production intensive. Chaudhuri and Yabuuchi (2007) showed that trade liberalization reduces unskilled wage while increases skilled wage. Consequently, wage inequality increases. Chaudhuri and Mukhopadhyay (2009) showed that trade liberalization leads to increase wage inequality and urban unemployment. Thus, different studies found the heterogeneous impact of trade liberalization in globalized economy.

Thus, the impact of trade liberalization on labour welfare varies due to dynamic situation of an economy. Consequently, different studies examine the possibility of outcomes of trade liberalization under different circumstances. The implications of trade liberalization for labour market outcome remain deeply contested especially in the context of dual economies where low wage traditional sector coexist with high wage urban industrial sector. Similarly, the present study deals with a partial situation of a dual economy and makes an attempt to examine the impact of tariff reduction on rural wage, rural-urban wage gap, unemployment and export of the economy. To meet this objective, the study develops a model with Harris–Todaro type unemployment and rural–urban migration, where higher fixed wage in the manufacturing sector attract labour from agriculture sector. The agricultural sector is central of the model. It supplies inputs to the manufacturing sector and also participates in the export market. Hence, using this framework the economic effects of tariff liberalization in agricultural sector is examined.

Thus, by incorporating wage dualism and rural-urban migration into a general equilibrium structure, this study bridges classical trade theory with the labour market realities of the dual type economy.

3. The model

In this study, the 'static competitive general equilibrium model' of a small open economy with two sectors is presented. In this model first sector is traditional sector (agricultural sector) whose output is used as input in second sector i.e., manufacturing sector (import substitute sector). This traditional sector also exports its output to foreign sector. Both these sectors use labour but manufacture sector pays higher fixed wage than traditional sector. That's why workers have a tendency to migrates from rural to urban to earn higher wage. However, manufacture sector uses more two inputs; these are capital and output of traditional sector (agricultural sector). As both the sectors are traded sectors hence prices of their outputs are internationally given. Considering these interconnections between the rural and urban sector, presented model analyses the impact of tariff liberalization in traditional sector of a dual economy.

To explain our model, we have used following notations in our equations to describes the structure of general equilibrium model:

- a_{Ki}: Capital-output ratio in i^{th} sector for i = A, M
- a_{Li}: Labour-output ratio in i^{th} sector for i = A, M
- W: Wage of labour in traditional sector (Agricultural Sector).
- $\bar{W}$: Fixed wage of labour in manufacturing sector (Urban Sector).
- r: Remuneration of capital input.
- P_i: Price of outputs in i^{ith} sector for i = A, M
- L: Exogenously given labour endowment
- K: Exogenously given capital endowment.
- θ_{ij}: distributive share of i^{ith} inputs in j^{th} sectors for i = L, K and j = A, M
- λ_{ij} : proportion of i^{ith} inputs employed in j^{th} sector for i = L, K and j = A, M
- S_{ij}^{h}: Elasticity of factor output coefficient of i^{th} inputs in h^{th} sector, for i, j = L, K. For instance, $S_{LK}^{M} = \left(\frac{\partial a_{LM}}{\partial r}\right)\left(\frac{r}{a_{LM}}\right)$ where $S_{SK}^{M} > 0$ $\quad S_{LL}^{A} = \left(\frac{\partial a_{LL}}{\partial W}\right)\left(\frac{W}{a_{LA}}\right)$ where $S_{LL}^{A} < 0$
- $\hat{X}_i = \frac{dX_i}{X_i}$ absolute changes in X_i where X_i = A, M
- $P_A^t = P_A(1+t)$. Hence, $\hat{P}_A^t = \alpha\hat{t}$ where $\alpha = \frac{t}{1+t}$ and $\hat{t} = \frac{dt}{t}$ indicates absolute changes in tariff rate.
- If tariff rate reduces $(\hat{t} < 0)$ then price of agricultural output falls $(\hat{P}_A^t < 0)$. On the other hand if tariff rate increases $(\hat{t} > 0)$ then price of agricultural output increases $(\hat{P}_A^t > 0)$.[1]

We have following six equations to describes the formation of simple theoretical model:

$$a_{LA}W = P_A^t \tag{1}$$
$$a_{AM}P_A^t + a_{LM}\bar{W} + a_{KM}r = P_M \tag{2}$$
$$W = \frac{a_{LM}M}{a_{LM}M + L_U}\bar{W} \tag{3}$$
$$a_{AM}M + \varepsilon_A A = A \tag{4}$$
$$a_{KM}M = K \tag{5}$$
$$a_{LM}M + a_{LA}A + L_U = L \tag{6}$$

[1] Throughout the analysis, tariff liberalization is represented by a reduction in the tariff rate $(\hat{t} < 0)$. The effect of a tariff reduction depends on the sign of the relevant derivative value of the function. If the function is positive, then a decrease in the tariff rate reduces the value of the function. Conversely, if the derivative is negative then value of the function increases due to tariff reduction.

There are six unknowns are W, r, L_U, A, M, ε_A and six equations from 1 to 6 in the above model. Hence our model is solvable. The main objective of the present study is to be examined the impact of tariff liberalization of traditional sector on rural wage, rural-urban wage gap, output of all consider sectors in the model, unemployment and export in likely developing economy. All these are main economic aspect of a developing economy that can be alter in post liberalization period is examined intuitively.

Totally differentiating equation (1) and (2):[2]

$$\widehat{W} = \widehat{P}_A^t/\theta_{LA} = (\alpha/\theta_{LA})\hat{t} > 0 \quad (7)$$

$$\hat{r} = -(\alpha\theta_{AM}/\theta_{KM})\hat{t} < 0 \quad (8)$$

Equation (7) and (8) indicates that tariff reduction $(\text{when } \hat{t} < 0)$ reduces the rural wage in traditional sector and increases the returns on capital. The reason behind fall in rural wage is 'price effects'. Tariff reduction on agricultural output induces imports of agricultural product (each economy is doing intra industry trade), as a result its supply increases and its price fall in domestic economy. This fall in price of output of traditional sector, reduces the price of raw materials for manufacturing sector. Because, agricultural output use as input in manufacturing sector. Hence manufacturing sector try to produce more at lower cost. Hence, demand for capital increases which push up the price of capital.

Using equation (7), the impact of tariff reduction on rural urban wage gap can be examined. To find the rural-urban wage gap, rural wage is deducted from fixed urban wage. This effect of tariff liberalization is shown in with equation (9):

$$\bar{W} - \widehat{W} = \bar{W} - \left(\frac{\alpha}{\theta_{LA}}\right)\hat{t} \qquad \text{As } \bar{W} > \widehat{W} \qquad \text{So, } \bar{W} > \left(\frac{\alpha}{\theta_{LA}}\right)\hat{t} \quad (9)$$

Equation (9) shows the rural-urban wage gap and indicates that how Change in tariff $(\hat{t})$ is associated with it. First part (urban wage) of right hand of equation (9) is constant and second part (rural wage) is positively associated with tariff. Hence, tariff reduction $(\hat{t} < 0)$ reduces the value of the second part (rural wage) of equation (9) as a result the rural-urban wage gap increases in post liberalization period.

In a dual economy, agricultural sector is the backbone of the economy and it plays a vital role by giving employment, contributes highest in GDP and help to earn foreign reserves by exporting agricultural product. Such economy totally depends upon traditional agricultural sector and most of the labour is only engaged with agricultural activities. Here, in the present study agricultural sector is functioning as supplier of inputs to manufacturing sector and contributes in foreign trade. Hence, tariff liberalization on agricultural product definitely affects traditional sector but it is very important to examine that how this impact translate to modern manufacturing sector.

[2] Derivation of equation (7) and (8) is given in Appendix A. Here equation (7) is positive that's why reduction of tariff reduces wage and vice versa. And, equation (8) is negative that's why reduction of tariff increases the rate of interest and vice versa.

Totally differentiating equation (5) and (6) we can derive equation (10) and (11): [3]

$$\widehat{M} = -\alpha B\hat{t} < 0, \text{ where } B > 0 \quad (10)$$

$$\widehat{A} = \frac{\alpha E}{\lambda_{LA}}\hat{t} > 0, \text{ where } E > 0 \quad (11)$$

Equation (10) and (11) describes that trade liberalization expands manufacturing sector and contracts agricultural sector respectively. The reason behind shrink of agricultural sector is increase in foreign competition in post reform period. While manufacturing sector expands due to fall in input prices.

Unemployment is a persistent long-term problem in a dual economy and presence of huge rural urban wage gap. The wage gap is sufficiently large such that urban–rural wage difference is greater than rural wage. This assumption ensures strong migration incentive within the Harris-Todaro framework. For the purpose of analytical convenience let, $\bar{W} > 2W \Longrightarrow \bar{W} - W > W.$

Under this rural-urban wage gap and unemployment it is crucial to examine how employment in a dual economy responds in post-tariff-liberalization period. The impact of trade liberalization on unemployment can be analysed by using equation (3).

From equation (3) we can derive:

$$L_U = \frac{a_{LM} M(\bar{W} - W)}{W} \quad (12)$$

Now differentiating equation (12):

$$\hat{L}_U = \alpha\left(C - B - \frac{\omega}{\theta_{LA}}\right)\hat{t} > 0 \quad (13)\ [4]$$

where $B > 0;\ C < 0$ and $\omega < 0$.

Equation (13) shows that a reduction in the tariff in agricultural products $(\hat{t} < 0)$ reduces unemployment in the dual economy. Thus, tariff liberalization improves employment condition of the economy.

Thus, equation (7), (10), (11) and (13) are explaining that in post liberalization period rural sector contracts while urban sector expands and tariff liberalization of rural sector reduces the income of labour in agricultural sector. Hence, workers in the rural sector are incentivized to migrate towards urban sector, where higher fixed wage prevail. This migration of labour reduces the available of work force in the traditional sector, hence further weakening its output. However, labour migration from rural to urban sector helps to expand manufacturing sector. At the same time, the urban manufacturing sector benefits from the fall in input prices (price of agricultural product)[5]. It makes manufacturing production more profitable. These two effects (labour migration and fall in input price) stimulate industrial expansion in post tariff liberalization periods. Therefore, while trade liberalization reduces viability of the traditional sector, but it boosts productivity and employment

[3] Derivation of equation (10) and (11) is given in Appendix B and D. Here equation (11) is positive that's why reduction of tariff rate $(\hat{t} < 0)$ reduces agricultural production $(\widehat{A} < 0)$ and vice versa. And, equation (10) is negative that's why reduction of tariff rate $(\hat{t} < 0)$ increases the manufacturing production $(\widehat{M} > 0)$ and vice versa.

[4] Derivation of equation (13) is given in Appendix C. Here, equation (12) is positive that's why reduction of tariff rate $(\hat{t} < 0)$ reduces unemployment.

[5] Because the output of agricultural sector uses as input in manufacturing sector.

in the urban sector. This dual impact confirms the proposition that trade liberalization causes a sectoral shift that disadvantages the rural economy but supports industrial growth in the urban sector.

As mentioned earlier that traditional sector in a dual economy also helps to earn foreign reserve by exporting agricultural products. Hence, it is essential to examine the impact of tariff reduction on export of traditional sector.
Totally differentiating equation (4) we can derive equation (14):

$$\widehat{\varepsilon_A} = \frac{1}{\lambda_{\varepsilon_A}}\left[\frac{E}{\lambda_{LA}}\left(1-\lambda_{\varepsilon_A}\right)+\lambda_{AM}(B\hat{t}-\lambda_{AM}\alpha F)\right]\alpha\hat{t} > 0 \qquad (14)^{6}$$

where $\because B > 0; E > 0; F > 0.$

Equation (14) describes that tariff reduction on agricultural product $(\hat{t} < 0)$ reduces its export. This outcome is appropriately associate with the contraction of agricultural sector in post liberalization period. As tariff reduction negatively affects the production of agricultural outputs which leads to fall in export of agricultural product.

4. Propositions

In this section of the study four propositions are mentioned based on estimated equation (9), (10), (11), (13) and (14) and all propositions are explained intuitively. These proposition are the ultimate findings of the study which reflect the economic outcomes of a dual economy due tariff reduction in agricultural sector.

Proposition 1: Tariff liberalization in rural sector increases the rural-urban wage disparity.[7]

Equation (9) shows that rural-urban wage gap increases due to reduction of tariff on agricultural output. Tariff liberalization of rural sector reduces domestic price of agricultural output and increases competition. Since wages in the rural economy, particularly in traditional agriculture are closely linked to the market price. Hence, this decline in price translates into a reduction in rural wages. In contrast, wages in the urban manufacturing sector are assumed to be institutionally rigid or fixed at a higher level. Hence, urban wages do not immediately respond to this changes in market mechanism in post tariff reform period. Thus, due to tariff reduction rural wage declines while urban wage remains stable in post liberalization period. This divergence leads to a widening rural-urban wage gap as a result of tariff liberalization of agricultural sector in a dual economy.

Proposition 2: Tariff liberalization in agricultural sector (rural informal sector) leads to contraction of this sector while stimulating growth in the urban industrial sector.[8]

Equations (10) and (11) show that a reduction of tariffs in agricultural (rural) sector has a negative effect on agricultural output, while it positively affects manufacturing output. This outcome emerges as a direct extension of the first proposition. The reason behind this lies in the basic mechanics of tariff liberalization. Tariff liberalization of agricultural sector reduces its price and increase imports. As a result, supply rises which leads to further fall in market price. A decline in

[6] Derivation of equation (14) is given in Appendix E. Here, equation (14) is positive that's why reduction of tariff rate $(\hat{t} < 0)$ reduces unemployment.
[7] Impact of tariff reduction (liberalization) on rural wage is shown with equation (9).
[8] Impact of tariff reduction (liberalization) on sectoral output is shown with equation (10) and (11).

price of agricultural product reduces the income earned by rural producers. Further, labour migrates to urban sector due to fall in rural wage. As a result, intension of agricultural work harms and reduces overall agricultural production.
As model of the present study is assumed that traditional sector produces a good that both exports and supplies input to the urban manufacturing sector. Hence, manufacturing sector get benefits from this liberalization. From one side it gets raw materials at lower competitive price and migrated labours helps to produce more manufacturing output. Thus, tariff reduction on agricultural output contracts the rural sector and expands the urban sector.

Proposition 3: Tariff liberalization in agricultural sector reduce unemployment in a dual economy.[9]

Equation (12) shows that a reduction in tariffs on the agricultural output reduces unemployment. The mechanism of interdependence between the rural and urban sectors driving this outcome. Price and output of agricultural sector reduces due tariff liberalization which leads to fall in rural wage. Consequently, rural labours migrates to urban sector. This phenomenon helps to expand manufacturing sector.

As manufacturing production becomes cheaper in post tariff liberalization period, so manufacturing firms increase production to take advantage of higher profitability. This expansion of the manufacturing sector requires more labour, which creates employment opportunities in the urban sector. At the same time, workers displaced from the traditional sector due to fall in wages or output are now absorbed by the growing manufacture sector. The labour reallocation from rural to urban areas is therefore not only a response to wage incentives but also facilitated by an actual increase in urban employment demand.

Thus, although liberalization contracts the rural sector, but it simultaneously stimulates growth in the urban sector and allow the economy to absorb surplus labour more efficiently. In this way, when trade liberalization enhances industrial output, it can mitigate unemployment in a dual-sector economy by redirecting labour toward more productive and expanding areas of the economy.

Proposition 4: Trade liberalization in the traditional sector may lead to a decline its export performance.[10]

Equation (13) shows that a reduction in tariffs on the agricultural output reduces export. This proposition builds upon the earlier findings of the model. When tariff is reduced in the traditional sector, the domestic market becomes more open to cheaper foreign substitutes. This increases competition and lowers the domestic price of agricultural products. Since the traditional sector also exports a portion of its output, the fall in domestic prices reduces producers' incentives to export, especially when international prices remain constant. As a result, the volume of exports from the traditional sector may decline due to tariff liberalization of the agricultural product.

Moreover, the reduced profitability in this sector due to falling prices can shrink output levels, which further limits the volume available for export. Therefore, though trade liberalization is generally associated with expanding trade, in this case it can lead to a reduction in exports from the liberalized sector due to adverse price effects.

However, this contraction in rural exports must be evaluated alongside the expansion of the urban manufacturing sector. If the industrial sector grows significantly due to lower input costs and

[9] Impact of tariff reduction (liberalization) on unemployment in a dual is shown with equation (12).
[10] Impact of tariff reduction (liberalization) on export of agricultural sector in a dual economy is shown with equation (11).

successfully absorbs displaced rural labour, then the overall economy may still have benefited. In other words, sector-specific losses can be offset by broader gains, especially if employment and production shift toward more productive sectors. This supports the broader insight of the study: trade liberalization may adversely affect one sector but enhance the performance and employment capacity of another sector. If the expanding sector compensates for job losses and maintains overall output growth, the policy change can lead to a net improvement in economic wellbeing.

4. Conclusion

The present study has developed a 'static general equilibrium model' with two sectors and three main inputs of production. The presented model analyses the labour market implications of tariff liberalization in traditional sector of a dual economy. The dual-sectors developing economy is characterized by rural–urban wage disparity and presence of unemployment in economy. Further, rural sector (agricultural sector) supplies raw materials (input) to the urban manufacturing sector. The analysis reveals that tariff liberalization in traditional rural sector leads to fall in rural wage. Rural wage declines due to the fall in domestic price of agricultural product in post tariff liberalization period, while urban wage unaffected. Consequently, rural-urban wage gap increases in post liberalization period. This declines in rural wage incentivize labour migration from rural to urban sector, where wage is high and more stable. As the manufacturing sector benefits from lower input costs, so it expands the production and utilizes more capital, thereby absorbing the surplus labour that displaced from the rural agricultural sector. Consequently, while the traditional sector experiences contraction, while the urban manufacturing sector grows in post tariff liberalization period. This growth in urban manufacturing sector offsets the job losses in rural sector and protects the economy from reduction in overall unemployment.

The results suggest that trade liberalization may have asymmetric effects across the sectors but it can yield positive aggregate outcomes if the expanding sector effectively accommodates displaced labour. Therefore, study highlights the importance of productive linkages among the production sectors and absorptive capacity of manufacturing sector in realizing the employment benefits of foreign trade reform. Hence, the findings of the study provide important insights for shaping trade and labour market policies in economies undergoing structural transformation and highlighting the need for complementary measures that facilitate labour mobility and support both rural and urban sectors. Further findings of the study support the criticism that trade liberalization often adversely affects the agricultural sector in a least developed countries (LDCs). Therefore, it is essential to design supportive policies that protect farmer's income (wage in rural sector) and strengthen rural sectors to ensure inclusive and balanced growth. Hence, this theoretical discussion highlights the need for a deeper assessment of the effect of trade liberalization in developing and under developed economies, with special reference to the agricultural sector.

Acknowledgment

The authors would like to thank Dr. Priya Bratta Dutta for his valuable insights and encouragement in learning general equilibrium modelling during the M.Phil. course at Visva-Bharati University, Shantiniketan, which significantly shaped the direction of this study.

Conflict of Interest

The authors declare that there is no conflict of interest regarding the publication of this paper.

Reference

Ahmadi, Z. K., Rabin, Y. A., & Qadamshahi, H. R. (2025). The impact of trade openness on economic growth of South Asian countries. *Journal of Social Sciences and Humanities*, 2(3), 37–50.

Atiq-ur-Rehman, M., Shaheen, R., & Munir, F. (2021). Impact of trade openness on economic growth in emerging economies: A panel data analysis. *Pakistan Journal of Humanities and Social Sciences*, 9(2), 210–216.

Chao, C.-C., & Yu, E. S. (1997). Trade liberalization in oligopolistic competition with unemployment: A general equilibrium analysis. *The Canadian Journal of Economics*, 30(2), 479-496.

Chaudhuri, S. (2003). How and how far to liberalize a developing economy with informal sector and factor market distortions. *The Journal of International Trade & Economic*, 12(4), 403-428.

Chaudhuri, S., & Mukhopadhyay, U. (2009). Harris-Todaro migration model and introduction of the informal sector. In S. Chaudhuri, & U. Mukhopadhya , Revisiting the informal sector: A general equilibrium approch (pp. 33-50).

Chaudhuri, S., & Yabuuchi, S. (2007). Economic liberalization and wage inequality in the presence of labour market imperfection. *International Review of Economics and Finance*, 16(4), 592–603.

Corden, W. M., & Findlay, R. (1975). Urban unemployment, intersectoral capital mobility and development policy. *Economica*, 42(165), 59-78.

Dutta, P. B., & Ghosh, N. (2021). Wage Inequality and Unemployment in the Presence of Imported Intermediate Goods: A Theoretical Analysis. *Foreign Trade Review*, 56(4), 1-25.

Falvey, R., Foster, N., & Greenaway, D. (2012). Trade liberalization, economic crises, and growth. *World Development*, 40(11), 2177–2193.

Ghosh, S., Mandal, B., & Gupta, K. (2018). Economic liberalization, the informal sector and urban unemployment: A theoretical analysis. *Review of Urban & Regional Development Studies*, 30(3), 225.

Grossman, G. M., & Helpman, E. (1991). Trade, knowledge spillovers, and growth. *European Economic Review*, 35(2), 517-526.

Gupta, M. R. (1997). Informal sector and informal capital market in a small open less-developed economy. *Journal Development Economics*, 52(2), 409-428.

Jones, R. W. (1965). The structure of simple general equilbrium model. *Journal of Political Economy*, 73(6), 557-572.

Helpman , E., Itskhoki, O., & Reddin, S. (2010). Inequality and unemployment in a global economy. *Journal of Econometric Society*, 78(4), 1239–1283.

Krugman, P. R. (1979). Increasing returns, monopolistic competition, and international trade. *Journal of International Economics*, 9(4), 469–479.

Marjit, S., & Kar, S. (2009). A contemporary perspective on the informal labour market: theory, policy and the Indian experience. *Economic and Political Weekly*, 44(14), 60-71.

Marjit, S., Kar, S., & Beladi, H. (2007). Trade reform and informal wages. *Review of Development Economics*, 11(2), 313-320.

Panagariya, A. (2019). Free trade and prosperity: How openness helps developing countries grow richer and combat poverty. Oxford University Press.

Romer, P. (1993). Idea gaps and object gaps in economic development. *Journal of Monetary Economics*, 32(3), 543-573.

Samuelsopn, P. A. (1948). International trade amd the equilaization of factor prices. *The Economic Journal*, 58(230), 163-184.

Stolper, W. F., & Samuelson, P. A. (1941). Pritection and real wage. *The Review of Economic Studies*, 9(1), 58-73.

World Trade Organization (2017). World trade report 2017: Trade, technology and jobs. Geneva: World Trade Organization.

Appendix A

Totally differentiating of equation (1)

$\theta_{LA}\widehat{W} = P_A^t$
As $\widehat{P}_A^t = \alpha\hat{t}$
Hence, $\widehat{W} = (\alpha/\theta_{LA})\hat{t} > 0$ (1.A)

Totally differentiating equation (2)
$\theta_{AM}\widehat{P}_A^t + \theta_{KM}\hat{r} = \widehat{P}_M$
$\theta_{AM}\alpha\hat{t} + \theta_{KM}\hat{r} = 0$
$\theta_{KM}\hat{r} = -\theta_{AM}\alpha\hat{t}$
$\hat{r} = -\alpha(\theta_{AM}/\theta_{KM})\hat{t} < 0$ (2.A)

Appendix B

Totally differentiating equation (5):
$\lambda_{KM}\hat{a}_{KM} + \lambda_{KM}\widehat{M} = \widehat{K}$
As capital endowment is given:
$\lambda_{KM}\hat{a}_{KM} + \lambda_{KM}\widehat{M} = 0$
$\widehat{M} = -\lambda_{KM}\hat{a}_{KM}/\lambda_{KM}$
$\widehat{M} = -\hat{a}_{KM}$ (1.B)

Where; $\hat{a}_{KM} = S_{KA}^M\widehat{P}_A^t + S_{KL}^M\widehat{\bar{W}} + S_{KK}^M\hat{r}$
$\hat{a}_{KM} = S_{KA}^M\widehat{P}_A^t + S_{KK}^M\hat{r}$ [$\because \bar{W}$ is constant]
$\hat{a}_{KM} = S_{KA}^M\alpha\hat{t} - S_{KK}^M\alpha(\theta_{AM}/\theta_{KM})\hat{t}$
$\hat{a}_{KM} = \alpha(S_{KA}^M - S_{KK}^M\theta_{AM}/\theta_{KM})\hat{t}$ let $B = (S_{KA}^M - S_{KK}^M\theta_{AM}/\theta_{KM}) > 0$ (2.B)

Substituting equation (2.B) in equation (1.B):
$\widehat{M} = -\alpha B\hat{t} < 0$ (3.B)

Totally differentiating equation (6):

$\lambda_{LM}\widehat{M} + \lambda_{LM}\hat{a}_{LM} + \lambda_{LA}\widehat{A} + \lambda_{LA}\hat{a}_{LA} + (L_U/L)\hat{L}_U = \hat{L}$
As factor endowment are given:
$\lambda_{LM}\widehat{M} + \lambda_{LM}\hat{a}_{LM} + \lambda_{LA}\widehat{A} + \lambda_{LA}\hat{a}_{LA} + (L_U/L)\hat{L}_U = 0$ (4B)

Where; $\hat{a}_{LM} = S_{LA}^{M}\widehat{P}_A^t + S_{LK}^{M}\hat{r} + S_{LL}^{M}\widehat{\bar{W}}$
$\hat{a}_{LM} = S_{LA}^{M}\widehat{P}_A^t + S_{LK}^{M}\hat{r}$ [$\bar{W}$ is constant]
$\hat{a}_{LM} = S_{LA}^{M}\alpha\hat{t} - S_{LK}^{M}\alpha\theta_{AM}/\theta_{KM}\hat{t}$
$\hat{a}_{LM} = \alpha(S_{LA}^{M} - S_{LK}^{M}\theta_{AM}/\theta_{KM})\hat{t}$ Let $C = (S_{LA}^{M} - S_{LK}^{M}\theta_{AM}/\theta_{KM}) < 0$
$\hat{a}_{LM} = \alpha C\hat{t}$ (5B)

Where; $\hat{a}_{LA} = S_{LL}^{A}(\alpha/\theta_{LA})\hat{t}$ Let, $D = S_{LL}^{A}(1/\theta_{LA}) < 0$
$\hat{a}_{LA} = \alpha D\hat{t} < 0$ (6B)

Substituting equation (3.B), (5B) and (6B) in equation (4B):
$-\lambda_{LM}\alpha B\hat{t} + \alpha C\hat{t} + \lambda_{LA}\widehat{A} + \lambda_{LA}\alpha D\hat{t} + (L_U/L)\hat{L}_U = 0$ (7B)

Appendix C

Totally differentiating equation (11)
$\hat{L}_U = \hat{a}_{LM} + \widehat{M} - \omega\widehat{W}$ (1C)
Let $\omega = \frac{W}{\bar{W}-W} - 1 < 0$ $\because \bar{W} - W > W$
Substituting equation (1A) (5B) and (3.B) in equation (1C):
$\hat{L}_U = \alpha C\hat{t} - \alpha B\hat{t} - \omega(\alpha/\theta_{LA})\hat{t}$
$\hat{L}_U = \alpha(C - B - \omega/\theta_{LA})\hat{t}$ Let $\gamma = C - B - \frac{\omega}{\theta_{LA}} > 0$ (2C)
$\hat{L}_U = \alpha\gamma\hat{t} > 0$ (3C)

Appendix D

Substituting equation (3C) in equation (7B)
$-\lambda_{LM}\alpha B\hat{t} + \alpha C\hat{t} + \lambda_{LA}\widehat{A} + \lambda_{LA}\alpha D\hat{t} + (L_U/L)\alpha\gamma\hat{t} = 0$
$\lambda_{LA}\widehat{A} = \lambda_{LM}\alpha B\hat{t} - \alpha C\hat{t} - \lambda_{LA}\alpha D\hat{t} - (L_U/L)\alpha\gamma\hat{t}$
$\widehat{A} = \frac{\alpha\{\lambda_{LM}B - \alpha C\hat{t} - \lambda_{LA}D - (L_U/L)\gamma\}}{\lambda_{LA}}\hat{t}$ Let, $E = \{\lambda_{LM}B - \alpha C\hat{t} - \lambda_{LA}D - \gamma(L_U/L)\} > 0$
$\widehat{A} = \frac{\alpha E}{\lambda_{LA}}\hat{t} > 0$ (1D)

Appendix E

Totally differentiating equation (4)
$\lambda_{AM}\hat{a}_{AM} + \lambda_{AM}\widehat{M} + \lambda_{\varepsilon_A}\widehat{A} + \lambda_{\varepsilon_A}\widehat{\varepsilon_A} = \widehat{A}$
$\lambda_{\varepsilon_A}\widehat{\varepsilon_A} = \widehat{A}(1 - \lambda_{\varepsilon_A}) - \lambda_{AM}\widehat{M} - \lambda_{AM}\hat{a}_{AM}$ (1E)
Where; $\hat{a}_{AM} = S_{AA}^{M}\widehat{P}_A^t + S_{AL}^{M}\widehat{\bar{W}} + S_{AK}^{M}\hat{r}$
$\hat{a}_{AM} = S_{AA}^{M}\widehat{P}_A^t + S_{AK}^{M}\hat{r}$ [$\bar{W}$ is constant]
$\hat{a}_{AM} = S_{AA}^{M}\alpha\hat{t} - S_{AK}^{M}\alpha(\theta_{AM}/\theta_{KM})\hat{t}$

$$\hat{a}_{AM} = \alpha(S^{M}_{AA} - S^{M}_{AK}\theta_{AM}/\theta_{KM})\hat{t} \qquad \text{let } F = (S^{M}_{AA} - S^{M}_{AK}\theta_{AM}/\theta_{KM}) > 0$$
$$\hat{a}_{AM} = \alpha F\hat{t} \qquad (2E)$$

Now substituting equation (3B), (1D), (2E) in equation (1E):

$$\lambda_{\varepsilon_A}\widehat{\varepsilon_A} = \frac{\alpha E}{\lambda_{LA}}\hat{t}\left(1 - \lambda_{\varepsilon_A}\right) + \lambda_{AM}\alpha B\hat{t} - \lambda_{AM}(\alpha F\hat{t})$$
$$\lambda_{\varepsilon_A}\widehat{\varepsilon_A} = \alpha\left[\frac{E}{\lambda_{LA}}\left(1 - \lambda_{\varepsilon_A}\right) + \lambda_{AM}(B\hat{t} - \lambda_{AM}\alpha F)\right]\hat{t}$$
$$\widehat{\varepsilon_A} = \frac{1}{\lambda_{\varepsilon_A}}\left[\frac{E}{\lambda_{LA}}\left(1 - \lambda_{\varepsilon_A}\right) + \lambda_{AM}(B\hat{t} - \lambda_{AM}\alpha F)\right]\alpha\hat{t} > 0 \ \ [\because B > 0; E > 0; F > 0] \qquad (3E)$$