Social Science Spectrum ISSN 2454-2806
Vol. 11 , No.3 , September 2025 , pp.86-102

Trade Liberalization, Inequality, and Poverty
A Brief Note

Neelambar Hatti[1] and S.V. Hariharan[2]

Abstract

This paper examines the relationship between globalization, trade liberalization, income inequality, and poverty, emphasizing the conceptual and empirical challenges in identifying clear causal links. While inequality within many countries has risen in recent decades, evidence on global inequality trends remains inconclusive, with some findings suggesting a decline driven by growth in large developing economies. The paper reviews theoretical predictions and empirical studies on how trade openness affects wages, employment, and income distribution. It argues that the distributional effects of trade reforms depend heavily on country-specific conditions, including labor market structures, technological change, sectoral protection patterns, and institutional capacity. The study concludes that trade liberalization combined with other domestic policies determine inequality or poverty outcomes and its social impact.

Keywords: *Trade Liberalization. Poverty. Inequality*

Introduction

Global income inequality has for long been a subject of much interest to economists. Underlying this interest is a perception that income inequality among nations and people of the world has been growing rapidly over the last two decades. Several studies and reports confirm a general tendency for income inequality to grow in both developed and developing countries in recent decades, though with some variation and exceptions. This trend is driven by factors such as technological progress, globalization, and national policy choices, leading to rising income gaps between rich and poor populations within many countries (Li, et. al. 1998; Dabla-Norris, E., et. al., 2015; Makhlouf, 2023; Alvaredo, F., et. al., 2017 Gradin, 2024).

The belief that globalization disproportionately benefits the rich and harms the poor has driven the popular opposition to globalization, though the evidence is mixed. While some data shows globalization has lifted hundreds of millions out of poverty and decreased global income inequality, it has also been associated with rising income inequality within some countries and created new vulnerabilities for vulnerable the poor and benefits the rich (Ghose, 2004; Bardhan, 2006; Rahim, H. L., et. al. 2014; Tabash, M., et. al., 2024).

But a review of recent research shows that the empirical evidence available so far does not provide a firm basis for concluding that global income inequality has been growing rapidly since the early 1980s. Of course, there is little doubt that the 'gap' between the richest and poorest countries in terms of per capita income has been widening, but this does not necessarily imply a growth of inequality among nations or world population (Keely B. 2015; Alvaredo, F., et. al. 2017; World Social Report 2020; Dabla-Norris, E., et. al., 2015; Gradin, C. 2024).

[1] Professor emeritus, School of Economics and Management, Lund University, Lund, Sweden.
[2]Former Chairperson and Senior Professor, School of Economics, Madurai Kamaraj University, Madurai, India.

Income distribution has undoubtedly worsened in some countries in recent years, but it also seems to have improved in some others. There exist some empirical studies which attempt to construct sophisticated indices of global income inequality (Chotikapanich, D., et al. 1997; Bourguignon, and Morrison, 1999; Beck, T., et. al. 2004; Chancel and Piketty, 2021; Niño-Zarazúa, et. al., 2017). However, the empirical evidence on trends in global income inequality remains inconclusive as the empirical evidence on trends in global income inequality remains inconclusive as different methodologies and data sources lead to differing conclusions, but generally, global income inequality appears to have fallen since 1990 due to economic growth in populous Asian countries, while inequality within countries has been rising. The lack of consensus also stems the varying definitions of "global income inequality".

The issue of a possible link between trade openness and income inequality also remains unresolved. The mainstream economic theory predicts that growth of world trade would lead to a reduction in income disparities across countries. But these predictions are based on the assumptions whose validity remains open to question.

Moreover, they do not receive much support from recent historical experience. During an earlier period of globalization (1870-1910), only a small number of countries of Europe and the 'new world' showed convergence among themselves, while the income gap between them and the rest of the world widened very sharply. Moreover, income distribution worsened in poor nations of the 'new world' but improved in the more developed nations of Europe (O'Rourke, and Williamson, 1999; Ghose, A. K, 2001; Williamson, J. G. 1996; Guillaume D., et. al. 2008; Huwart, and Verdier, 2013).

The research on relationship between trade and growth is already quite large. Nevertheless, the relationship between trade and growth is not fully settled and a consensus yet to be reached on the effects of trade on growth (Frankel and Romer, 1999; Baldwin, 2000; Lewer, and Van der Berg, (2003; Winters, A., McCulloch, N. and McKay, A. 2004; Were, M., 2015; Huchet-Bourdon, M., et.al. 2018). Open international trade is seen as a potential driver of economic growth and poverty reduction, but realizing these benefits requires carefully designed national policies and infrastructure to ensure broad benefits.

Trade Liberalization, Inequality and Poverty

The measurement of trade liberalization is not without its problems. Over the years, trade protection has taken the form of non-tariff barriers (NTBs) that are inherently hard to measure. This use of NTBs is particularly pronounced in the developed nations. The traditional approach to circumventing this challenge is to use imports, exports, or the sum of the two as proxies of a country's openness and interpret their increase over time as the consequence of the fall of trade and/or transport barriers. Both imports and exports are determined simultaneously with the other variables that are focus of empirical study (e.g. wages, prices, etc.).

Of course, trade liberalizations in poor countries during the 1990s provide a strong measurement advantage because they created a large-scale, cross-country "natural experiment" that allows economists to study the effects of these policies on growth and poverty with greater clarity (Huy, Quang Doan (2019; Adão, R., et. al. 2022; Atkin, et. al. 2021). Also, tariffs are easier to measure than NTBs and comparable across time. While tariff coefficients may overstate the pure tariff effect in regressions employing tariff changes as the right-hand side variable, the coefficients nevertheless capture the combined effect of trade policy changes in each sector.

The concern about the endogeneity of tariffs in the econometric sense remains-that is, tariff changes could be correlated with unobserved sector-specific factors that also affected the dependent variable in the relevant regressions.

The focus on tariff changes is informative only to the extent that tariff declines capture the essence of globalization in the corresponding countries. This is the case in several Latin American countries where the tariff changes are significant especially when one considers that they go hand in hand with substantial reductions in the NTBs in the same sectors.

Measurement of inequality poses several challenges. As has been noted (Lundahl, Mats., et. al. 2024; Ravallion M. 2003; Atkinson, A. 2015; Elford, G. 2017), the definition of inequality is controversial and complex, as it involves various dimensions, such as income inequality, wealth inequality, and inequality of opportunity. It's often debated whether one should focus on differences in outcomes, opportunities, or both. Recent research on trade reforms and inequality in poor nations has focused on the 'relative' version of inequality and found that trade liberalization can increase relative inequality by benefiting skilled workers and capital owners more, particularly in countries with large low-education labor forces or specific resource endowments (Goldberg, and Pavcnik, 2004; Pavcnik, N. 2017; Santos-Paulino, 2012; Maasoumi, E., et. al, 2015; Cerra, Valerie., et. al. 2021). This implies an even larger increase in absolute inequality.

Several household surveys used to compute measures of inequality have come under scrutiny due to the "missing rich" problem, caused by higher non-response rates among richer households and sampling errors that underrepresent high-income individuals. These issues, combined with inconsistencies in survey design and measurement, can lead to biased estimates of income distribution (Alvaredo, F., et. al., 2019; Bourguignon, F., 2018; Chancel, et. al. 2023; Flachaire, et. al., 2023; Flores, I., 2019).

With respect to measurement of inequality, what are of most concern are the counterintuitive results which show that when non-response rates are increasing with income, it is 'possible' that the estimated variance of the truncated income distribution exceeds the variance of true distribution (Mistiaen and Ravallion, 2003; Han and Cheng, 2019; Korinek, et. al. 2006; Lakner and Milanovic 2013). So that the usual measures of inequality based on second moments of the observed income distribution can be completely uninformative about true changes in income inequality.

Yet it seems unlikely that this drives the recent findings on increased inequality in several poor nations. One needs to assume very particular income distributions for the estimated variance to increase when the true variance decreases or remains constant. Also, most empirical studies on inequality have used surveys for different years, documenting an increase in inequality occurring over a short period of time, often 3-5 years.

For inequality results to be misleading due to high-income non-response, the rate of non-response among high-income households must not only be higher but also have increased significantly over a 3–5-year period, making this group's systematic non-participation a more substantial problem that could skew data and analysis (Adam Bee, et. al 2015; Riphahn, and Serfling 2005; Masselus, L. and Fiala, N. 2024; Korinek, et. al 2006; Szekely and Hilgert, 1999); this seems unlikely in practice.

What is more disconcerting being the fact that the design of surveys from poor nations often changes from year to year, making comparisons across years difficult? Despite these difficulties, the widely documented increase in inequality for several countries is likely not just an

'artifact' of faulty survey design. The finding of increased inequality is based typically on comparisons of wages between the 'skilled' and 'unskilled' workers rather than on the second moments of the income distribution (Juhn, et. al. 1993; Lemieux T. 2008; Hutter and Weber, 2022).

Ajit Ghose suggested that the available evidence on trends in global inequality comes mainly from studies on inter-country inequality (comparing average incomes across different countries) and intra-country inequality (measuring income disparities within individual countries) (Ghose, A. K., 2004; World Bank, 2002). Studies of the first type have been concerned with testing empirically the catching up or convergence hypothesis. This states that poor nations and regions should be expected to grow faster than more developed ones, so that we should expect inter-country inequality to decline over time. Three arguments have been advanced in support of this view. The late comers into the world of modern economic growth enjoy an advantage because they can simply adopt and exploit technologies which the pioneers had to develop through their own efforts (Ghose, A., 2004; Yifu Lin, J., 2016; Vu, and Asongu, 2020).

Secondly, the assumption of diminishing returns to capital in standard growth theory, as seen in neoclassical models, predicts that capital productivity is higher in capital-scarce poor countries, leading to a "catch-up effect" where they grow faster than richer, capital-abundant countries. For equivalent rates of investments, the poor countries should be able to achieve higher growth (Solow, R. 1956; Solow, R., 1994). Thirdly, the bulk of workers in poor countries tend to be in low productivity agricultural activities. The structural change in employment that accompanies economic growth is a source of growth of labor production.

None of these arguments are fully convincing. First, the expansion of the technological frontier can be such that there always remains a substantial technological gap between the pioneers and the latecomers. There is no reason why the pioneers cannot derive advantages from their accumulated experience of developing leading –edge technologies. Second, because there is considerable scope for 'learning by doing'. And thirdly, because of the catch-up needs, there is a tendency in poor countries for premature adoption of technologies with relatively low labor intensity, so that the process of labor transfer tends to be extremely slow (Carroni, E., et.al. 2023; Acemoglu, D., 2002; Lahiri, et. al., 2018. If our concern is with the welfare of the world's population, then global inequality should refer to the inequality of world income distribution.

Unfortunately, the available statistical data on income distribution in individual countries, apart from being inadequate, suffers from serious limitations. Hence, estimating global income inequality is challenging due to inconsistent and incomplete data across nations, which highlights the limitations of available datasets rather than establishing widely accepted findings. Only a few attempts to estimate indices of inequality of world income distribution have been made and these succeed more in highlighting the limitations of the data than in establishing widely accepted results (Chancel, et. al. 2021; World Inequality Report 2022; Gradin, C., 2024; Milanovic, B., 2012; Makhlouf, 2023).

Conceptually, it is not at all clear how and through what mechanism trade might affect world income distribution. It is easy to see that trade can affect inter-country inequality in so far as it affects growth. The relationship between inter-country inequality and international inequality is analytically tractable; to this extent, there is no difficulty in analyzing the effects of trade on international inequality. But observed changes in inter-country inequality tell us virtually nothing about changes in world income distribution.

Trade Liberalization and Poverty

Goldberg and Pavcnik and other noted that there is virtually no work on the relationship between trade liberalization and poverty (Goldberg, and Pavcnik, 2004; Harrison, Ann 2006; Mercurio, B., 2013. An operational definition of poverty raises itself important philosophical and measurement issues.

Poverty has proved hard to measure even harder than inequality. This is not surprising, given that-when an absolute poverty line is used-poverty measurement requires getting the per capita income or consumption figures 'exactly' right, or at a minimum, measuring them consistently over time. This is a difficult task.

A further difficulty is that existing research predominantly focuses on the impact of 'unilateral' trade liberalization in poor countries. Several policies in developed countries, such as export and production subsidies, import tariffs and quotas that shelter agricultural and food products in the developed world from foreign competition potentially also have important implications for poverty in poor nations.

World Bank views the removal of these protectionist measures as an important tool in combating global poverty and simulations based on computable general equilibrium models suggest large welfare gains stemming from removal of these barriers (Anderson, K., 2003; Kutlina-Dimitrova, Z. and Lakatos, C., 2017; Hess, S. and Von Cramon-Taubadel, S., 2008; Abrego, L., et. al. 2019). We are not aware of any empirical studies that analyze the implications of these policies for the well-being of the rural poor in poor countries by linking inter-temporal variation in trade policy measures to household surveys that span trade liberalization episodes.

A possible explanation for increase in the skill premium documented in several poor countries is that the returns to particular occupations that require a higher level of education have increased. Cragg and Epelbaum observed a rapid increase in occupational premium to skill-intensive occupations account for a significant fraction of the estimated skill premium increase. Controlling for occupation compresses the original estimate of the change in the premium of post-secondary education from 67 to 40 p.c. (Cragg,M.I. and Epelbaum,M.,1996; Acemoglu, D. and Autor, D., 2010; Deming, D. J. and Noray, K., 2020; Tanaka, S., et. al., 2023).

The usual premise is that developed countries are relatively abundant in skilled labor, while poor nations are abundant in unskilled labor. According to a simple 2x2 version of the Hecksher-Ohlin (HO) model, poor countries will specialize in the production of unskilled labor-intensive products (textiles and footwear), while developed countries will specialize in skilled-labor intensive products (e.g. machinery) (Leamer, Edward., 1995). The Stolper-Samuelson theorem, on the other hand, links product prices to wages in a HO model where price decrease in the import sector will reduce the wages of skilled workers (used intensively in the import-competing sector) and benefit the unskilled workers in export sector (Abrego, and Huw Edwards, T., 2002; Chiquiar, D. 2008; Michael, A.M., 2016).

Since the model assumes that the factors of production can move across sectors within a country, the price changes affect only the 'economy-wide' returns to factors of production. Thus, trade liberalization should be associated with reductions in poverty and inequality in poor nations. The increase in skill premium and inequality in many poor nations in the aftermath of trade liberalization thus at first glance contradicts the predictions of the Stolper-Samuelson theorem.

This observed increase in the skill premium (wages of skilled versus unskilled labor) in many poor nations, especially in Latin America, is consistent with the Stolper-Samuelson theorem's predictions when considering protectionist policies that were reduced or eliminated during trade reforms (Sala-i-Martin, Xavier, 2007; Dix-Carneiro, R. and Kovak, B. K. 2023; Goldberg, P. and

Pavcnik, N. 2007). Before liberalization, unskilled labor-intensive sectors often faced the highest tariffs, which shielded them from foreign competition.

Given this evidence, the increase in 'skill premium' is exactly what Stolper-Samuelson would predict since trade liberalization was concentrated in unskilled-labor-intensive sectors, the economy-wide return to unskilled labor should decrease. This case shows the advantages of exploiting the sectoral variation in tariff changes, as opposed to relying on time variation alone to identify the effects of trade policy changes.

The assertion suggests that simply comparing trade levels "before" and "after" liberalization is a flawed approach because trade liberalization doesn't lead to a state of complete autarky (no trade) and free trade but rather a movement from high protection to lower protection. The assertion suggests that simply comparing trade levels "before" and "after" liberalization is a flawed approach because trade liberalization doesn't lead to a state of complete autarky (no trade) and free trade but rather a movement from high protection to lower protection; the pattern of protection across sectors prior to liberalization is crucial in determining the effects of trade reforms (Goldberg and Pavcnik, 2004; Goldberg, and Pavcnik, 2007; Goldberg and Pavcnik 2016).

The above evidence is not sufficient to conclude that the increase in skill premium was driven by trade reforms via the H-O mechanism. Other pieces of evidence cast doubt on this explanation. First, the HO model implies that industries that experience a tariff-induced decline (increase) in their relative prices, would contract (expand). Hence labor should reallocate from sectors with the largest tariff cuts to sectors with smaller tariff cuts. Yet, a common finding of studies of trade liberalization in poor nations is the lack of such reallocation.

Several studies have pointed out that the lack of effective labor allocation after trade reforms is a phenomenon that can be observed in several developing countries due to barriers like low worker mobility, imperfect labor markets, and sectoral mismatches (Li, Jie., et. al. 2019; Revenga, A. 1997; Feliciano, Z., 2001; Alessandria, G. et. al. 2022; Alessandria, G., and Avila, O. 2023; Dix-Carneiro, R., and Kovak, B. K. 2019). These studies attribute the lack of labor allocation in response to trade reforms to either rigid labor markets or to the existence of imperfect product markets and not through labor reallocation across sectors. But Grossman finds greater employment than wage sensitivity to trade shocks for the US.

A second piece of evidence that seems inconsistent with Stolper-Samuelson effects is that empirical work on poor nations typically finds that the share of skilled workers has increased substantially within 'most' industries in the last two decades (Schwellnus, C., et. Al., 2018; Kunst, D., et. al., 2022).

Even though the above facts seem more consistent with skill-biased technical change than the Stolper-Samuelson effects following trade reforms, trade could still have contributed to the rise in skill premium if technical change had been an endogenous response to more 'openness'(Pi, and Zhang, 2017; Sampson, 2016).

The higher share of skilled workers in most industries points to skilled-biased technical change, an explanation that has received a lot of attention in the context of rising inequality in developed countries. Leamer has argued that sector bias, not factor bias, determines changes in wage determination is often true, particularly in models of skill-biased technical change (SBTC) in diversified economies (Leamer, Edward 2005; Stehrer, R., 2010; Xu, B., 2001; Qiu, et. al. 2023). Sector bias, referring to the distribution of technological progress across industries, is the primary driver of changes in relative factor prices, such as skill premia, in these scenarios, as opposed

to factor bias, which describes technology's benefit to one factor over another generally.This argument requires that product prices do not change, which is unlikely to be the case during a trade reform.

Leamer further notes; "Wage determination in an HO model is described by the Stolper-Samuelson theorem which links product prices with wages. This theorem reminds us that what matter is not the level of imports of apparel but their price…Two conclusions emerge (i) The residual globalization effects on income inequality generally dominate the technological effects. (ii) The 1970's was the Stolper-Samuelson decade with product price changes causing increases in inequality. We need to explore other ways of measuring the factor shares and TFP".

Trade liberalization can increase the skill premium if it causes endogenous skill-biased technical change (SBTC), where technical innovations become more skill-intensive due to increased market "openness" (Pi, and Zhang, 2017; Behar, A., 2016; Goldberg, P. and Pavcnik, N. 2004; Michael, A., 2016). While Stolper-Samuelson effects of trade liberalization traditionally predict a rise in the skill premium in labor-abundant countries, the observation of a rising skill premium despite this prediction suggests a strong influence of SBTC. In this scenario, trade liberalization can not only increase demand for skilled labor in developing economies but also spur innovation and the adoption of new, skill-based technologies. This combination can lead to greater wage inequality by increasing returns to education and disadvantaging less skilled Workers (Wang et. al., 2021; Acemoglu and Restrepo, 2018; Kumar and Mishra, 2008).

Quality Upgrading of Firms and/ Products

A puzzling finding of studies on trade liberalization in poor countries is the lack of labor 'reallocation' across sectors. The puzzle arises because trade liberalization is theorized to shift labor from less productive to more productive sectors, but empirical evidence from poor countries shows little such labor reallocation across sectors, even as productivity gains are observed at the firm level. This suggests that the lack of labor reallocation after trade liberalization in poor countries stems from several factors, including labor market rigidities like hiring and firing costs, rigid minimum wage laws, and inflexible labor laws that prevent workers from moving to more profitable sectors (Topolova, P., 2010; Hoekman, B. and Winters, A.L., 2005; F. Landesmann. M. and Foster McGregor, N., 2021; Dix-Carneiro, R. 2014; Atkin, D. and Khandelwal, A. K. 2020; Khandelwal, A. K., et. al., 2013; Cravino, J. and Sotelo, S., 2019). Poor infrastructure and low skills may also hinder workers' ability to transition to new industries.

Recent research has focused on compositional changes in response to trade liberalization that may induce reallocation of both capital and labor towards 'higher quality' firms. The basic idea is that trade openness induces a 'quality' upgrading of firms, where quality can mean either 'firm productivity' or 'product quality.'

What is essential for establishing a connection with the inequality debate is that these 'higher quality' firms employ a higher proportion of skilled workers, so that aggregate demand for skilled workers increases relative to that for unskilled workers.

Schott provides strong evidence of 'complete' specialization by countries within product categories, with the skill and capital-abundant countries specializing in the production and export of higher unit value products (Schott, P., 2004; Pham, C. S., 2008; Pham, C. S. and Ulubasoglu, M. A., 2015). While these findings do not tell us directly how countries adjust to trade liberalization, it seems plausible to assume that as poor countries become more open to trade, they engage in more product differentiation along the same lines as more developed countries.

The main challenge is to define ‘quality’ in an operational way. As Erdem and Tybout have pointed out, separating firm productivity and product quality isn't possible given the accuracy of available, as standard datasets often conflate these two concepts (Erdem, and Tybout, 2003; Ozler, and Yilmaz, 2009; Sanchez-Fernandez, R. and Angeles Iniesta Bonillo, M. 2007; Fu, Q., et. al. 2024; De Loecker, J. and Syverson, C., 2021). For example, the assertion that high revenue-based "productivity" may mask higher prices for better quality instead of true efficiency is a valid concern in economic analysis. While revenue metrics can be convenient, they fail to distinguish between increased output volume and higher prices due to superior product quality, a distinction that requires physical output data and advanced analytical methods to accurately assess a firm's or industry's true productivity (Berglund, C. and Harmon, R., 2007; Van den Ven, M., et. al., 2023; Chu, et. al., 2025; Syverson, C. 2010); high "productivity" might actually reflect higher prices for higher-quality goods rather than true efficiency.

What matters is the proportion of skilled and unskilled workers that are required to produce goods ‘before’ and ‘after’ a trade liberalization episode. Hence, rather than resorting to specific interpretations of product ‘quality’ that may be controversial, empirical work in this area could directly examine how within-firm relative demand for skilled workers are affected by trade liberalization, and whether this effect is different for firms with initially low versus high skill-intensity.

Changes in Industry Wage Premiums

The empirical evidence suggests that the increase in economy-wide skill premium alone cannot fully explain the growing wage inequality (Borrs, and Knauth, 2021; Amiti & Davis, 2012; Dinopoulos, E., et.al., 2011; Winkler, E. 2019; De Loecker, and Syverson 2021). Trade theory suggests that changes in trade policy, like falling tariffs, can affect industry wages through various channels, including changes in product prices and firm-level productivity, labor mobility and bargaining power, and the transfer of technology. In short and medium-run models of trade where workers cannot easily move across sectors, tariff cuts translate into proportional declines in industry wage premiums. This channel may be particularly important in poor nations, where labor mobility in the aftermath of a trade shock may be obstructed by labor market rigidities (Heckman, and Pages, 2000; Ahn, JaeBin., et., al., 2022; Helpmann and Itskhoki, 2010; Rodríguez-Clare, et. al., 2022). In principle, these labor market rigidities might not be important in practice because of vast non-compliance with labor market regulations.

It is true that the standard H-O model is incompatible with data which shows a rising wage inequality in each of the trading countries. It can be shown that ‘variety’ trade can be a possible source of increased wage inequality in each country.

Does Liberalization Raise Wages or Employment?

Traditional international trade theory assumes that factor supplies are fixed, and wages are flexible. In a two-factor world, the Stolper-Samuelson theorem predicts that an increase in the price of goods that is labor-intensive in production will increase its production and thus increase the real wage. While its basic insight is almost certainly robust, the Stolper-Samuelson theorem is not sufficient to answer questions of trade and poverty in the real world.

The theorem, which predicts how price changes in goods affect factor prices, is limited in complex "multi-commodity, multi-factor" economic models because the link between functional and personal income distribution is weak (Menedez, et. al. 2023; Lopez Gonzalez, J., P. Kowalski and P. Achard., 2015; Harrison, Ann., et. al., 2011). Consequently, rising unskilled wages due to higher

prices don't guarantee lower poverty because poor households may not be reliant on this income source, or they might be unemployed and unable to benefit from wage increases. For poverty to decrease, poor households must have their incomes rise, which depends on whether they have access to jobs that pay higher unskilled wages (Bhagwati, and Srinivasan, 2002; Jadoon, et. al., 2021; McKnight, et.al., 2016; Cerra, V., et. al., 2021).

The critical issues, then, are the effects of trade liberalization on the demand for labor- the shock to the labor market- and the elasticity of labor supply-where the economy lies between the two polar extremes of vertical and horizontal curves of labor. In addition, empirical analysis should recognize that adjustment takes time, so that short-run effects may differ from long-run ones (Milner and Wright, 1998; Itskhoki, O. and Helpman, E., 2015; Mrabet, and Lanouar, 2012.

It is also important to bear in mind that trade reform's effects on factor markets (like labor and capital) depend on how it alters output, which, in turn, is influenced by the goods market's structure and how easily consumers can substitute between imported, exported, and locally produced goods (Falvey, R. 1999; Lewis, et. al., 2022; Fajgelbaum and Khandelwal, 2016; Herrendorf, et. al., 2013). Thus, the impact on wages and rents hinges on changes in a country's production mix, which is shaped by market dynamics and the availability of alternatives for consumers.

There are several studies of the 'labor market' effects of trade reform, but most of them presume segmented markets and deal only with the manufacturing sector and so make it difficult to draw conclusions about overall 'poverty' (Acemoglu and Autor 2011; Grimshaw, et. al., 2017; Hanaki, et. al., 2021; Zhao, et. al., 2025). Moreover, they rely on inter-sectoral and inter-firm variations to identify effects and so have little to say on general equilibrium effects which one would expect to be smaller than partial equilibrium ones. The most striking common feature of these studies is the low wage and employment effects they find whilst the most marked difference is the variety of explanations offered for it.

An early discussion of trade and employment was by Krueger who argued that trade liberalization in developing countries should boost labor-intensive output and increase employment a theory supported by the early success of East Asian economies (Krueger, A.O., 1988; Arbache, J. L. 2001; Beker, V. A. 2012; Busse, et. al., 2024). Her case studies showed that developing countries manufactured exports were, indeed, labor-intensive, but that the employment effects of liberal trade policies were generally muted. She concluded that this was because of other distortions in factor markets.

Several studies (Winters, et. al., 2004; Wolcott, E. L. 2021; Santos and Neves Sequeira, 2014; Pi, and Zhang, 2018) have paid much attention to the mismatch between employer-needed skills and worker-possessed skills, leading to increased relative wages for skilled workers (the skill premium), wage inequality, and workforce challenges. This is frequently linked to income inequality and thence, casually and less justifiably, to poverty.

Of course, a widening skills gap could reflect falling unskilled wages (relative to the no-reform counterfactual). Many studies have questioned the factor abundance model (Heckscher-Ohlin model) because it predicts that increasing trade should benefit unskilled labor in poor nations, but rising income inequality within these countries, a widening skill gap, suggests otherwise. The observed outcome of increased inequality points to other factors, such as skill-biased technological change, weakening labor institutions, or differential access to education, which may be more significant drivers of income distribution than the simple factor proportions assumed by the model (Acemoglu, D., 2002; Harrison, Ann., et. al., 2011; Meschi, and Vivarelli, 2009; Dabla-Norris, et. al., 2015).

Most of the recent experience concerns Latin America. Latin America's increasing skills gap contrasts with the earlier experience of East Asia, where liberalization was accompanied by a narrowing of the gap. Various explanations have been given for this difference (Wood, and Mayer, 2011; Kay, C. 2002; Cornia, G. A., 2012; Gasparini, L., et. al., 2011; Dix-Carneiro, R. and Kovak, B. 2025). Some concern the different timing of the liberalizations; the entry of large countries with large surplus labor like China into the global market, coupled with skill-biased technological change and increased capital mobility in the 1980s and 1990s, led to increased wage inequality in Latin America by creating a global competition for unskilled labor that Latin America did not possess. The region's previous perceived advantage in unskilled labor was eroded, while its debt crisis also played a role in its vulnerability to these changes.

Some Conclusions

One potentially important dimension of the skill gap is whether openness stimulates poor countries' demand for education and acquisition of human capital. Simple Stolper-Samuelson theory suggests that the returns to skill will decline and with them the incentives for education. The alternative studies have quite the opposite implications.

The effects of trade liberalization on wages and employment are complex to predict because they have varied impacts depending on factors like a country's development level, the specific industries, and whether the focus is on exports or imports (Paz, L. S., 2014; Lee, J.-W., & Wie, D., 2015; Beaton, K., et. al., 2021). Although liberalization will often raise the demand for unskilled workers in many poor nations and so, on average, can be poverty-alleviating, there will also be important exceptions, e.g. possibly where natural resources dominate exports and where outsourcing is important-as well as cases where segmented import-competing sectors suffer adverse shocks. Overall, the effects on the wage gap between skilled and unskilled workers are often complex, sometimes widening this gap, and the overall impact on employment can be ambiguous, with some studies showing increases and others showing decreases or shifts in job types.

The most heavily protected sectors in several poor nations tend to be sectors that employ a high proportion of unskilled workers earning low wages. It should not come as a surprise if trade liberalization has a negative impact on unskilled workers; if there is a puzzle, this is why most poor countries find it 'optimal' to protect low-skill intensive sectors.

There is some evidence that trade liberalization decreased the industry wage premiums in those sectors that experienced the largest tariff reductions. This is consistent with the dissipation of industry rents, or alternatively, the existence of labor market 'rigidities' that constrain labor mobility across sectors in the short and medium run. But the effects of trade reforms on industry wages are generally estimated to be small. In general, the price (wage) response to trade liberalization is more pronounced than the quantity response. This is again indicative of market rigidities that may be relevant in poor nations in the short run.

Similarly, there is little evidence that trade reforms are associated with an increase in informal employment and a worsening of working conditions (Goldberg, P. K., 2003; Kar, S., 2016; Topalova, P. 2010). To the extent that one finds such evidence, it seems to be relevant in settings characterized by severe labor market rigidities. A study of labor market institutions and their interactions with trade policy is essential for understanding the effects of trade liberalization on inequality and poverty.

References

Abrego, L., & Edwards, T. H. (2002). *The relevance of the Stolper–Samuelson theorem to the trade and wages debate* (CSGR Working Paper No. 96/02). Centre for the Study of Globalisation and Regionalisation, University of Warwick.

Abrego, L., et al. (2019). *The African Continental Free Trade Agreement: Welfare gains estimates from a general equilibrium model* (IMF Working Paper No. 19/124). International Monetary Fund.

Acemoglu, D. (2002). Technical change, inequality, and the labor market. *Journal of Economic Literature, 40*(1), 7–72.

Acemoglu, D., & Autor, D. (2011). Skills, tasks and technologies: Implications for employment and earnings. In O. Ashenfelter & D. Card (Eds.), *Handbook of labor economics* (Vol. 4, pp. 1043–1171). Elsevier.

Acemoglu, D., & Restrepo, P. (2018). The race between man and machine: Implications of technology for growth, factor shares, and employment. *American Economic Review, 108*(6), 1488–1542.

Adam Bee, C., et. al (2015), Bias from Unit Non-Response in the Measurement of Income in Household Surveys, U.S. Census Bureau, Maryland.

Adão, R., Kolesár, M., & Morales, E. (2022). Imports, exports, and earnings inequality: Measures of exposure and estimates of incidence. *The Quarterly Journal of Economics, 137*(3), 1553–1612.

Ahn, J., et al. (2022). *Labor market rigidity at home and multinational corporations' flexible task reallocation abroad* (Policy Research Working Paper No. 10114). World Bank.

Alessandria, G., & Avila, O. (2023). Trade integration, industry reallocation, and welfare in Colombia. *IMF Economic Review, 71*(3), 559–601.

Alessandria, G., et al. (2022). Perspectives on trade and structural transformation. *Oxford Development Studies, 51*(4), 525–544.

Alvaredo, F., Assouad, L., & Piketty, T. (2019). Measuring inequality in the Middle East, 1990–2016: The world's most unequal region? *Review of Income and Wealth, 65*(4), 685–711.

Alvaredo, F., Chancel, L., Piketty, T., Saez, E., & Zucman, G. (2017). *World inequality report 2018*. World Inequality Lab.

Al-Zoubi, W. K. (2024). Economic development in the digital economy: A bibliometric review. *Economies*, *12*(3), 53.

Amiti, M., & Davis, D. R. (2012). Trade, firms, and wages: Theory and evidence. *The Review of economic studies*, *79*(1), 1-36.

Anderson, K. (2003). *Trade liberalization, agriculture and poverty in low-income countries* (UNU/WIDER Discussion Paper No. 2003/25). UNU-WIDER.

Arbache, J. L. (2001). *Trade liberalization and labor markets in developing countries: Theory and evidence* (Discussion Paper No. 12). University of Kent.

Atkin, D., & Khandelwal, A. K. (2020). How distortions alter the impacts of international trade in developing countries. *Annual Review of Economics, 12*, 213–238.

Atkin, D., Khandelwal, A. K., & Osman, A. (2021). *Globalization and the ladder of development: Pushed to the top or held at the bottom?* (NBER Working Paper No. 29500). National Bureau of Economic Research.

Atkinson, A. B. (2015). *Inequality: What can be done?* Harvard University Press.

Bardhan, P. (2006). Does globalization help or hurt the world's poor?. *Scientific American*, *294*(4), 84-91.

Batuo, M. E., & Asongu, S. A. (2015). *The impact of liberalisation policies on income inequality in African countries. Journal of Economic Studies, 42*(1), 68–100. https://doi.org/10.1108/JES-02-2014-0030

Beaton, M. K., Cerra, M. V., & Hadzi-Vaskov, M. (2021). *Trade, Jobs, and Inequality: IMF Working Paper No. 178*. International Monetary Fund.

Beck, T., et. al. (2004), Finance, Inequality, and Poverty: Cross Country Evidence. NBER Working Paper No. 10979.

Behar, A. (2016), The endogenous skill bias of technical change and wage inequality in developing countries, *Journal of International Trade and Economic Development, 25*(8), 1012–1035.

Beker, V. A. (2012). *A case study on trade liberalization: Argentina in the 1990s, Economics Discussion Papers, No. 2012-3*, Kiel Institute for the World Economy.

Berglund, C. and Harmon, R. (2007). Revenue-Based Metrics for Managing the New Product Introduction Process. In *Proceedings of the Portland International Conference on Management of Engineering and Technology (PICMET)*, Portland, Oregon, DOI: 10.1109/PICMET.2007.4349524.

Bhagwati, J., & Srinivasan, T. N. (2002). Trade and poverty in the poor countries. *American Economic Review*, *92*(2), 180-183.

Borrs, L., & Knauth, F. (2021). Trade, technology, and the channels of wage inequality. *European Economic Review*, *131*, 103614.

Bourguignon, F. (2018). Simple adjustments of observed distributions for missing income and missing people. *Journal of Economic Inequality*, *16*, 1–20.

Bourguignon, F., & Morrison, C. (1999). *The size distribution of income among world citizens, 1820–1990*. DELTA Working Paper. Paris.

Busse, M., Dary, S. K., & Wüstenfeld, J. (2024). Trade liberalisation and manufacturing employment in developing countries. *Structural Change and Economic Dynamics*, *70*, 410-421.

Carroni, E., Delogu, M., & Pulina, G. (2023). Technology adoption and specialized labor. *International Economics*, *173*, 249-259.

Cerra, V., Lama, R., & Loayza, N. V. (2021). Links between growth, inequality, and poverty: A Survey. *International Monetary Fund*, *68*, 1-54. https://doi.org/10.5089/9781513572666.001.

Chancel, L., & Piketty, T. (2021). Global income inequality, 1820–2020: the persistence and mutation of extreme inequality. *Journal of the European Economic Association*, *19*(6), 3025-3062.

Chancel, L., Cogneau, D., Gethin, A., Myczkowski, A., & Robilliard, A. S. (2023). Income inequality in Africa, 1990–2019: Measurement, patterns, determinants. *World Development*, *163*, 106162.

Chancel, L., Piketty, T., Saez, E., & Zucman, G. (Eds.). (2022). *World inequality report 2022*. Harvard University Press.

Chiquiar, D. (2008). Globalization, regional wage differentials, and the Stolper–Samuelson theorem: Evidence from Mexico. *Journal of International Economics*, *74*(1), 70–93.

Chotikapanich, D., Valenzuela, M. R., & Rao, D. S. P. (1997). Global and regional inequality in the distribution of income: Estimation with incomplete data. *Empirical Economics*, *22*(4), 533–546.

Chu, H., Niu, X., Li, M., & Wei, L. (2025). Research on the impact of new quality productivity on enterprise ESG performance. *International Review of Economics & Finance*, *99*, 104009.

Cornia, G. A. (2012). *Inequality trends and their determinants: Latin America over 1990–2010* (WIDER Working Paper No. 2012/09). UNU-WIDER.

Cragg, M. I., & Epelbaum, M. (1996). Why has wage dispersion grown in Mexico? Is it the incidence of reform or growing demand for skills? *Journal of Development Economics*, *51*(1), 99–116.

Cravino, J., & Sotelo, S. (2019). Trade-induced structural change and the skill premium. *American Economic Journal: Macroeconomics*, *11*(3), 289–325.

Dabla-Norris, E., Kochhar, K., Suphaphiphat, N., Ricka, F., & Tsounta, E. (2015). *Causes and consequences of income inequality: A global perspective* (IMF Staff Discussion Note No. SDN/15/13). International Monetary Fund. https://www.imf.org/external/pubs/ft/sdn/2015/sdn1513.pdf

Daudin, G., Morys, M., & O'Rourke, K. H. (2008). *Europe and globalization, 1870–1914* (Working Paper hal-03459830). HAL Open Science. https://hal.science/hal-03459830v1

De Loecker, J., & Syverson, C. (2021). *An industrial organization perspective on productivity*. In K. Ho, A. Hortaçsu, & A. Lizzeri (Eds.), *Handbook of Industrial Organization* (Vol. 4, pp. 141–223). Elsevier. https://doi.org/10.1016/bs.hesind.2021.11.003

Deming, D. J., & Noray, K. (2020). Earnings dynamics, changing job skills, and STEM careers. *The Quarterly Journal of Economics*, *135*(4), 1965-2005.

Dinopoulos, E., Syropoulos, C., Xu, B., & Yotov, Y. V. (2011). Intraindustry trade and the skill premium: Theory and evidence. *Journal of International Economics*, *84*(1), 15-25.

Dix-Carneiro, R. (2014). Trade liberalization and labor market dynamics. *Econometrica, 82*(3), 825–885.

Dix-Carneiro, R., & Kovak, B. (2025). Globalization and inequality in Latin America. *Oxford Open Economics*, *4*(1), 1–30.

Dix-Carneiro, R., & Kovak, B. K. (2019). Margins of labor market adjustment to trade. *Journal of International Economics*, *117*, 125–142.

Dix-Carneiro, R., & Kovak, B. K. (2023). *Globalization and inequality in Latin America* (NBER Working Paper No. 31459). National Bureau of Economic Research.

Elford, G. (2017). Relational equality and distribution. *Journal of Political Philosophy*, *25*(4), 414–438.

Erdem, E., & Tybout, J. (2003). Trade policy and industrial sector responses in developing countries. *Brookings Trade Forum*, 2003, 1–47. https://doi.org/10.1353/btf.2004.0007.

Fajgelbaum, P. D., & Khandelwal, A. K. (2016). Measuring the unequal gains from trade. *The Quarterly Journal of Economics*, *130*(3), 1113–1180.

Falvey, R. (1994). Revenue-enhancing tariff reform. *Weltwirtschaftliches Archiv*, vol.130, 175–190.

Feliciano, Z. (2001). Workers and trade liberalization: The impact of trade reforms in Mexico on wages and employment. *Industrial and Labor Relations Review*, *55*(1), 95–115.

Flachaire, E., Lustig, N., & Vigorito, A. (2023). Underreporting of top incomes and inequality: A comparison of correction methods using simulations and linked survey and tax data. *Review of Income and Wealth*, *69*(4), 1033-1059.

Flores, I. (2019). *On the empirical measurement of inequality* (Doctoral dissertation). Université Paris I Panthéon-Sorbonne, Paris, France.

Frankel, J. A., & Romer, D. (1999). Does trade cause growth? *American Economic Review*, *89*(3), 379–399.

Fu, Q., Nicholson, G. L., & Easton, J. M. (2024). Understanding data quality in a data-driven industry context: Insights from the fundamentals. *Journal of Industrial Information Integration*, *42*, 100729.

Gasparini, L., Cruces, G., & Tornarolli, L. (2011). *Recent trends in income inequality in Latin America*. *Economía (LACEA)*, *10*(2), 1–46.

Ghose, A. K. (2004). Global inequality and international trade. *Cambridge journal of economics*, *28*(2), 229-252.

Goldberg, P. K., & Pavcnik, N. (2003). The response of the informal sector to trade liberalization. *Journal of development Economics*, *72*(2), 463-496.

Goldberg, P. K., & Pavcnik, N. (2004). *Trade, inequality, and poverty: What do we know? Evidence from recent trade liberalization episodes in developing countries* (NBER Working Paper No. 10593). National Bureau of Economic Research. https://www.nber.org/papers/w10593.

Goldberg, P. K., & Pavcnik, N. (2007). *Distributional effects of globalization in developing countries*. *Journal of Economic Literature*, *45*(1), 39–82. https://doi.org/10.1257/jel.45.1.39.

Goldberg, P. K., & Pavcnik, N. (2016). *The effects of trade policy* (NBER Working Paper No. 21957). National Bureau of Economic Research, Cambridge. https://www.nber.org/papers/w21957

Gradín, C. (2024). *Revisiting the trends in global inequality*. *World Development*, *179*, Article 106607. https://doi.org/10.1016/j.worlddev.2024.106607

Grimshaw, D., Fagan, C., Hebson, G., & Tavora, I. (Eds.). (2017). *Making work more equal: A new labour market segmentation approach*. Manchester University Press. https://doi.org/10.7765/9781526125972

Han, X., & Cheng, Y. (2019). *Does the "missing" high income matter? Income distribution and inequality revisited with truncated distribution*. *China Economic Review*, *57*, 101331. https://doi.org/10.1016/j.chieco.2019.101331

Hanaki, N., Hayashi, T., Lombardi, M., & Ogawa, K. (2021). *Partial equilibrium mechanism and inter-sectoral coordination: An experiment* (ISER Discussion Paper No. 1138). Institute of Social and Economic Research (ISER), Osaka University.

Harrison, A. (2006**).** *Globalization and poverty* (NBER Working Paper No. 12347). National Bureau of Economic Research. http://www.nber.org/papers/w12347.pdf

Harrison, A. (2011). *Recent perspectives on trade and inequality* (World Bank Policy Research Working Paper No. 5672). World Bank. http://documents.worldbank.org/curated/en/5672/pdf/WPS5672.pdf

Harrison, A. E., McLaren, J., & McMillan, M. (2011). *Recent perspectives on trade and inequality* (World Bank Policy Research Working Paper No. 5754). World Bank. http://documents1.worldbank.org/curated/en/134331468149091255/pdf/WPS5754.pd

Heckman, J. J., & Pagés, C. (2000). *The cost of job security regulation: Evidence from the Latin American labor market* (NBER Working Paper No. 7773). National Bureau of Economic Research. https://www.nber.org/papers/w7773

Helpmann, E., & Itskhoki, O. (2010). *Labor market rigidities, trade and employment. Review of Economic Studies*, *77*(3), 1100–1137. https://doi.org/10.1111/j.1467-937X.2009.00606.x

Herrendorf, B., Rogerson, R., & Valentinyi, Á. (2013*). Two perspectives on preferences and structural transformation. American Economic Review*, *103*(7), 2752–2789. https://doi.org/10.1257/aer.103.7.2752

Hess, S., & von Cramon-Taubadel, S. (2008). *A meta-analysis of general and partial equilibrium simulations of trade liberalisation under the Doha Development Agenda. The World Economy*, *31*(6), 849–877. https://doi.org/10.1111/j.1467-9701.2008.01168.x

Hoekman, B., & Winters, A. L. (2005). *Trade and employment: Stylized facts and research*. World Bank Policy Research Working Paper. https://doi.org/10.1596/1813-9450-3678

Huchet-Bourdon, M., Gaigné, C., & Jean, S. (2018). *The relationship between trade openness and economic growth: Some new insights on the openness measurement issue. The World Economy, 41*(1), 3–25. https://doi.org/10.1111/twec.12538

Hutter, C., & Weber, E. (2022). *Labor market effects of wage inequality and skill-biased technical change. Applied Economics, 55*(27), 3074–3092. https://doi.org/10.1080/00036846.2022.2039325

Huwart, J. Y., & Verdier, L. (2013). *Economic globalization: Origins and consequences.* OECD Publishing. http://dx.doi.org/10.1787/9789264111899-en

Huy, Q. D. (2019). *Trade, institutional quality and income: Empirical evidence for Sub-Saharan Africa. Economies, 7*(2), 48. https://doi.org/10.3390/economies7020048

Itskhoki, O. and Helpman, E. (2015). *Trade Liberalization and Labor Market Dynamics with Heterogeneous Firms*. http://www.princeton.edu/~itskhoki/papers/TradeLMDynamics.pdf.

Jadoon, A. K., Tanveer, A., Javed, M. F., & Sarwar, A. (2021). *Minimum wages and poverty: A cross-country analysis. Asian Economic and Financial Review, 11*(8), 632–643. https://doi.org/10.18488/journal.aefr.2021.118.632.643.

Juhn, C., Murphy, K. M., & Pierce, B. (1993). *Wage inequality and the rise in returns to skill. Journal of Political Economy, 101*(3), 410–442. https://doi.org/10.1086/261881.

Kar, S. (2016). *Do economic reforms hurt or help the informal labor market? IZA World of Labor*. Institute for the Study of Labor (IZA). https://doi.org/10.15185/izawol.263.

Kay, C. (2002). *Why East Asia overtook Latin America: Agrarian reform, industrialization and development. Third World Quarterly, 23*(6), 1075–1104. https://doi.org/10.1080/0143659022000022252.

Keeley, B. (2015*). Income inequality: The gap between rich and poor.* OECD Publishing. https://doi.org/10.1787/9789264235120-en.

Khandelwal, A. K., Schott, P. K., & Wei, S.-J. (2013). *Trade liberalization and embedded institutional reform: Evidence from Chinese exporters. American Economic Review, 103*(6), 2169–2195. https://doi.org/10.1257/aer.103.6.2169

Korinek, A., Mistiaen, J., & Ravallion, M. (2006). *Survey nonresponse and the distribution of income. Journal of Economic Inequality, 4*(1), 33–55. https://doi.org/10.1007/s10888-005-1089-4.

Krueger, A. O. (1988). *Trade and employment in developing countries* (Vol. 3). University of Chicago Press.

Kumar, U., & Mishra, P. (2008). *Trade liberalization and wage inequality: Evidence from India. Review of Development Economics, 12*(2), 291–305. https://doi.org/10.1111/j.1467-9361.2008.00418.x

Kunst, D., Freeman, R. B., & Oostendorp, R. (2022). *Occupational skill premia around the world: New data, patterns and drivers. Labour Economics, 79*, 102255. https://doi.org/10.1016/j.labeco.2022.102255..

Kutlina-Dimitrova, Z., & Lakatos, C. (2017). *The global costs of protectionism* (Policy Research Working Paper No. 8277). World Bank. http://documents.worldbank.org/curated/en/2017/01/26845024/global-costs-protectionism.

Lahiri, R., Ding, J., & Chinzara, Z. (2018). *Technology adoption, adaptation and growth. Economic Modelling, 70*, 469–483. https://doi.org/10.1016/j.econmod.2017.10.006

Lakner, C., & Milanovic, B. (2013). *Global income distribution from the fall of the Berlin Wall to the Great Recession* (World Bank Policy Research Working Paper No. 6719). World Bank. http://documents.worldbank.org/curated/en/2013/06/18005028/global-income-distribution-fall-berlin-wall-great-recession.

Landesmann, M. F., & Foster-McGregor, N. (2021). Trade liberalization, structural change, and economic growth. In *Structural change and economic dynamics* (DESA Working Paper No. 7). Oxford University Press. https://doi.org/10.1093/oso/9780198850113.003.0018

Leamer, E. (1995). *The Heckscher-Ohlin model in theory and practice* (Princeton Studies in International Finance No. 77). Princeton University.

Leamer, E. (2005). *In search of Stolper-Samuelson linkages between trade and tower wages* (NBER Working Paper No. 5427). National Bureau of Economic Research. https://www.nber.org/papers/w5427

Lee, J.-W., & Wie, D. (2015). *Technological change, skill demand, and wage inequality: Evidence from Indonesia. World Development, 67*, 11–26. https://doi.org/10.1016/j.worlddev.2014.10.020

Lemieux, T. (2008). *The changing nature of wage inequality. Journal of Population Economics, 21*(1), 21–48. https://doi.org/10.1007/s00148-007-0168-2

Lewer, J. J., & Van der Berg, H. (2003). *How large is international trade's effect on economic growth? Journal of Economic Surveys, 17*(3), 363–396. https://doi.org/10.1046/j.1467-6419.2003.00200.x

Lewis, L. T., Monarch, R., Sposi, M., & Zhang, J. (2020). *Structural change and global trade* (Working Paper). Federal Reserve Board & Federal Reserve Bank of Chicago. Retrieved from https://www.ltlewis.net/LMSZ.pdf

Li, H., Squire, L., & Zou, H.-F. (1998*). Explaining international and inter-temporal variations in income inequality. The Economic Journal, 108*(446), 26–43. https://doi.org/10.1111/1468-0297.00237

Li, J., Lu, Y., Song, H., & Xie, H. (2019). *Long-term impact of trade liberalization on human capital formation. Journal of Comparative Economics, 47*(4), 946–961. https://doi.org/10.1016/j.jce.2019.08.002

Lopez Gonzalez, J., Kowalski, P., & Achard, P. (2015). *Trade, global value chains and wage-income inequality* (OECD Trade Policy Paper No. 182). OECD Publishing. https://doi.org/10.1787/5js009mzr2f7-en

Lundahl, M., Rauhut, D., & Hatti, N. (Eds.). (2024). *Inequality: Economic and social issues*. Routledge. https://doi.org/10.4324/9781003387114

Makhlouf, Y. (2023). Trends in income inequality: Evidence from developing and developed countries. *Social Indicators Research*, *165*(1), 213-243.

Masselus, L., & Fiala, N. (2024). Whom to ask? Testing respondent effects in household surveys. *Journal of Development Economics*, *168*, 103265.

McKnight, A., Stewart, K., Mohun Himmelweit, S., & Palillo, M. (2016). *Low pay and in-work poverty: Preventative measures and preventative approaches* (Report for the European Commission – DG Employment, Social Affairs and Inclusion). LSE Business Consulting. https://www.lse.ac.uk/business/consulting/assets/documents/Low-Pay-and-In-Work-Poverty.pdf.

Menéndez González, I., Owen, E., & Walter, S. (2023). Low-skill products by high-skill workers: The distributive effects of trade in emerging and developing countries. *Comparative Political Studies*, *56*(11), 1724-1759.

Mercurio, B. (2013). *Trade liberalization and poverty reduction: Complimentary or contradictory aims?* In *Trade, Development and Poverty Reduction* (pp. 123–145). Cambridge University Press. https://doi.org/10.1017/CBO9781139507097.009.

Meschi, E., & Vivarelli, M. (2009). *Trade and income inequality in developing countries. World Development, 37*(2), 287–302. https://doi.org/10.1016/j.worlddev.2008.06.004.

Michael, A. M. (2016). *Evaluating Stolper-Samuelson: Trade liberalization and wage inequality in India* (Master's thesis). University of San Francisco. https://repository.usfca.edu/thes/179

Milanovic, B. (2012). *Global income inequality by the numbers: In history and now* (Policy Research Working Paper No. 6259). World Bank.

Milner, C., & Wright, P. (1998). *Modeling labor market adjustment to trade liberalization in an industrializing economy. The Economic Journal, 108*(447), 509–528. https://doi.org/10.1111/1468-0297.00342

Mistiaen, J., & Ravallion, M. (2003). *Survey compliance and the distribution of income* (Policy Research Working Paper No. 3011). World Bank. https://documents.worldbank.org/en/publication/documents-reports/documentdetail/736901468766650205/survey-compliance-and-the-distribution-of-income

Mrabet, Z., & Lanouar, C. (2012). *The impact of trade liberalization on labor market of developing countries: What can literature tell us? Journal of Economics and Behavioral Studies, 4*(6), 332–340. https://doi.org/10.22610/jebs.v4i6.346

Niño-Zarazúa, M., Roope, L., & Tarp, F. (2017). Global inequality: Relatively lower, absolutely higher. *Review of Income and Wealth*, *63*(4), 661-684.

O'Rourke, K. H., & Williamson, J. G. (1999). *Globalization and history: The evolution of a 19th century Atlantic economy*. MIT Press.

Ozler, S., & Yilmaz, K. (2009). *Productivity response to reduction in trade barriers: Evidence from Turkish manufacturing plants. Review of World Economics. Weltwirtschaftliches Archiv, 145*(2), 287–313. https://doi.org/10.1007/s10290-009-0033-2

Pavcnik, N. (2017). *The impact of trade on inequality in developing countries* (NBER Working Paper No. 23878). National Bureau of Economic Research. https://www.nber.org/papers/w23878

Paz, L. S. (2014). *The impact of trade liberalization on informal markets: A theoretical and empirical evaluation of the Brazilian case. Journal of International Economics, 92*(2), 254–270. https://doi.org/10.1016/j.jinteco.2013.12.001

Pham, C. S. (2008). *Product specialization in international trade: A further investigation. Journal of International Economics, 75*(1), 71–94. https://doi.org/10.1016/j.jinteco.2007.06.001

Pham, C. S., & Ulubasoglu, M. A. (2015). *The role of endowments, technology and size in international trade: New evidence from product-level data. Journal of International Trade and Economic Development, 25*(7), 869–896. https://doi.org/10.1080/09638199.2015.1027172

Pi, J., & Zhang, P. (2018). *Skill-biased technological change and wage inequality in developing countries. International Review of Economics and Finance, 56,* 157–170. https://doi.org/10.1016/j.iref.2018.02.012

Pi, Z. and Zhang, P. (2017). Skill-biased Technological Change and Wage Inequality in Developing Countries, *International Review of Economics and Finance*, vol. 56(4).

Qiu, Y., Han, W., & Zeng, D. (2023). Impact of biased technological progress on the total factor productivity of China's manufacturing industry: The driver of sustainable economic growth. *Journal of Cleaner Production*, *409*, 137269.

Rahim, H. L., Abidin, Z. Z., Ping, S. D. S., Alias, M. K., & Muhamad, A. I. (2014). Globalization and its effect on world poverty and inequality. *Global Journal of Management and Business*, *1*(70), 8-13. http://repository.upenn.edu/bepp_papers/70.

Ravallion, M. (2003). The debate on globalization, poverty and inequality; Why measurement matters, Policy Research Working Paper No. 3038, The World Bank.

Revenga, A. (1997). Employment and wage effects of trade liberalization; The case of Mexican manufacturing, *Journal of Labor Economics, 15*, 20–54.

Riphahn, R. T., & Serfling, O. (2005). Item non-response on income and wealth questions, *Empirical Economics, 30*(2), 503–520.

Rodríguez-Clare, A., Ulate, M., & Vásquez, J. P. (2020). Trade with Nominal Rigidities: Understanding the Unemployment and Welfare Effects of the China Shock (NBER Working Paper No. 17141). National Bureau of Economic Research.

Sala-i-Martin, X. (2007). Economic integration, growth, and poverty, Integration and Trade Sector, Inter-American Development Bank.

Sampson, T. (2016). Assignment reversals; Trade, skill allocation and wage inequality, *Journal of Economic Theory, 163*(C), 467–502.

Sanchez-Fernandez, R., & Angeles Iniesta Bonillo, M. (2007). The concept of perceived value: A systematic review of the research, *Marketing Theory, 7*(4), 427–451.

Santos, M., & Neves Sequeira, T. (2014), Skills mismatch and wage inequality: Evidence for different countries in Europe, *Technological and Economic Development of Economy, 19*(sup 1), S123–S145.

Santos-Paulino, A. U. (2012). Trade, income distribution and poverty in developing countries, a survey, Geneva: UNCTAD.

Schott, P. (2004), Across-product versus within-product specialization in trade, *Quarterly Journal of Economics, 119*(2), 647–678.

Schwellnus, C., Pak, M., Pionnier, P.-A., & Crivellaro, E. (2018). *Labour share developments over the past two decades: The role of technological progress, globalisation and "winner-takes-most" dynamics* (OECD Economics Department Working Paper No. 1503). OECD Publishing, Paris. https://doi.org/10.1787/3eb9f9ed-en

Solow, R. (1956). A contribution to the theory of economic growth, *Quarterly Journal of Economics, 70*(1), 65–94.

Solow, R. (1994). Perspectives on growth theory. *The Journal of Economic Perspectives, 8*(1), 45–68.

Stehrer, R. (2010), The effects of factor and sector biased technical change revisited, *Economic Change and Restructuring, 43*(1), 1–28.

Syverson, C. (2010). What determines productivity? NBER Working Paper No. 15712, National Bureau of Economic Research, Cambridge, MA. https://www.nber.org/papers/w15712

Szekely, M., & Hilgert, F. (1999). What is behind the inequality we measure; An investigation using Latin American data, IADB Working Paper No. 409, Inter-American Development Bank, Washington, DC.

Tabash, M. I., Elsantil, Y., Hamadi, A., & Drachal, K. (2024). Globalization and Income Inequality in Developing Economies: A Comprehensive Analysis. *Economies*, 12(1), 23. https://doi.org/10.3390/economies12010023.

Tanaka, S., Warren, L., & Wiczer, D. (2023). Earnings growth, job flows and churn. *Journal of Monetary Economics*, *135*, 86-98.

Topalova, P. (2010). Factor immobility and regional impacts of trade liberalization: Evidence on poverty from India, *American Economic Journal: Applied Economics, 2*(4), 1–41.

Topalova, P. (2010). Factor immobility and regional impacts of trade liberalization: Evidence on poverty from India, IMF Working Paper No. 218, International Monetary Fund.

United Nations. (2020). *World social report 2020: Inequality in a rapidly changing world*. United Nations.

Van De Ven, M., Lara Machado, P., Athanasopoulou, A., Aysolmaz, B., & Turetken, O. (2023). Key performance indicators for business models: a systematic review and catalog. *Information Systems and e-Business Management*, *21*(3), 753-794.

Vu, K., & Asongu, S. (2020). Backwardness advantage and economic growth in the information age: A cross-country empirical study, MRPA Paper No. 107103, https://mpra.ub.uni-muenchen.de/107103/

Wang, W., Findlay, C., & Thangavelu, S. (2021). Trade, technology, and the labour market: Impacts on wage inequality within countries, *Asian-Pacific Economic Literature, 35*(1), 19–35.

Were, M. (2015). Differential effects of trade on economic growth and investment; A cross-country empirical investigation, *Journal of African Trade, 2*(1-2), 45–67.

Williamson, J. G. (1996). Globalization, convergence, and history, *The Journal of Economic History, 56*(2), 277–306.

Winkler, E. (2019). Trade, firm wage premiums, and wage inequality: Worker-level evidence, *IZA Conference Paper*. https://conference.iza.org/conference_papers/worker-level-evidence.

Winters, A., McCulloch, N., & McKay, A. (2004). Trade liberalization and poverty; The evidence so far, *Journal of Economic Literature, 42*, 72–115.

Winters, L. A., McCulloch, N., & McKay, A. (2004). Trade liberalization and poverty: the evidence so far. *Journal of economic literature*, *42*(1), 72-115.

Wolcott, E. L. (2021). Employment inequality: Why do the low-skilled work less now? *Journal of Monetary Economics, 118*, 1–20. https://doi.org/10.1016/j.jmoneco.2021.05.004.

Wood, A., & Mayer, J. (2011). Has China de-industrialized other developing countries? *Review of World Economics, 147*(2), 217–243. https://doi.org/10.1007/s10290-011-0096-1

World Bank. (2002). Globalization, growth and poverty: Building an inclusive world economy. New York & Oxford: Oxford University Press.

Xu, B. (2001). Factor bias, sector bias, and the effects of technical progress on relative factor prices, *Journal of International Economics, 54*(1), 283–307. https://doi.org/10.1016/S0022-1996(00)00083-2

Yifu, J. L. (2016). The latecomer advantages and disadvantages; A new structural economics perspective. https://doi.org/10.1093/acprof:oso/9780198737407.003.0003

Zhao, X., Wu, D., & Wang, L. (2025). Wage Effect and Workers' Skill Mismatch: Paths and Mechanisms. *Sage Open*, *15*(1). https://doi.org/10.1177/21582440251318540 (Original work published 2025).