There is a very powerful link between trade and economic growth because countries that are closer to each other tend to trade more and have higher GDP per capita.  Countries that are isolated from trade due to policy or geography tend to have much lower GDP per capita. And that is not an accident. The evidence that trading and growth are strongly related to each other is overwhelming. Although trade is very effective at increasing economic growth, as we have seen in Japan, South Korea, Hong Kong, China, Singapore, and other countries in Asia, we have learned in the last several years that the transmission of trade into labor market outcomes is not quite as clear. Therefore, we need to do more to understand the link between trade policies and efforts to help the poorest people within a country. Specifically, we need to understand how trade policies affect trade and how trade affects labor market outcomes.

Understanding the link between trade policy and trade outcomes (increasing trade) and its connection with the labor market has motivated many empirical studies. The findings that come out of the academic literature strongly suggest that the relationship is very strong. In most cases trade agreements increase trade and, in general, lowering trade costs by reducing trade barriers and tariffs and quotas and non-tariff barriers tend to increase trade to differing degrees.

Trade is found to promote economic growth through different channels. As trade barriers are lifted, trade agreements among countries signed, new opportunities for companies in tradable sectors expand. At the firm level, there is clear evidence that expanding export markets can increase labor demand, which in turn, increases employment and/or wages in the country. For example, in the last three decades East Asia and Pacific (EAP) experienced an impressive economic growth with rising income and increasing share of manufactures exports. Structural reforms contributed to openness to trade, which created millions of new jobs. Over the same time, poverty fell dramatically. China’s export-orientation in the last 30 years created job opportunities in manufacturing and services, rising households’ incomes though higher wages and increased remittances from migrant workers.[[1]](#footnote-1) While it is hard to quantify what proportion of the dramatic poverty reduction in China can be directly attributed to trade, there is no doubt that it played a fundamental role. China is far from the only example. Cambodia’s strong commitment to economic openness since the 1990s contributed to sustained economic growth averaging 7 percent per annum in the first decade of the 2000s. In 2015, Cambodia achieved lower-middle income status, coinciding with an impressive reduction of the proportion of people living in poverty from ≈40 percent to 17.8 percent between 1990-2020 (Roche et al 2024). Vietnam is another excellent example of rising trade and its positive effects on poverty reduction. Export-led growth has been critical to Vietnam's transition from one of the poorest countries in the world to a lower-middle income country ( Vu et al 2024).

We know, however, that there are also concerns. Trade involves imports and exports. On the import side, for example, there are cases in which trade agreements allow for imports to expand, which can have adverse effects on import competing industries and reduce labor demand. Indeed, there is solid evidence that these import competition effects tend to be very regionally concentrated within the country. This is because, typically, there are industrial clusters of the competing sectors, and therefore labor displacement tends to be very localized. Most of the empirical evidence is in developed countries and slowly this is being applied to developing countries. In our World Bank Global Report on the “Distributional Impacts of Trade (2023)”, we present empirical evidence for countries such as Mexico, Brazil, Bangladesh, South Africa, Sri Lanka that undertook trade liberalization. For example, in the cases of Brazil and South Africa trade liberalization led to diversification of exports and an increase in income but also greater income disparity. Restrictions to mobility either geographically or deterrence to booming industries widen wage gaps. On the other hand, in Bangladesh, relatively low migration barriers meant that workers move to sectors with booming economic opportunities.

What is key, therefore, is that by anticipating these effects at the earliest stage of a trade agreement, it is possible to design labor market policies and social protection policies to better prepare for the adjustment. Policies should have three main goals: reduce distortions, reduce trade costs, and speed up labor market adjustment. Active labor market policies, such as training and providing information about opportunities, make it easier for workers to move between industries and take advantage of those expanding sectors. In addition, a robust unemployment insurance and a system that ensures the continuity of healthcare for affected workers and their families will help the transition. Because the impacts are expected to be localized, it is also important to target policies for the community while lowering barriers to mobility so that people can take advantage of economic opportunities that are open by trade.

Our approach builds upon several recent empirical papers. Pioneering research by Topalova (2010) studies the effects of tariff changes on poverty rates across India’s districts. The author measured the effective changes in tariff rates for districts (zila) by weighting industry-level changes with the number of workers in each district. One of Topalova’s (2010) key contributions was to implement an approach proposed by Bartik (1991). This approach takes advantage of a concentration of production and local labor markets to identify the relationship between globalization and local labor market outcomes. More specifically, Topalova calculates the effective change in import protection for Indian districts after the 1991 trade reform. The variation in the author’s sample comes from differences among districts in their industry and import compositions. The districts with a larger share of import-competing sectors and sectors with larger tariff reductions are exposed more severely to the trade liberalization shocks. Topalova assumes that tariff reductions are exogenous to the districts, since they were planned by the central government through international agreements.

Several studies have used variations of this approach but have reached different conclusions. Topalova (2010) shows that poverty rates increased (or decreased more slowly) in districts that were more exposed to the trade shocks. One concern about the Topolova (2010) study, however, is that the study assumes zero tariffs for nontraded sectors such as services, and includes those sectors in the analysis. In reality, however, nontraded sectors face trade costs that are prohibitive, which is more consistent conceptually with infinite tariffs than with zero tariffs. Hasa, Mitra, and Ural (2007) argue that changing the zero tariffs to prohibitive levels generates results that suggest that trade shocks potentially reduced poverty in India. Although their results contrast with Topalova (2010), they use a similar Bartik (1991)-based instrument in their research.

Other studies have also found that local labor markets play an important role in understanding the effects of globalization on labor market outcomes. Using an empirical approach suggested by Hasan, Mitra, and Ramasmawy (2007), Krishna, Mitra, and Sundaram (2010) show that the positive impact of trade liberalization on poverty reduction is less significant in lagging regions in India, Sri Lanka, Bangladesh, Pakistan, and Nepal. In a related study, Hasan et al. (2012) show that trade protection is negatively correlated with state-level unemployment; this correlation is especially strong for states that have high employment in exporting industries.

In Brazil, Menezes-Filho and Muendler (2011) find that low tariffs on intermediate inputs were associated with a lower likelihood of unemployment and higher formal sector employment. Kovak (2013) uses an instrument based on tariff changes, similar to Topalova (2010), to analyze the impact of trade liberalization on Brazil’s labor markets. Unlike the previous research, the study uses a semi-structural approach based on a general theoretical model. Kovak shows the exact specification for the instrument that is consistent with the economic theory. The author argues that the effects of trade shocks on local labor markets are larger when localities are more exposed to trade through higher producer prices, larger employment shares in import-competing sectors, and higher elasticities of labor demand. Dix-Carneiro and Kovak (2017) find that, lower tariffs had the opposite effect, result­ing in higher informality in Brazilian micro-regions that were more exposed to tariff reductions, even 20 years after the trade reform. Similarly, after examining annual vari­ations in tariffs between 1993 and 2001, Sarra and Bombarda (2018) find that regional exposure to Mexican tariff reductions boosted the probability of formal employment in tradable sectors, especially for men. This may have been driven by the fact that export-oriented sectors benefited from the fall in Mexican tariffs as intermediate inputs became cheaper.

There is evidence that export growth has resulted a large and persistent beneficial impact on informality and wages. Hasan et al. (2012) find that trade protection is negatively correlated with state-level unemployment, a correlation that is especially strong for states with high employment in exporting industries. They also find that lower tariffs reduce unemployment rates by about 41 percent in states with flexible labor markets and large export shares. Using a similar methodological framework as ADH, Artuç et al. (2019) find that, more recently, larger exports per worker have resulted in higher wages for those typi­cally working in the formal sector (especially high-skilled workers) and less infor­mality for many marginalized groups in India (1999–2011) and Sri Lanka (2002–13). In districts in India that are more export-intensive, a US$100 export increase per worker resulted in an annual wage increase of Rs 572 per worker. Higher exports also drew workers from the informal sector into the formal sector, especially women and low-skilled workers. For Sri Lanka, a US$100 increase in exports per worker resulted in an average wage increase of SL Rs 975 and an average income increase of SL Rs 206.

Unlike with India, not many studies of Bangladesh have investigated how trade impacts local labor markets. Bangladesh has been successful in accelerating its export growth over the years by mostly concentrating on the ready-made garments sector. In turn, its exports are far less diversified than those of its neighbors and other com­parators. There is, though, a dearth of empirical evidence on how this sector-specific export growth has affected local economic outcomes in the country. A recent study finds that a greater export orientation triggers a short-term increase in both formal and informal employment, as well as a longer-run increase in self-employment (Goutam et al. 2017). Using a reduced form model such as ADH, Goutam et al. 2017 find that trade increases labor force participation and formal employment in Bangladesh. Moreover, there is an even larger impact on labor force participation if the indirect impacts of trade in the form of induced demand through supply chain linkages are included.

For Brazilian workers, empirical evidence shows that the dynamic process of adjust­ment to trade liberalization reforms has been painful, bringing bigger declines in wages and lower employment over time. Between 1991 and 2002, Kovak (2013) finds that microregions in Brazil facing liberalization-induced price declines greater than 10 percent experience 4 percent more declines in wages. Building upon this work, Dix-Carneiro and Kovak (2017) show that microregions facing larger tariff cuts experience prolonged declines in for­mal sector employment and earnings relative to other microregions: the impact of tariff changes on regional earnings 20 years after liberalization is three times the effect after 10 years Workers initially working in tradable sectors are more likely to locally transition to nontradable sectors, but this response is not enough to offset the strong declines in formal employment in tradable sectors. Workers in nontradable sectors in harder-hit areas are similarly affected, indicating large spillovers from tradable to nontradable sectors. Why does this occur? The authors suggest there is a mechanism involving imperfect interregional labor mobility and dynamics in labor demand, driven by slow capital adjustment and agglomeration economies. These unfavorable results are consistent with conclusions by Góes et al. (2019), who deviate from the reduced-form methodology employed by these earlier studies and instead use a general-equilibrium model that aggregates information on production, employment, wages, prices, imports, and exports in 57 economic sectors in Brazil.

Most of the adjustment in Brazil takes place through the informal sector, which acts as a buffer for trade-displaced workers. Dix-Carneiro and Kovak (2017) show that, after Brazil’s trade liberalization in the 1990s, microregions more exposed to foreign competition faced higher unemployment in the medium term relative to the national average. In the long run, however, foreign competition had no effect on unemployment, but there was a significant positive effect on informal employ­ment at the local level. This view of the informal sector serving as a buffer is cor­roborated by Ponczek and Ulyssea (2018), who show that the medium-term effect of liberalization-induced foreign competition on unemployment was larger in microregions where labor market regulations were more strictly enforced, making labor shifts harder. The role of the informal sector as an important margin of labor market adjustment to trade has gained prominence in the literature in last two decades.

What about the effects of an import and export shock on migration across microre­gions and labor reallocation from the formal sector to nonemployment within these regions? Using an instrumental-variable approach, Brummund and Connolly (2019) examine Brazil’s unique trade relationship with China to analyze this question. They find that export exposure reduces the movement of workers from the traded sec­tor to nonemployment and increases the movement of workers from nonemployment to the nontraded sector. These movements are primarily driven by the manufacturing sector. This is in stark contrast to the negative impacts on microregions that are more exposed to imports, which show more reallocation from manufacturing to nonem­ployment, and less movement from the traded sector to the nontraded sector. It thus seems that Brazilian labor markets responded more dynamically to the China shock than they did to the 1990s trade reforms.

The literature on the distributional impacts of trade in Brazil reveals a multifaceted landscape where trade liberalization has had varied effects across different regions, sectors, and income groups. Key themes include wage inequality, regional disparities, and the effects on poverty and employment. Below is a summary of significant findings along with references.

### 1. \*\*Wage Inequality and Employment\*\*

Trade liberalization in Brazil, particularly since the 1990s, has been associated with increased wage inequality. This is largely attributed to the differential impacts on skilled versus unskilled labor. Research indicates that industries with greater exposure to international competition have seen relative wage declines for unskilled workers while skilled workers have often benefited from higher wages due to increased demand for their labor.

- \*\*References:\*\*

- Porto, G. G. (2006). "Using Survey Data to Assess the Distributional Effects of Trade Policy." \*Journal of International Economics\*, 70(1), 140-160.

- Menezes-Filho, N., & Muendler, M.-A. (2011). "Labor Reallocation in Response to Trade Reform." \*American Economic Review\*, 101(3), 417-423.

### 2. \*\*Regional Disparities\*\*

Trade has also exacerbated regional disparities in Brazil. States with higher levels of industrialization, particularly in the South and Southeast, have benefited more from trade openness compared to less industrialized regions in the North and Northeast. This has led to a concentration of economic growth and job creation in already developed areas, leaving other regions behind.

- \*\*References:\*\*

- Dix-Carneiro, R., & Kovak, B. K. (2017). "Trade Liberalization and Regional Dynamics." \*American Economic Review\*, 107(10), 2908-2946.

- De Carvalho, J. A., & Souza, R. (2015). "Regional Disparities and Trade Liberalization in Brazil." \*Economia Aplicada\*, 19(3), 417-440.

### 3. \*\*Poverty and Inequality\*\*

Trade liberalization has had mixed effects on poverty in Brazil. While some studies show that trade has contributed to poverty reduction by lowering the cost of goods and creating new job opportunities, others highlight that the benefits are unevenly distributed, often favoring those who are already better off. Consequently, while some individuals have moved out of poverty, others have seen little change or even worsening conditions due to job displacement or wage reduction in vulnerable sectors.

- \*\*References:\*\*

- Ferreira, F. H. G., Leite, P. G., & Wai-Poi, M. (2007). "Trade Liberalization, Employment Flows, and Wage Inequality in Brazil." \*World Bank Economic Review\*, 21(1), 109-134.

- Goldberg, P. K., & Pavcnik, N. (2007). "Distributional Effects of Globalization in Developing Countries." \*Journal of Economic Literature\*, 45(1), 39-82.

### 4. \*\*Sectoral Impacts\*\*

Different sectors in Brazil have responded differently to trade liberalization. The agricultural sector, for instance, has generally benefited from increased access to international markets, leading to growth and income gains for farmers. In contrast, some manufacturing sectors, particularly those unable to compete with cheaper imports, have experienced job losses and reduced profitability.

- \*\*References:\*\*

- Nogueira, J. R. M., & Lima, G. T. (2015). "Trade and Sectoral Productivity: Evidence from Brazilian Manufacturing." \*Economic Systems Research\*, 27(2), 125-145.

- Kume, H., Piani, G., & Souza, C. R. (2003). "A Política Brasileira de Importação no Período 1987-98: Descrição e Avaliação." \*Revista Brasileira de Economia\*, 57(4), 635-676.

### Conclusion

The literature underscores the complexity of trade's impact on Brazil, highlighting that while trade liberalization can spur economic growth and integration into global markets, it also poses significant challenges in terms of equitable distribution of benefits. Policymakers need to consider these distributional impacts to ensure that trade policies support inclusive and sustainable economic development.

Here are key references on the distributional impacts of trade in Brazil:

**1. Income Inequality**

* **Goldberg, P. K., & Pavcnik, N. (2007)**. "Distributional Effects of Globalization in Developing Countries." Journal of Economic Literature, 45(1), 39-82.
  + This paper discusses the overall distributional impacts of globalization, including trade liberalization in developing countries like Brazil, highlighting its effects on income inequality.
* **Pavcnik, N., Blom, A., Goldberg, P. K., & Schady, N. (2004)**. "Trade Liberalization and Industry Wage Structure: Evidence from Brazil." The World Bank Economic Review, 18(3), 319-344.
  + This study examines how trade liberalization has affected wage inequality in Brazil’s industrial sector, showing an increase in the skill premium.

**2. Regional Disparities**

* **Ferreira, F. H. G., Leite, P. G., & Wai-Poi, M. (2007)**. "Trade Liberalization, Employment Flows, and Wage Inequality in Brazil." World Bank Policy Research Working Paper No. 4108.
  + This paper analyzes the regional impacts of trade liberalization on employment and wages, noting significant regional disparities.
* **Gonzaga, G., Menezes-Filho, N. A., & Terra, C. (2006)**. "Trade Liberalization and the Evolution of Skill Earnings Differentials in Brazil." Journal of International Economics, 68(2), 345-367.
  + Focuses on the differences in regional impacts of trade liberalization on earnings, with a particular focus on skill differentials.

**3. Sectoral Shifts**

* **Hanson, G. H., & Harrison, A. (1999)**. "Trade Liberalization and Wage Inequality in Mexico." Industrial and Labor Relations Review, 52(2), 271-288.
  + Although focused on Mexico, this paper provides a comparative perspective relevant to understanding sectoral shifts in Brazil due to trade.
* **Muendler, M. A. (2004)**. "Trade, Technology, and Productivity: A Study of Brazilian Manufacturers, 1986-1998." CESifo Economic Studies, 50(1), 105-115.
  + Examines the impact of trade on the manufacturing sector in Brazil, highlighting productivity changes and sectoral shifts.

**4. Labor Market Effects**

* **Carneiro, F. G., & Arbache, J. S. (2003)**. "The Impacts of Trade on the Brazilian Labor Market: A CGE Model Approach." World Development, 31(9), 1581-1595.
  + Utilizes a Computable General Equilibrium (CGE) model to assess the labor market impacts of trade in Brazil.
* **Porto, G. G. (2006)**. "Using Survey Data to Assess the Distributional Effects of Trade Policy." Journal of International Economics, 70(1), 140-160.
  + Provides an analysis of how trade policy impacts different segments of the labor market in Brazil.

**5. Poverty Alleviation**

* **Barros, R. P., & Corseuil, C. H. (2001)**. "The Impact of Trade Liberalization on the Employment Structure in Brazil." IPEA Working Paper No. 829.
  + Investigates the effects of trade liberalization on employment and poverty, noting improvements in poverty levels but persistent inequalities.
* **Neri, M. C., & Thomas, M. (2000)**. "Household Income and Employment Impact of Trade Liberalization on Poverty in Brazil." In "Trade and Poverty" edited by Ann Harrison, World Bank.
  + Analyzes the household-level impacts of trade liberalization, showing its effects on poverty reduction.

**6. Policy Implications**

* **Rodrik, D. (2018)**. "Populism and the Economics of Globalization." Journal of International Business Policy, 1(1-2), 12-33.
  + Discusses the broader policy implications of globalization and trade, relevant to Brazil’s context.
* **Moreira, M. M., & Najberg, S. (2000)**. "Trade Liberalization in Brazil: Creating or Exporting Jobs?" Journal of Development Studies, 36(3), 78-99.
  + Focuses on the policy measures necessary to maximize the benefits of trade and mitigate its adverse impacts on employment.

**7. Environmental Considerations**

* **Hargrave, J., & Kis-Katos, K. (2013)**. "Economic Causes of Deforestation in the Brazilian Amazon: A Panel Data Analysis for the 2000s." Environmental and Resource Economics, 54(4), 471-494.
  + Examines the environmental impacts of trade, particularly deforestation in the Amazon due to agricultural expansion.

These references provide a comprehensive overview of the distributional impacts of trade in Brazil, covering various aspects from income inequality to regional disparities and labor market effects.

4o

Summary of the literature on the distributional impacts of trade in Brazil with References

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**Summary of Literature on the Distributional Impacts of Trade in Brazil**

**1. Income Inequality**

* **Trade Liberalization**: Trade liberalization in Brazil has had mixed impacts on income inequality. While it has lowered consumer prices and increased access to goods, it has also widened the wage gap between skilled and unskilled workers.
  + **Goldberg, P. K., & Pavcnik, N. (2007)**. "Distributional Effects of Globalization in Developing Countries." Journal of Economic Literature, 45(1), 39-82.
  + **Pavcnik, N., Blom, A., Goldberg, P. K., & Schady, N. (2004)**. "Trade Liberalization and Industry Wage Structure: Evidence from Brazil." The World Bank Economic Review, 18(3), 319-344.

**2. Regional Disparities**

* **Regional Effects**: Trade impacts vary significantly across regions. The more industrialized Southern and Southeastern Brazil benefit more from trade liberalization than the less developed Northern and Northeastern regions.
  + **Ferreira, F. H. G., Leite, P. G., & Wai-Poi, M. (2007)**. "Trade Liberalization, Employment Flows, and Wage Inequality in Brazil." World Bank Policy Research Working Paper No. 4108.
  + **Gonzaga, G., Menezes-Filho, N. A., & Terra, C. (2006)**. "Trade Liberalization and the Evolution of Skill Earnings Differentials in Brazil." Journal of International Economics, 68(2), 345-367.

**3. Sectoral Shifts**

* **Manufacturing and Agriculture**: The manufacturing sector faces increased competition from imports, leading to structural changes. The agricultural sector, particularly in commodities where Brazil has a comparative advantage, generally benefits.
  + **Hanson, G. H., & Harrison, A. (1999)**. "Trade Liberalization and Wage Inequality in Mexico." Industrial and Labor Relations Review, 52(2), 271-288.
  + **Muendler, M. A. (2004)**. "Trade, Technology, and Productivity: A Study of Brazilian Manufacturers, 1986-1998." CESifo Economic Studies, 50(1), 105-115.

**4. Labor Market Effects**

* **Employment and Wages**: Trade impacts on employment and wages are complex. While some studies show overall job growth, others highlight job losses in specific industries. There is also evidence of wage polarization.
  + **Carneiro, F. G., & Arbache, J. S. (2003)**. "The Impacts of Trade on the Brazilian Labor Market: A CGE Model Approach." World Development, 31(9), 1581-1595.
  + **Porto, G. G. (2006)**. "Using Survey Data to Assess the Distributional Effects of Trade Policy." Journal of International Economics, 70(1), 140-160.

**5. Poverty Alleviation**

* **Poverty Reduction**: Trade openness is associated with poverty reduction through lower consumer prices and economic growth. However, the benefits are unevenly distributed.
  + **Barros, R. P., & Corseuil, C. H. (2001)**. "The Impact of Trade Liberalization on the Employment Structure in Brazil." IPEA Working Paper No. 829.
  + **Neri, M. C., & Thomas, M. (2000)**. "Household Income and Employment Impact of Trade Liberalization on Poverty in Brazil." In "Trade and Poverty" edited by Ann Harrison, World Bank.

**6. Policy Implications**

* **Trade and Industrial Policies**: Effective policies include investment in education and training, social safety nets for displaced workers, and regional development programs to address disparities.
  + **Rodrik, D. (2018)**. "Populism and the Economics of Globalization." Journal of International Business Policy, 1(1-2), 12-33.
  + **Moreira, M. M., & Najberg, S. (2000)**. "Trade Liberalization in Brazil: Creating or Exporting Jobs?" Journal of Development Studies, 36(3), 78-99.

**7. Environmental Considerations**

* **Environmental Impacts**: Trade-driven agricultural expansion raises concerns about deforestation and environmental degradation, especially in the Amazon.
  + **Hargrave, J., & Kis-Katos, K. (2013)**. "Economic Causes of Deforestation in the Brazilian Amazon: A Panel Data Analysis for the 2000s." Environmental and Resource Economics, 54(4), 471-494.

**Conclusion**

The distributional impacts of trade in Brazil are complex, with trade liberalization benefiting certain regions and sectors while exacerbating inequalities in others. Effective policy measures are essential to ensure that the benefits of trade are more equitably distributed and that adverse impacts are mitigated

Unlike Brazil, Vietnam’s experience of reallocation after trade reforms has been starkly different. In a study analyzing the labor market impacts of Vietnam’s free trade agreement with the United States, McCaig and Pavcnik (2018) find a significant reallocation of labor from informal household businesses to employers in the formal enterprise sector. The reallocation was larger in industries and regions that experi­enced larger declines in US tariffs on Vietnamese exports and also among younger workers.

The study also suggests that expanded export opportunities increased employment among manufacturing firms by 15 percent. At the same time, the aggregate share of household businesses declined in Vietnam during the early 2000s. Within the context of trade theory, the results indicate that the removal of export market distortions, which harm the profitability of more productive firms, induces a movement of labor away from less productive employers in the small business sector toward the more productive formal enterprise sector. In turn, this leads to sizable gains in aggregate productivity.

As for Indonesia, which has one of the highest mobility costs among developing countries, Agustina (2018) finds negative impacts of increased import competition between 2007 and 2013 on manufacturing employment share, nonmanufacturing employment share, and wages. And Cali, Hidayat, and Hollweg (2019) suggest that workers in more remote regions (especially in eastern Indonesia) face particularly high mobility costs. Not surprisingly, then, workers were unable to adjust to these trade shocks and became unemployed, with the highest impact driven by imports of con­sumption goods.

By contrast, the work of Kis-Katos and Sparrow (2015) and Kis-Katos, Pieters, and Sparrow (2018) shows positive labor market consequences across Indonesia’s regions following the liberalization of trade in intermediate inputs. Specifically, the authors find that poverty decreased more in regions that were more strongly exposed to the liberalization of tariffs for intermediate inputs. Among the potential channels behind this were the formalization of the unskilled labor force and structural reallocation of labor. Job formation and increases in unskilled wages were related to lower import tariffs on intermediate goods and retaining import tariffs on final outputs at their cur­rent levels. This reiterates the point that it is vital to distinguish between the type of imports being affected by tariff reductions when analyzing the impacts of greater import competition on welfare.

Not much is known about the local labor market impacts of trade in sub-Saharan Africa, but a recent study shows that trade impacts operate through the employment channel rather than the income channel. Erten, Leight, and Tregenna (2019) provide strong causal evidence on the effects of a quasi-exogenous reduction in import tariffs on local economies in South Africa between 1994 and 2004, the period of rapid trade liberalization. The results suggest that workers employed in districts facing larger tariff reductions experienced a significant decline in employment driven primarily by a decline in manufacturing sector employment relative to workers in districts facing smaller tariff reductions.

These displaced workers were unable to reallocate into other sectors. Instead, they were more likely to become discouraged, unemployed workers or exit the labor force entirely. Unlike in other countries, they also were not absorbed by the informal econ­omy. When examining differences with respect to education and race, the observed employment effects were consistent for individuals at varying education levels, but among relatively less-educated workers, non-white workers faced a higher likelihood of employment loss. By contrast, there was no evidence of significant differences with respect to gender, age, or location.

This study shows a concentration of negative impacts of trade on employment in certain regions or local labor markets and groups (black and other nonwhite workers), despite the reintegration of homelands into South Africa after 1994. This report adds to this evidence base by further analyzing how persistent these impacts on local labor markets are in the medium to long term—given the sharp tariff reductions observed after the democratic elections—by drawing upon municipal-level data from South Africa for the period 1996–2011.

**Conclusion**

Overall, substantial methodological advances in the literature have strengthened our ability to understand the complex relationship between trade, labor income, and con­sumption at the subnational level within countries. Trade clearly has brought overall gains to households and is critical to the reduction of poverty, but labor market and consumption gains have been concentrated in some regions and groups.

In addition, the evidence base is limited to a few countries, and several knowledge gaps remain despite significant advances in the understanding of the ex post and ex ante impacts of trade shocks. The disproportionate emphasis on examining the dis­tributional impacts of trade on labor markets (wages and employment) is clearly evident, while impacts on consumer prices remain relatively less understood because

The Bartik (1991) approach used in these studies has also been applied to developed countries. Hakobyan and McLaren (2016) applied the Topalova (2010) instrument to local labor markets in the United States, using the change in tariffs due to the North American Free Trade Agreement (NAFTA). They find that the impact of NAFTA shocks to the industry-level labor market were as important as the agreement’s impact on the local-level labor market. Unlike previous research, they based the analysis on worker data directly via Mincer (1958)-like wage regressions with instruments. This modification allowed them to specify very sophisticated and detailed regression equations. A follow-up paper by Hakobyan and McLaren (2017) uses a similar empirical methodology (and additional theoretical analysis) to study the differential impact of NAFTA on male and female wages and employment. They find that this gender differential is extremely difficult to explain with standard economic theory or as labor market discrimination.

A methodology similar to Topalova (2010) and Bartik (1991) was later adopted by Autor, Dorn, and Hanson (2013) (henceforth ADH) to study the impact of China’s rapid growth on local labor markets in the United States that were defined as commuting zones. ADH contributed to the research on trade and local labor markets in two important aspects. First, it is virtually impossible to argue against the exogeneity of their instrument. This is because ADH use growth of China (measured by the change in exports of China to countries other than the United States) as the main instrument, rather than a potentially endogenous policy variable such as tariffs. Second, ADH identified one of the largest negative exogenous shocks to labor demand in recent history, that is, China’s rapid growth. This discovery attracted a great deal of attention.

Following the success of these papers, the Bartik (1991) methodology, as revised by ADH, became the gold standard in empirical trade literature for analyzing labor market effects of trade shocks. (See Autor, Dorn, and Hanson (2016) for a detailed literature review of the China shock.)

Many prominent papers followed some variations of the ADH methodology. Acemoglu and Restrepo (2017) analyzed the impact of automation on local labor markets. Feler and Senses (2017) showed the impact of China shock on provision of local public goods. Dix-Carneiro and Kovak (2017) showed that the negative impact of trade shocks can have persistent effects that are larger in the long run compared to short and medium runs. Pierce and Schott (2016) showed the impact of trade shocks on manufacturing employment, and Utar (2015) looked at the wage impacts.

A parallel line of research in the international trade literature focused on trade liberalization shocks using matched employer-employee data rather than geography-based data. Autor et al. (2014) show the effect of the China shock using both micro-level worker data and firm-level data. A similar methodology was implemented previously by Menezes-Filho and Muendler (2011) to show the impact of trade liberalization in Brazil on employment. In Brazil, individual worker trajectories in the labor market after trade liberalization in the 1990s showed significant worker displacement resulting in very slow transition not only to services but also to unemployment as well as out of the labor force. Another example is Hummels et al. (2014) that showed the impact of offshoring on Danish workers with matched employer-employee data.

The fundamental implicit assumption behind these studies is that workers are essentially entangled by labor market frictions and mobility costs. Other papers, however, focus on these costs explicitly. One of the first papers about labor market frictions in the trade literature is Artuc, Chaudhuri, and McLaren (2010). They show that workers incur very large costs when they try to change industries after trade shocks. Follow-up work by Artuc and McLaren (2015) shows large frictions for occupational mobility as well. Caliendo, Dvorkin, and Parro (2015) combine the Artuc, Chaudhuri, and McLaren (2010) framework with Caliendo and Parro’s (2015) input-output linkage analysis and show that a model with labor mobility frictions can explain the ADH model findings on local labor markets. This paper is critical for understanding the mechanism behind the ADH approach.

If workers were not entangled, the labor markets in all districts would be fully integrated into the national labor market. In other words, if workers were not entangled, a trade shock would impact all workers similarly independent of their location or region. There is clear evidence that workers are, indeed, entangled. As a result, we focus on how a change in exports may impact workers in a given region. The effect of a change in exports would be (mostly) contained within the region since the factors cannot move freely from import-competing, industry-intensive regions to export industry-intensive regions.

These papers usually exploit the variation in the trade exposure of districts based on employment shares. For example, regions with high shares of import-competing industry employment are exposed to more intensive trade shocks than districts with high shares of nontraded or export industry employment. This research calculates the impact of tariffs changes or export shocks weighted by the employment shares for each district. The employment share of industries in each district is taken from a time prior to the shock to ensure the exogeneity of the shares. Then the papers look at the impact of trade shocks on employment and wage outcomes for districts, with an instrumental difference-in-difference approach.

Our empirical approach is similar to these previous studies because we also employ the Bartik (1991) approach. Our approach is different from previous studies because we focus on exports, while most previous research on trade and local labor markets focuses on negative shocks, such as increasing competition due to growth of China, automation, exchange rates, or tariff reduction. One significant exception to the negative focus of the literature is Hasan et al. (2012). Although they use a measure based on protection (rather than exogenous export shocks), they also discuss the role of export-sector employment shares on trade shocks, with a partial focus on export shocks. From this perspective, this chapter is closely related to Hasan et al. (2012) and provides evidence consistent with their findings, despite the use of a different methodology and the focus on different economic outcomes.

We employ a geography-based Bartik (1991)-type instrument of trade exposure in …..regions similar to most of the papers just discussed. However, unlike the previous literature, we focus on positive exogenous demand shocks calculated by import demand from XXXX for Brazilean exports. We describe the approach in detail in the next section.

1. Chen and Ravallion (2004); Hertel, Zhai, and Wang (2004); and Sicular and Zhao (2004) [↑](#footnote-ref-1)