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By

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ABSTRACT

This paper examines the effect of U.S. imports from Mexico on state-level unemployment rates compared to imports from Canada and China. Given the high degree of economic integration between the U.S. with Mexico and Canada, and the high degree of domestic content in imports from these countries, I expect a positive relationship with local employment. In contrast, the low level of domestic content from Chinese imports should negatively affect local market outcomes. The results suggest that imports from Canada and China have an effect consistent with my hypothesis such that trade between countries that share production is associated with lower unemployment while imports from countries that mostly trade final goods have an adverse effect on unemployment rates. Results from Mexico are inconsistent with this hypothesis. Despite having almost 40 percent of U.S. content, imports from Mexico have a similar effect as imports from China and are associated with higher state-level unemployment rates. I conclude that the large wage differential between the U.S and Mexico continues to be the main driver behind the effect of imports on the labor market. As Mexican wages begin to rise, production sharing will become the driver of the effect between imports and employment rates.
I would like to dedicate this thesis to my beloved wife Claudia, thank you for your love and constant support. This journey would not have been the same without you.

I would also like to give special thanks to my parents for their moral support and constant encouragement. Thank you for making me into who I am.

Porfirio Diaz Gonzalez Basurto
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Introduction

In recent years, the increasing integration of emerging markets to the global economy has intensified a long standing debate about the effects of international trade on employment in developed countries. Expanding international trade has commonly been offered as a strong argument for explaining a decline in the employment rate of industrialized economies (Hiebert & Vansteenkiste, 2010).

Although many other economists have also historically taken the point of view that trade and unemployment are unrelated (Francis & Yuqing, 2011), politicians, the media and the general public in the U.S. usually agree with the opinion that international trade and unemployment are closely related.a

The focus of this paper is to compare the effect of trade on unemployment between the U.S. and Mexico with the effect of trade between the other two U.S. top trading partners: Canada and China. Given there is general agreement that exports have a positive relationship with employment, I will turn my focus on U.S. imports. I will analyze its relationship with state-level unemployment, controlling for the states’ economic conditions, labor characteristics and population conditions.

I argue that the effect of imports on unemployment depends on the level of economic integration between trading countries. As such, given the high degree of “product sharing” between the U.S. and Mexico, imports between both countries should have a positive relationship with local U.S. employment. A similar positive relationship should be present in the

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a Pew Research Center, “Americans are of two minds on trade”, November 9, 2010
Canadian case. In contrast, given the low degree of economic integration between China and the U.S., I expect imports will have a negative relationship with local employment.

My final results suggest that imports from Canada and China support the hypothesis that production sharing determines the effect of imports on state-level unemployment rates. A one percent increase in state-level imports from Canada is predicted to cause a 0.004 percentage point reduction in unemployment, while a one percent increase in total U.S. imports is associated with a 0.138 percentage point increase in local employment rates. State-imports from China are not statistically significant, while total U.S. imports predict, on average, a 0.0225 percentage point state unemployment rate increase. Results from Mexico are inconsistent with the hypothesis. Despite the high level of economic integration, state-level imports are associated with a 0.0078 percentage point increase in local unemployment, and total U.S. imports predict a 0.0494 percentage point unemployment rate rise. I argue that the wage differential between both countries may offset the production sharing argument and be the main driver behind the effect of imports on the labor market. I believe that as Mexican wages begin to rise, the effect will begin to reverse.

This paper is organized as follows: I will provide a background of the economic relationship between Mexico and the United States, and a brief overview of the current debate on the effect of international trade on employment in Section 2. Next, I will describe my theoretical model in Section 3. In Section 4 I will discuss the empirical model, explain the variables I use and provide descriptive statistics. Section 5 will focus on presenting the results. In section 6 I will discuss some potential limitations. Finally, some concluding remarks and policy recommendations will be provided in Section 7.
Section 2: Background and Literature Review

Economic ties between Mexico and the United States

The Mexican and U.S. economies are closely integrated with goods, services, capital and people traveling back and forth between the two nations at unprecedented rates. In trade, Mexico is second only to Canada as the largest export market for the United States, purchasing $216 billion in U.S. goods in 2012.\(^b\) Mexico and the United States are top sources of both immigrants and tourists for each other, as well as important destinations for foreign investment and services exports (Wilson, 2011).

The North American Free Trade Agreement (NAFTA) eliminated many barriers to trade and investment between the two countries. As a consequence, there was an increased economic integration between the U.S. and Mexico after its implementation that led to a quadrupling of trade between the two countries since 1994 (Wilson, 2011).

The economic relationship between Mexico and the U.S. however, represents a larger portion of Mexico’s total economy than for the United States. Mexico’s economy is less than one-fourteenth the size of the United States and is considerably less wealthy. At $8,545 U.S. dollars, its 2012 GDP per capita was approximately one fifth the U.S. level.\(^c\) The divergence in wealth between the two countries translates into a significant disparity in the countries’ labor costs. As a result, Mexico’s economy is oriented toward the production of labor intensive goods while the United States produces more capital intensive goods (Wilson, 2011).

Nonetheless, exports to Mexico are vitally important to the U.S. economy and the livelihood of millions of Americans. According to a Wilson Center publication, 6 million jobs are supported by U.S. exports to Mexico (Wilson, 2011). The border states of California and Texas are home to the most, but states far away from the border also depend on exports to Mexico to sustain their economies. New York, Florida, Illinois, Pennsylvania and Ohio have more than two hundred thousand Mexico-export-related jobs each, and a total of twenty two states have over one hundred thousand (Wilson, 2011).

Despite the large and growing number of U.S. jobs dependent on trade with Mexico, many have argued that the economic relationship between the United States and Mexico has had a strong effect on employment displacement. On one side of the trade debate are those who argue that, although exports create jobs, imports represent domestic job losses, as production tends to move to labor-intensive countries. On the other side are the economists who say that not only increased exports, but imports also create jobs and benefit the economy. They argue that cheaper inputs reduce U.S. manufacturer’s costs, making domestic industries more competitive, thus increasing sales and producing jobs. Since both visions agree that U.S. exports increase American jobs, any analysis of the impact of international trade on U.S. employment must address the relationship between imports and the labor market.

**Negative impact of U.S. imports**

Those who highlight the negative effects of international trade on U.S employment point out that NAFTA made Mexico a much safer and more attractive location to invest and outsource
U.S. manufacturing production. NAFTA’s investment provisions provided a mechanism for settling disputes that improved the safeguards for foreign investors in Mexico. (Scott, 2011). As a consequence, the Trade Agreement greatly reduced the risk of doing business in Mexico, and substantially increased U.S. investment in the country.

On the other hand, Scott (2011) argues that stagnant wages south of the border have limited consumption for exports from the United States. Parts, supplies and components for use in Mexican export-oriented factories increased initially, but declined afterwards as Mexican supply chains expanded. Since U.S. imports from Mexico grew much more rapidly than exports to Mexico after NAFTA, the trade deficit grew rapidly.

As a consequence, from having a small trade surplus in 1993, by 2012 exports to Mexico totaled $216 billion, but imports were $283.8 billion, resulting in a $66 billion U.S. trade deficit with Mexico in that year.\(^d\)

Scott (2011) is one of the scholars that argues that international trade with Mexico has had an overall negative effect on the labor market. According to his calculations, and contrary to what Wilson (2011) maintains, U.S. exports to Mexico in 2010 supported 791,900 jobs but U.S. imports displaced production that would have supported 1,474,800 jobs. Thus the U.S. trade deficit with Mexico in 2010 displaced 689,200 jobs. According to Scott, 40,200 jobs have been lost or displaced per year since NAFTA took effect (Scott, 2011).

The negative effects of increased imports are not restricted to NAFTA and Mexico according to those on the negative side of the debate. In a study done by Autor, Dorn and Hanson (2012), they find similar negative effects of imports from China on the U.S. labor market. They analyze local labor outcomes, such as employment, earnings, and labor force participation and compare them to “changes in exposure to Chinese import competition” (Autor, et al., 2012).
They argue that industries that are labor intensive in sectors in which China’s “comparative advantage is pronounced” are more vulnerable to import competition (Autor, et al., 2012).

Their study concludes that local labor markets that are exposed to rising imports from China experience higher unemployment and a decrease in labor-force participation. After comparing two U.S. markets from 2000 to 2007, one at the 25th percentile and the other at the 75th percentile of “exposure” to Chinese import growth, the more exposed was expected to have a 4.5 percent fall in the number of manufacturing workers, 0.8 percentage point increased reduction in labor force participation, and a 0.8 percent larger decline in weekly earnings (Autor, et al., 2012).

Additionally, Ebenstein, et al. (2009) show that offshoring to low-wage countries is associated with reductions in U.S. employment in the same industry, while offshoring to high-wage countries has the opposite effect, and Treffer (2004) found substantial employment reductions in Canadian industries whose tariff against U.S. imports fell the fastest.

Positive impacts of U.S. imports: the role of supply chains on U.S. international trade

In contrast to the argument that U.S. international trade has affected domestic labor demand, are those who say that not only exports, but also increased imports benefit the economy and create jobs. Through regional integration and global supply chains, cheaper imports lower U.S manufacturer’s costs. Global supply chains can be described as a system of value added sources and destinations within a production network. Each producer purchases inputs and then adds value within the supply chain, which is later included in the cost of the next stage of
production. As goods cross an international border, the value added trade flow is equal to the value added paid to the factors of production in the exporting country (Koopman, et al., 2010).

Koopman, et al. (2010) developed a methodology to measure a country’s participation in global supply chains. They argue that most official trade statistics are overstated because they “double count” the value of intermediate goods that cross international borders more than once. This is the consequence of measuring exports and imports in gross terms, which include both intermediate and final goods (Koopman, et al., 2010).

To address this issue, they decomposed gross exports and connected official gross statistics to value added measures of trade. The framework distributed all value-added in a country’s exports to its original sources and it expressed individual sources and destinations of value added at either the country wide or industry average level. As a result they concluded that the United States has the highest share of its own value-added exports embodied in its imports at 8.3 percent of its gross imports and 12.4 percent of its gross exports (Koopman, et al., 2010). These high shares are an indication of the role of the U.S. as a key supplier in the content of many products it consumes.
The United States also contributes the highest share (10 percent) of its own value added to its imports of final goods. Almost 40 percent of U.S. final goods imports from Mexico consist of value added from the United States itself, while a bit less than a quarter of U.S. final goods imports from Canada consists of its own value added. These two countries account for three
quarters of all U.S. value added returned from abroad. U.S. import content from China is merely 4.2 percent (Koopman, et al., 2010). As a reference, the European countries contribute a lower share (7.8 percent) of value to its own imports. The returning value however is less concentrated among trading partners. It receives about 50 per cent of such value from its European neighbors, and moderate shares of its own value from many more countries than the United States (Koopman, et al., 2010).

Table 3: Sources of domestic value added that returns home embodied in final goods

<table>
<thead>
<tr>
<th>Exporter Country</th>
<th>U.S. share in imports from partner</th>
<th>Japanese share in imports from partner</th>
<th>E.U. Share in imports from partner</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canada</td>
<td>24.7</td>
<td>0.7</td>
<td>3.3</td>
</tr>
<tr>
<td>China</td>
<td>4.2</td>
<td>8.7</td>
<td>4.1</td>
</tr>
<tr>
<td>European Union</td>
<td>2.1</td>
<td>0.9</td>
<td></td>
</tr>
<tr>
<td>Japan</td>
<td>2</td>
<td>1.8</td>
<td></td>
</tr>
<tr>
<td>Mexico</td>
<td>39.8</td>
<td>1.4</td>
<td>3.2</td>
</tr>
<tr>
<td>United States</td>
<td></td>
<td>1.1</td>
<td>2.8</td>
</tr>
</tbody>
</table>

Source: (Koopman, et al., 2010)

Given the United States’ contribution of content to the goods it consumes, we can predict that imports from the countries that share supply chains will also contribute in the creation of domestic jobs.

Desai, Fritz and Hines go further and suggest that U.S. foreign investment abroad can also increase the levels of domestic employment and capital investment as profitability and
competitiveness are improved when domestic firms expand globally. As with imports, the logic behind this argument is that increases in foreign direct investment raise the return to domestic production. This in turn increases domestic output and domestic factor demand. Firms with foreign operations might have access to intermediate inputs at lower costs, or find out that their foreign affiliates “serve as ready buyers of tangible and intangible property produced in the United States” (Desai, et al., 2009). The study found a relationship between domestic and foreign operations of American manufacturing firms between 1982 and 2004 (Desai, et al., 2009). Estimates indicated that 10 percent greater FDI is associated with 2.6 percent greater domestic investment, and 10 percent greater foreign employee compensation is associated with 3.7 percent greater domestic employee compensation (Desai, et al., 2009). Bernard, Jensen and Schott (2006) find similar results. They conclude that imports from low wage countries have a much more marked effect on the survival probabilities of U.S. plants in the same product category than imports from other locations.

Finally, Hanson (2011) examined U.S.-Mexico border cities to see whether integration between the United States and Mexico was expanding the economic activity in the U.S. border region. Specifically he analyzed whether the growth of export manufacturing in the Mexican side increases the demand for goods and services produced in neighboring U.S. cities (Hanson, 2001). He concluded that a 10 percent increase in export manufacturing in a Mexican border city leads to a 1.1 to 2.0 percent increase in employment in the neighboring U.S. border city. For small border cities, the employment effects are strongest for the transportation and wholesale trade industries; for large U.S. border cities the employment effects are strongest for manufacturing.
As we can see, these results do not support the notion that expansions of imports and foreign direct investment abroad harm U.S. employment.

**Trade and the wage differential among countries**

Alternatively, other economists argue that the effect of international trade depends on the wage differential between trading countries. They attribute this to “factor price equalization” (Krugman & Lawrence, 1993). Factor price equalization claims that when a country in which highly skilled labor is abundant, trades with a country where skilled workers are scarce and unskilled workers abundant, the wage rates will tend to converge. This is because the country with skill-abundant labor will export more skill-intensive goods and import labor-intensive products and will shift its production toward capital-intensive industries and away from low-skilled sectors. Such shifts in the industry mix towards capital-intensive sectors raises the demand for skilled workers while reducing it for low-wage workers (Krugman and Lawrence, 1993). The wages of skilled workers rise in the rich country and fall in the poor one, while the wages of unskilled workers do the opposite.

There are two potential outcomes from the change in demand of skilled and unskilled workers. One is a rise of unemployment for low skilled labor; this is especially evident if a welfare program is present. Krugman (1994) argues that the generosity and cost of a welfare state can raise the unemployment rate especially for unskilled workers. Benefits, such as unemployment insurance create a reservation wage for workers and, if high enough, can discourage them from accepting employment under these conditions, thus raising the level of unemployment.
The second outcome is a relative decreasing wage for unskilled labor. If the reservation wage for employees is low (or nonexistent), a decrease in demand for unskilled labor will translate into lower wages, as workers would not have an alternative but to accept the new terms of the market. The unemployment rate will not be affected but there will be a fall of wages for low-paid workers relative to the average, and a greater inequality of earnings (Krugman, 1994).

As we can see, this argument presents a third alternative for the effect of imports on unemployment. Trade between countries with similar wages will lead to specialization but the distributional consequences between skilled and low-skilled labor will remain the same. On the other hand, trade between countries with a large wage differential will affect low-skilled workers from developed countries and potentially create unemployment or an unequal distribution of wages, depending on the nature of the welfare state.

Original Contribution

There is a strong debate over the net effects of international trade on the U.S. labor market. All positions agree on the positive effects of U.S. exports, so the disagreement is centered in the impact of imports on the domestic market. For some economists, imports represent job losses as production shifts to other countries. For others, imports represent cheap inputs that make domestic firms more competitive by taking advantage of global supply chains. A third view examines the relationship of wages between trading countries to explain the net effect of imports.
Given the high wage differential between the U.S. and Mexico, increased imports can create pressure on unskilled labor and have a similar negative effect on employment as I expect is the case with China. Nonetheless, I believe the positive effect of production sharing between Mexico and the U.S. will be larger than the wage differential effect. Thus, I expect imports from Mexico should have a similar effect than that of imports from Canada, that is, a positive correlation with employment.

To test my hypothesis I will analyze the effect of U.S. international trade on local U.S. labor markets comparing imports from the top three trading partners: Mexico, Canada and China. Given the different level of U.S. content from each country’s imports, I expect the effect on employment will differ substantially. Since 40 percent of the value of U.S. imports from Mexico is actually made in the United States, I expect a positive relationship between imports and employment even in the presence of a large wage differential. Canada’s imports have lower U.S. content, but the wage differential is also small. Thus the effect should be similarly positive with employment. For the Chinese case, given the low degree of product sharing (4.2 percent) and high wage differential, I expect international trade will negatively affect local employment.

I next develop a Theoretical Framework in order to explain the factors that influence state-level unemployment rates.
Section 3: Theoretical Framework

In order to examine whether and how imports affect local employment, I develop the theoretical model described below. This model will create a framework by illustrating the factors that should influence a State’s unemployment rate.

\[ \text{Unemployment} = f(\text{Economic Conditions, State Labor Characteristics, Population Conditions, } E) \]  

As you can see, I propose three main factors that contribute to local unemployment. 
*Economic Conditions* refer to the volume of international trade and economic characteristics. International trade, local and national GDP growth rates are the variables selected to measure this factor. Trade refers to exports, but specially, to the level and origin of imports. As I have stated above, imports from countries that share supply chains are expected to have a positive effect on employment, while trade with countries that only exchange final goods will have a negative impact.

*Labor characteristics* refer to how much local employment is concentrated in activities that can enhance global supply chains and controlling for factors that affect individuals’ and businesses’ decisions to supply and demand labor. The variables used for this purpose are manufacturing employment density, union membership density, individual tax rates and wages.

*By population conditions* I refer to population growth and human capital. A large rate of growth may affect the unemployment rate, as more people are willing to supply their labor. Human capital is important in that it can help retain and create jobs in a given state. Human capital may increase productivity, entrepreneurship and investment, thus states that have better
human capital are expected to have lower unemployment rates. Finally, $E$ represents the random error.

In the next section I explain the empirical model, provide an overview of the variables used and present descriptive statistics.
Section 4: Empirical Model

I use the model developed in the previous section to test the effect of international trade on state level unemployment in the U.S. The empirical interpretation of the model is:

\[ U = \beta_0 + \beta_1 \ln \text{ImpMex}_{IT} + \beta_2 \ln \text{ImpCan}_{IT} + \beta_3 \ln \text{ImpChi}_{IT} + \beta_4 \ln \text{ExpMex}_{IT} + \beta_5 \ln \text{ExpCan}_{IT} + \beta_6 \ln \text{ExpChi}_{IT} + \beta_7 \text{StGDP}_{IT} + \beta_8 \text{USGDP}_{IT} + \beta_9 \text{Union}_{IT} + \beta_{10} \text{Man}_{IT} + \beta_{11} \text{Itax}_{IT} + \beta_{12} \ln \text{Pop}_{IT} + \beta_{13} \text{Educ}_{IT} + \beta_{14} \ln \text{Wage}_{IT} + \mu_{IT} \]  

(2)

Where \( i \) and \( T \) are the state and year indices respectively and \( \mu_{IT} \) is an independent error term. By using state economies as the unit of analysis, I avoid the degrees of freedom problem common to estimating the effect of trade on labor-market outcomes. My local-labor approach to analyzing the impact of trade resembles earlier work by Francis and Zheng (2011), Borjas and Ramey (1995), Chiquiar (2008), Topalova (2005, 2010) and Kovak (2011), who study the effects of trade liberalizations on unemployment, wages, poverty and migration in local and regional labor markets in the U.S., Mexico, India and Brazil, respectively.

My empirical work consists of estimating this equation in three different ways. First I estimate the equation using state imports data in an Ordinary Least Squares regression for years 2008 to 2012. My initial intent was to estimate the equation from years 2001 to 2012 so I would be able to account the years before the 2008 financial crisis, the crisis, and the recovery. However, since import state-level data are only available for years 2008 to 2012, the model only accounts for those years.
The second equation uses the same variables and years of analysis but I estimate it using a Fixed Effects regression in order to account for unobserved characteristics of individual states. In this regression I assume that the unobserved characteristics are correlated with the explanatory variables that I have specified in my model and failing to control for these factors will create a bias in the estimated coefficients in the OLS regression. The fixed effects estimator correlates changes in independent variables I specified with changes in the unemployment rate, thus removing the effect of unobserved state characteristics that do not change over time. Since the potential bias depends on unknown characteristics, I do not know how the estimates in the OLS model are affected. Therefore, it is possible that the Fixed Effects coefficients differ substantially from the OLS model and are large enough to reverse the sign of the estimated coefficients.

The third model is also an OLS regression but uses total U.S. import data as the main variable of interest. I do this for two reasons: First, I acknowledge that state imports may not have a direct relationship with the state’s unemployment rate. My main thesis is that, given that imports from Mexico consist of 40 percent U.S. content, when the U.S. buys from Mexico, it is also buying from the United States and thus creates, or at least maintains, jobs. However, when an individual state buys from Mexico, it doesn’t necessarily mean it is also buying from the state, it may be buying domestic content from another state instead. By using total U.S imports I am able to measure the effect that imports from all states have in each individual state level unemployment rate. Thus, the unemployment level will not only depend on what each state imports but rather on the jobs created given the imports of other states.

Secondly, since data for total U.S. imports is available for a longer period, I am able to run estimates from 2001 to 2012 which includes a period prior the 2008 financial crisis, the years
where the crisis hit the most, and the recovery. The model excludes the Education variable since there is no information available on the percentage of the population above 25 that have a bachelor’s degree for years 2001 to 2004. Given this longer period of analysis and the exclusion of this variable, I expect the estimates of imports to differ in magnitude from both the OLS model using state level imports and the fixed effects regression.

**Variables and Descriptive Statistics**

I will be using a panel data set for the years 2001 to 2012 of all U.S states and the District of Columbia, except for state level imports and education, which only have available data from 2008 to 2012 and, 2005 to 2012, respectively. As a result, the OLS and fixed effects model using state-level imports only analyze the years 2008 to 2012. The Education variable was excluded from the OLS model using total U.S. imports in order to have a longer period of analysis, from 2001 to 2012. I compiled the data set using information primarily from the U.S. Census Bureau, the Bureau of Labor Statistics, the Bureau of Economic Analysis, the Tradestats database of the Department of Commerce, and the Tax Foundation.

The variables are more precisely defined as follows:

1. **Unemployment rate by state:** This is the dependent variable. The annual unemployment rate is the average monthly data across year from the Local Area Unemployment Statistics (LAUS) of the Bureau of Labor Statistics (BLS).

2. **State-by-state imports from Mexico, Canada, and China:** These are my main independent variables of interest. Data were taken from the Tradestats database from the Department
of Commerce and are in 2012 dollar value. Given the degree of integration between the U.S. economy and the Mexican and Canadian economies, I expect the effect of imports on unemployment rates to be negative. Since imports from China only have 4 percent of U.S. content, I expect the relationship to be positive; that is, the more a state imports from China, the higher I expect the unemployment rate to be.

3. Total U.S. imports from Mexico, Canada and China: Data were taken from the U.S. Census Bureau and are deflated using the Consumer Price Index to a 2012 dollar value. As with state level imports, I expect a negative coefficient on imports from countries that share global supply chains and a positive coefficient with countries that only exchange final goods. Therefore, imports from Mexico and Canada should have a negative relationship with unemployment while Chinese imports should raise unemployment.

4. State-by-state exports to Mexico, Canada, and China: Data were retrieved from the Tradestats Database of the Department of Commerce and were adjusted for inflation to 2012 dollar values using the Consumer Price Index. I expect exports to any of the three countries to increase the demand for labor in a state and thus decrease the unemployment rate.

5. State-by-state GDP growth rate: This variable measures the percentage change of state GDP from the preceding period. Data were taken from the Bureau of Economic Analysis. I intend this variable to control for the economic cycles within a state. A high growth rate is expected to decrease the unemployment rate therefore the coefficient should have a negative sign.
6. U.S. GDP growth rate: This variable measures the percentage change of U.S. GDP from the preceding period. Data were taken from the Bureau of Economic Analysis. As with state-level GDP, I expect this variable to control for the effect national economic cycles have on local unemployment rates. I expect growth to be inversely correlated to unemployment; consequently the coefficient should have a negative sign. Both state-by-state and U.S. GDP growth rates are measured with data adjusted for inflation to 2012 dollar values using the Consumer Price Index.

7. Union membership density by state: This variable is defined as the percentage of non-agricultural wage and salaried employees, including public sector employees, who are union members. The data were taken from the updated work compiled by Hirsh, Macpherson and Broman (2013). The effect of unions on unemployment rates is ambiguous. Unions can increase labor demand by supporting and lobbying for programs that increase product demand, influence the prices of related inputs and increase the number of firms that employ union workers (McConnell, et al., 2006). However, they can also influence labor demand negatively through their effects on productivity (Francis & Yuqing, 2011).

8. Manufacturing employment by state: This variable accounts for the shares of total civilian employment in the state that are accounted for by manufacturing. The data were created by dividing the number of employed workers in the manufacturing sector by the total number of employed individuals in each state. The data were retrieved from the Bureau of Economic Analysis and the Bureau of Labor Statistics respectively. The variable is expected to be a measure of the capacity of each state to participate in global
supply chains. States that have a high share on manufacturing employment are expected to benefit more from labor that can potentially be created with state and national imports. Therefore I expect states with high manufacturing shares will be associated with lower unemployment rates given the levels of imports.

9. Individual taxes by state: This variable is defined as the current personal income taxes that go to state governments divided by personal income. The source of these data is the Bureau of Economic Analysis and the Bureau of Labor Statistics respectively. The effect of individual taxes on unemployment is ambiguous as it depends on substitution and income effects. The substitution effect predicts that individual taxes will have a negative effect in labor supply as higher taxes on personal income makes the relative price of working more costly relative to not working. Therefore, individuals will leave the labor force and unemployment will decrease. The income effect however, predicts that higher taxes will decrease total income, making workers more eager to work in order to compensate for lost income. The increased supply of labor will positively affect the unemployment rate.

10. Population by state: Population data were retrieved from the Census Bureau. I assume labor supply is positively associated with the population. Population growth increases the number of individual seeking jobs and will be associated with higher unemployment rates.

11. Education by state: Education is measured as the percentage of the population 25 years or older that has a bachelor’s degree or equivalent. Data were retrieved from the U.S. Census Bureau. I expect this variable to serve as a proxy for human capital. I expect
states with higher levels of education to have more highly developed human capital and to be more amenable to the creation and retention of jobs. Hence, I expect the coefficients for this variable to be negative for the two regressions in which it is included.

12. Wages by state: Wages are the average annual pay by state taken from the Quarterly Census of Employment and Wages from the Bureau of Labor Statistics. They were adjusted for inflation to 2012 dollar values using the Consumer Price Index. As I have explained in the previous section, wages play a crucial role in unemployment. States with lower wages will be more able to compete with low skilled labor from Mexico and China, and thus the unemployment rate will not be affected as much by imports from these countries. On the other hand, high wages can also serve as a proxy for high skilled labor in a State. Thus labor can serve as a complement, not a substitute, for the low skilled labor of developing countries and help keep unemployment rates down. The relationship between wages and unemployment is therefore ambiguous.

In the following table, I present descriptive statistics for my variables of interest.
Table 4: Descriptive Statistics

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unemployment rate</td>
<td>5.85%</td>
<td>2.30%</td>
<td>13.80%</td>
</tr>
<tr>
<td>State imports from Mexico (millions)</td>
<td>$ 8,780</td>
<td>$ 2.57</td>
<td>$ 278,000</td>
</tr>
<tr>
<td>State imports from Canada (millions)</td>
<td>$ 11,200</td>
<td>$ 13.70</td>
<td>$ 362,000</td>
</tr>
<tr>
<td>State imports from China (millions)</td>
<td>$ 13,800</td>
<td>$ 0.630</td>
<td>$ 426,000</td>
</tr>
<tr>
<td>U.S. Imports from Mexico (millions)</td>
<td>$ 212,000</td>
<td>$ 170,000</td>
<td>$ 278,000</td>
</tr>
<tr>
<td>U.S. Imports from Canada (millions)</td>
<td>$ 309,000</td>
<td>$ 242,000</td>
<td>$ 362,000</td>
</tr>
<tr>
<td>U.S. Imports from China (millions)</td>
<td>$ 286,000</td>
<td>$ 133,000</td>
<td>$ 426,000</td>
</tr>
<tr>
<td>State exports to Mexico (millions)</td>
<td>$ 2,880</td>
<td>$ 0.642</td>
<td>$ 94,500</td>
</tr>
<tr>
<td>State exports to Canada (millions)</td>
<td>$ 4,500</td>
<td>$ 133,000</td>
<td>$ 28,600</td>
</tr>
<tr>
<td>State exports to China (millions)</td>
<td>$ 1,180</td>
<td>$ 1.93</td>
<td>$ 14,500</td>
</tr>
<tr>
<td>State GDP growth rate</td>
<td>1.72%</td>
<td>-11.06%</td>
<td>13.54%</td>
</tr>
<tr>
<td>US GDP growth rate</td>
<td>1.95%</td>
<td>-2.80%</td>
<td>4.10%</td>
</tr>
<tr>
<td>Union membership density</td>
<td>11.49%</td>
<td>2.30%</td>
<td>26.90%</td>
</tr>
<tr>
<td>Manufacturing employment share</td>
<td>8.15%</td>
<td>0.18%</td>
<td>18.47%</td>
</tr>
<tr>
<td>Population</td>
<td>5,843,039</td>
<td>494,300</td>
<td>37,700,000</td>
</tr>
<tr>
<td>Education rate</td>
<td>28.02%</td>
<td>17.10%</td>
<td>53.00%</td>
</tr>
<tr>
<td>Wages</td>
<td>$ 45,225.35</td>
<td>$ 32,663.02</td>
<td>$ 84,443.62</td>
</tr>
</tbody>
</table>

In the next section I present my regression results.
Section 5: Results

The three models have joint significance with p-values below 0.01 and F-stats of 9.98, 56.54 and 70.51 respectively. The Fixed Effects regression has the highest R-squared with a 0.786 value. It is followed by the OLS model using total U.S. imports with a 0.63 value and the OLS model using state-level imports has the lowest R-squared with 0.358.

The OLS model using state-level imports also has the lowest number of statistically significant coefficients. Three coefficients are significant at a 99 percent level of confidence and one at a 90 percent level. The Fixed Effects model has 9 significant coefficients; 6 coefficients are significant at a 99 percent, one coefficient is significant at a 95 percent level of confidence, and two are significant at a 90 percent level. The OLS regression using total U.S. imports has the most statistically significant coefficients (only two coefficients are not significant). It has 11 coefficients that are significant at a 99 percent level of confidence and 1 coefficient at a 95 percent. Therefore we can conclude that the OLS regression using state-level imports has the least predicting power in explaining the variance in unemployment rates.

Within the statistically significant coefficients there isn’t any divergence between both OLS models. Coefficients that are significant in both models have the same sign and only differ in magnitude. From the four variables that are significant in the state-level regression, three of them are also significant in the regression using total U.S. imports.

There is a greater divergence between the Fixed Effects model and the OLS models. Only one variable that is significant in the OLS regression using state-level imports is significant in the Fixed Effects regression, while seven variables that are significant in the Fixed Effects model
are significant in the OLS model using total U.S. imports data. From the two remaining significant variables, one is not significant in the regression using total U.S. imports and the other is **Education**; which is not included in the last model.

One of the most important divergences between the Fixed Effects and the OLS models is the nature of the variables that are significant. While variables measuring imports and exports are mostly significant in both OLS models, only the variable measuring state exports to Canada is slightly significant in the Fixed Effects regression. None of the variables measuring imports from any of the three countries have statistical significance. Another important diversion relates to the change in the direction of the relationship between some independent variables and my variable of concern. Variables measuring U.S. GDP growth rate, union membership and manufacturing employment densities change sign when using a Fixed Effects regression compared to the OLS using total U.S. imports. While they have a negative relationship in unemployment in the former, a higher value predicts an increase in unemployment in the latter.

The divergence in effects can be the result of the potential bias removal on unobserved characteristics that is done in the Fixed Effects regression, just as I explained in the Empirical Model section. Additionally, a fixed effects model places greater demand on the data because it estimates coefficients based only on changes. This effect can hurt statistical significance by itself.

Below I present my regression results and interpret the statistically significant coefficients of all models.
Table 5: Effect of U.S. Imports from Mexico, Canada, and China on U.S. State level unemployment rates

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>OLS Regression using state level imports</th>
<th>Fixed Effects Regression using state level imports</th>
<th>OLS Regression using total U.S. imports</th>
</tr>
</thead>
<tbody>
<tr>
<td>Imports from Mexico</td>
<td>0.00784***</td>
<td>-0.0000603</td>
<td>0.0494***</td>
</tr>
<tr>
<td></td>
<td>0.00184</td>
<td>-0.00164</td>
<td>0.00838</td>
</tr>
<tr>
<td>Imports from Canada</td>
<td>-0.00406*</td>
<td>-0.00256</td>
<td>-0.138***</td>
</tr>
<tr>
<td></td>
<td>-0.00214</td>
<td>-0.00249</td>
<td>-0.00665</td>
</tr>
<tr>
<td>Imports from China</td>
<td>0.00374</td>
<td>0.000668</td>
<td>0.0225***</td>
</tr>
<tr>
<td></td>
<td>0.0024</td>
<td>0.00258</td>
<td>0.00352</td>
</tr>
<tr>
<td>State exports to Mexico</td>
<td>-0.00945***</td>
<td>0.000945</td>
<td>0.00032</td>
</tr>
<tr>
<td></td>
<td>-0.00198</td>
<td>0.00209</td>
<td>0.000823</td>
</tr>
<tr>
<td>State exports to Canada</td>
<td>0.00248</td>
<td>-0.00721*</td>
<td>-0.00290***</td>
</tr>
<tr>
<td></td>
<td>0.00317</td>
<td>-0.00399</td>
<td>0.000974</td>
</tr>
<tr>
<td>State exports to China</td>
<td>0.00103</td>
<td>-0.0000276</td>
<td>0.00231***</td>
</tr>
<tr>
<td></td>
<td>0.00135</td>
<td>-0.00197</td>
<td>0.000693</td>
</tr>
<tr>
<td>State GDP growth rate</td>
<td>-0.000484</td>
<td>0.0218</td>
<td>-0.123***</td>
</tr>
<tr>
<td></td>
<td>-0.0474</td>
<td>0.0173</td>
<td>-0.0276</td>
</tr>
<tr>
<td>U.S. GDP growth rate</td>
<td>0.047</td>
<td>-0.0873***</td>
<td>0.176***</td>
</tr>
<tr>
<td></td>
<td>0.0586</td>
<td>-0.0297</td>
<td>0.0422</td>
</tr>
<tr>
<td>Union membership density</td>
<td>0.000458</td>
<td>-0.00156**</td>
<td>0.000431***</td>
</tr>
<tr>
<td></td>
<td>0.000344</td>
<td>-0.00068</td>
<td>0.00015</td>
</tr>
<tr>
<td>Manufacture employment density</td>
<td>0.00792</td>
<td>-2.472***</td>
<td>0.0543**</td>
</tr>
<tr>
<td></td>
<td>0.0673</td>
<td>-0.271</td>
<td>0.0237</td>
</tr>
<tr>
<td>Individual tax rate</td>
<td>-0.490***</td>
<td>-1.873***</td>
<td>-0.227***</td>
</tr>
<tr>
<td></td>
<td>-0.137</td>
<td>-0.682</td>
<td>-0.0567</td>
</tr>
<tr>
<td>Population</td>
<td>0.00211</td>
<td>0.642***</td>
<td>0.00424***</td>
</tr>
<tr>
<td></td>
<td>0.00382</td>
<td>0.0933</td>
<td>0.0014</td>
</tr>
<tr>
<td>Education</td>
<td>-0.0517</td>
<td>-0.189*</td>
<td></td>
</tr>
<tr>
<td></td>
<td>-0.0364</td>
<td>-0.094</td>
<td></td>
</tr>
<tr>
<td>Wage</td>
<td>0.0181</td>
<td>-0.131***</td>
<td>0.00279</td>
</tr>
<tr>
<td></td>
<td>0.0159</td>
<td>-0.0411</td>
<td>0.0048</td>
</tr>
<tr>
<td>Constant</td>
<td>-0.168</td>
<td>-7.766***</td>
<td>1.736***</td>
</tr>
<tr>
<td></td>
<td>-0.157</td>
<td>-1.178</td>
<td>0.189</td>
</tr>
<tr>
<td>Observations</td>
<td>255</td>
<td>255</td>
<td>610</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.358</td>
<td>0.786</td>
<td>0.63</td>
</tr>
<tr>
<td>F-Stat</td>
<td>9.98</td>
<td>56.54</td>
<td>70.51</td>
</tr>
</tbody>
</table>

*** p<0.01, ** p<0.05, * p<0.1
The estimated coefficients of imports from Mexico differ depending on the model used. The OLS model using state imports predicts an increase by 0.00784 percentage points with a one percent increase in imports from Mexico. The OLS regression using total U.S. imports predicts a 0.0494 percentage point increase with every percent increase in imports. These results are significant at a one percent alpha level. State imports from Mexico using a FE regression have no statistical significance.

The variable measuring imports from Canada is also not statistically significant in the Fixed Effects model, but is significant in both OLS models. A one percent increase in state imports from Canada is associated with a 0.00406 percentage point decline in the unemployment rate at a 90 percent confidence level, while a one percent increase in total U.S. imports from Canada correlates with a 0.138 percentage point decline in local unemployment levels at a 99 percent confidence level.

The variable measuring imports from China is only statistically significant in the OLS regression using total U.S. imports. A one percent increase predicts a 0.0225 percentage point increase in state level unemployment rates.

The results from Canada and China are consistent with the hypothesis that imports from countries that share global production chains create jobs, while imports from countries that sell only final goods harm domestic employment. Results from Mexico do not support my main argument. A high degree of economic integration between both countries has not translated in reducing the pressure on U.S. unemployment. The divergence in wages between both countries, as explained in the background section, could be the main driver of the effect of trade and unemployment.
It is important to note the increase in the effect when we compare state imports with total U.S. imports. The results suggest that total U.S. imports have a larger effect on local unemployment than state-level imports. By using total U.S. imports, I am able to measure the effect that imports from all states have on each state unemployment rate. Thus, the divergence may be explained because in one model the unemployment rate depends on what each state imports, while the second takes into account the jobs created given the imports of other states also.

The variables measuring exports to Mexico is only statistically significant in the OLS regression using state-level imports. A one percent increase predicts a 0.00945 percentage point decline in the unemployment rate. This is statistically significant at a 99 percent confidence level. The results support my hypothesis that increased exports raise the demand of labor and, consequently, decrease the unemployment rate.

The OLS model using state-level imports does not provide statistically significant estimates on the variable measuring state exports to Canada. The Fixed Effects regression predicts a 0.00721 percentage point decrease in unemployment rates with every percent increase of state exports to Canada. This result is significant at a 90 percent level of confidence. The OLS model using total U.S. imports predicts a 0.0029 percentage point decline with every percent increase of exports. The estimate is significant at a 99 percent level of confidence. As with the results of the variable measuring exports to Mexico, these results also support my hypothesis that higher exports increase the demand of labor and have a negative relationship with unemployment rates.
In China’s case, neither the Fixed Effects nor the OLS using state import data models provide statistically significant estimates. The OLS using total U.S. imports predicts a 0.002331 percentage point increase with every percent increase of state-level exports. The result is significant at a 99 percent level of confidence. The sign of this coefficient is unexpectedly positive and it differs with my argument that exports have a positive association with creating jobs.

The estimated coefficient for state GDP growth rate is only statistically significant in the model using total U.S. imports. It predicts that every percentage point increase is associated with a 0.123 percentage point decline in state level unemployment rates. This estimate is consistent with the theoretical model in which the greater the growth rate, the lower the unemployment rate for any given state. This result is statistically significant at a 99 percent level of confidence.

The variable measuring U.S. growth rate is highly significant in the Fixed Effects and OLS using total U.S. imports model. The Fixed Effects model predicts a 0.0873 percentage point unemployment rate decline with every percentage point increase in U.S. GDP at a 99 percent level. The OLS model using U.S. imports is inconsistent with the previous relationship as it predicts a 0.176 percentage point increase in unemployment with every percentage point increase in GDP growth. I believe this divergence, and the inexplicable sign of the OLS estimate, is result of the potential bias of OLS estimate due to time-invariant unobservable characteristics correlated with the explanatory variables.

Union membership density is also statistically significant in the Fixed Effects and OLS regression using total U.S. imports. As with the variable measuring U.S. growth rate, the estimates differ in their relationship with unemployment rates. A one percentage point increase
in the share of employees who are union members is associated with a 0.156 percentage point decrease in unemployment in the Fixed Effects regression. On the other hand, a one percentage point increase of union members predicts a 0.0431 point increase in the unemployment rate when using total U.S. import data. As with the previous variable, I believe the divergence is the result of the potential bias that can be eliminated when using a Fixed Effects regression.

The variable used for measuring manufacturing density is the third and final variable for which the direction of its estimates differ depending on the model used. The regression using state-level imports does not provide statistically significant estimates. The Fixed Effects model predicts a 2.472 percentage point decrease with every percentage point increase in the rate of manufacturing employment. This result is consistent with the theoretical model. Given that global supply chains are more present in the manufacture industry, the more the share of this industry, the more a state will be able to take advantage of the domestic content from state imports. The OLS regression using total U.S. imports predicts a 0.0543 percentage point increase in the unemployment rate with every percentage point increase in manufacturing labor. Both estimates are statistically significant at a 99 percent level of confidence.

The variables measuring individual tax rates are statistically significant and negative in the three models. The fixed effects model predicts a 1.873 percentage point unemployment rate decrease with every individual tax rate increase. The OLS models predict a 0.490 and 0.227 percentage point decreases with every tax increase using state-level imports and total U.S. imports respectively. The three models are statistically significant at 99 percent levels of confidence. These results suggest that the substitution effect for workers is higher than the income effect when raising taxes for individuals. When taxes are raised, the cost of working
increases relative to the cost of not working. The estimates suggest that the relative change in prices has a higher effect on the decision of workers to enter the labor force than the need to work more time after their income is decreased when taxes have been raised.

The variable controlling for population is statistically significant in the OLS model using national imports data and the Fixed Effects regression. A one percent increase in population in a given state is predicted to result in a 0.0042 percentage point increase in the unemployment rate. Similarly, a one percent increase in population is associated with a 0.642 percentage point increase in unemployment levels in the Fixed Effects estimate. Both coefficients are significant at a 99 percent level of confidence. These results may suggest insufficient absorption into the labor market of either international or domestic migration between states.

The variable measuring education is significant in the Fixed Effects model. The results predict that every percentage point increase in the share of the population over 25 that has a bachelor’s degree or equivalent is associated with a 0.189 percentage point decline in the unemployment rate at a 95 percent level of confidence. This result is consistent with the theoretical model as it suggests that the more educated the population is, the more jobs the state can support.

Finally, the variable measuring wages is also only statistically significant when estimating the effects through a fixed effects model. The estimate predicts that a one percent increase in wages is correlated with a 0.1314 percentage point decline in the rate of unemployment. I believe this result suggests that higher wages reflect a more skillful labor force. Consequently, the higher the skills of labor, the easier it is to retain jobs in spite of potential
external shocks such as foreign competition or adverse economic cycles. Thus the higher the wages are, the less the expected rate of unemployment.

Overall, I conclude that imports from Canada and China have an effect consistent with my hypothesis such that trade between countries that share production helps reduce unemployment while imports from countries that mostly trade final goods has an adverse effect on unemployment rates. The case of Mexico is inconsistent with this argument. Despite having 40 percent of U.S. content, imports from Mexico seem to have a positive correlation with higher unemployment. The wage differential between U.S. and Mexican labor is still very high and creates an incentive for U.S. companies to relocate south of the border. This effect might overshadow the positive consequences of integration between the two countries on employment. I believe that as wages begin to increase in Mexico, the regional supply chain shared by both countries will become the most important factor on the effect of imports on the labor market.

Of special concern should be the effect of individual tax rates on unemployment. It was the only variable that was highly significant and consistent among the three models. The evidence suggests that the substitution effect of higher taxes is larger than the income effect and that higher rates are driving individuals out of the workforce.

Finally, higher education and wages, two variables that can serve as proxy for high human capital, have a strong effect in keeping unemployment rates down. As I shall discuss in Section 7, any policymaking concerning trade should discuss the different effects on U.S. skilled and unskilled labor.

In the following section I discuss the potential limitations of my models.
Section 6: Limitations

There are latent limitations from the previous models. The first limitation is the potential presence of endogeneity. I have assumed that imports have a direct causation over unemployment rates. However, an inverse relationship cannot be discarded. Low levels of unemployment can predict higher economic growth which in turn can increase the demand of foreign goods. If present, this relationship could bias my coefficients. Furthermore, the lack of proxies that are able to predict state-level imports limits my ability to use instrumental variables to address this limitation.

A second concern corresponds to the estimate of U.S. content from each of the three countries. As previously discussed, I expected “production sharing” to be the main driver of the relationship between imports and unemployment rates. At 40 percent of U.S. content, I predicted that imports from Mexico would have a positive relationship with labor market outcomes. However, by analyzing it at a state-level, implicitly I assumed that product content was equal for every state, which might not be the case. By having specific data of individual state content of imports from the three countries I would have been able to predict a more accurate relationship.

The third and final limitation relates to the unavailability of more state-level import data. The OLS model using total U.S. imports had more observations, since I had available data from 2001 to 2012. As a consequence, this model had considerably more significant coefficients. State-level import data is only available starting 2008, thus I was only able to analyze the effect during the financial crises recovery. I believe my estimates would have been more precise if I
had more state-year observations. The following section is the final part of my study. In this section I conclude the study and offer policy recommendations.
Section 7: Conclusion and Policy Recommendations

The aim in writing this paper is to study the impact of imports on the U.S. labor market given the longstanding debate of the effect of trade with Mexico after NAFTA. I argue that the effect of imports on employment depends on the level of economic integration between the U.S. and the trading country. Imports from countries that share production supply chains with the U.S. will create jobs due to the high level of domestic content. Imports from countries with which the U.S. has a low degree of production sharing will have an adverse effect on employment.

To prove my hypothesis I have set out to compare the effect of national and state-level imports from Mexico with imports from Canada and China. Given the high degree of product sharing between the U.S with Mexico and Canada, I expected imports to have a positive relationship with employment. In contrast, the low level of economic integration between the U.S. and China should predict a negative relationship between imports and local-labor outcomes.

Imports from Canada have proven to create jobs in two of the three models, while the evidence from China suggests that imports increase unemployment. These results stand in accordance with my hypothesis. The results from Mexico are inconsistent with production content theory. While the Fixed Effects model does not provide statistical significance, both estimated OLS models indicate that imports from this country increase state unemployment rates. I argue that the wage differential between both countries continues to be the main driver behind the effect of imports on the labor market. As Mexican wages begin to rise, production sharing will become the driver of the effect between imports and employment rates.

Aside from measuring the impact of imports on employment, the models presented us with evidence on the impact of human capital on lowering unemployment rates. The estimates on
education suggest that the higher the rates, the easier it is to support and retain jobs and the less likely it will be for jobs to be lost to foreign competition. As a consequence, a first policy implication should be to increase investment in human capital, both in traditional education and in retraining for older workers. Education and training would increase the overall level of skill in the workforce and would presumably increase total worker productivity. The mix in investment in education however, should be a topic of further study. While there are those who argue that improvements in basic education take a very long time to be reflected in the actual labor market, others stress there is little evidence suggesting that retraining schemes are actually effective in raising productivity (Krugman, 1994). Nonetheless, the evidence presented a conclusive demonstration that human capital investment has a favorable impact in reducing the rates of unemployment.

A second policy implication involves the effect wages play in the labor market. The Fixed Effects model suggests that states with lower wages have higher unemployment rates. Although Krugman (1994) argues that decreasing wages in the United States have mitigated the rise in unemployment compared to European rates, my estimates suggest that states with lower wages are more susceptible to having higher rates of unemployment. As I have previously described, the United States has seen a surge in imports from countries that have substantially lower wages and are more abundant in unskilled labor. If we presume that wages reflect worker productivity, we must recognize that states with lower wages are less productive and the rise of unemployment in such states might be a consequence of foreign competition. States where productivity is higher are less vulnerable to unskilled foreign labor as they have a competitive advantage in skilled labor-intensive sectors.
I argue that the best response to address the unbalanced effect of imports on high and low skilled workers should be to compensate the losers, in this case, low-wage labor in the United States. Rather than restricting trade, which allows the development of low income countries, policymaking in the United States should address the negative effects on unskilled labor by providing more opportunities to increase productivity and to improve the welfare system. A system that provides enough incentives to promote increasing participation in the labor force, and a safety net sufficient to compensate for the adverse consequences of international competition would be optimal. The safety net should not be high enough however, as to reduce the incentives for individual and collective movements to a skill set that is appropriate to the current economy.

A third and final policy implication is to increase the quality of data. My hypothesis and principal sources of information regarded factor content and imports from the top three U.S. trading partners. In the three cases we observed a high increase of imports by the United States, but the volume may be misrepresented in part by a statistical illusion. If the United States imports cars from Mexico, and Mexico assembles cars largely from components made in Germany, only the assembly share of the sales price should reflect the value of imports, but as we see, the total value is attributed to the country which exported the good to the United States. The trace of value added in global production chains done by Koopman, et al., (2010) provides a first step of matching value-added trade with official trade statistics by eliminating the “double count”, nonetheless, this exercise should be done on a continuing basis. Additionally, state-level import regressions were only conducted for years 2008 to 2012 due to the unavailability of data. Yet, as discussed in the Limitations Section, my study could probably have had better and more
reliable findings if I had more state-year observations as in the case using total U.S. imports. As a consequence, I think it is very important to conduct further research with more precise figures of state and country imports and state-year observations to have a better understanding of the effects of imports on the U.S. labor market.
Bibliography:


