Bargaining Power and Inequality in U.S. States with Globally Exposed Economies

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Draft (not for citation)

Abstract

Inequality continues to increase in the United States. At the same time, the nature of international trade has evolved to include a greater proportion of North-South and intra-industry trade. Though this can be positive in may respects, our argument in this paper is that the contemporary international trade landscape has further eroded laborers' relative bargaining power in the U.S., which has tightened the trade-inequality linkage. We exploit the variation in global trade exposure across the American states in order to test how import competition has correlated with state-level income inequality since 1987. We find that the states that were more exposed to the global marketplace, in that they produced more that was competing with imports, did see an increase in inequality, but that this varies by industry. We find that this measure of globalization is also associated with a lower rate of poverty at the state level.

Keywords: Income inequality, trade, bargaining power, marginal tax rates, unions

(JEL Codes: D31, E25, H23)

1 Introduction

Perhaps no area in economics has enjoyed such complete agreement as the assumed benefits of free trade. In 2012 the IGM Forum at the Booth School at the University of Chicago found that 85% of economists agreed that freer trade resulted in long run benefits that outweighed short-run costs and that NAFTA had, on the whole, benefited U.S. citizens (Forum [2012b]). In a separate survey they found that while over 80% agree that U.S. - China trade helps

most Americans, it does hurt others who make competing goods (Forum [2012a]). But as one of the few areas in which almost all economists agreed, the increasing focus on economic inequality continues to cast doubt on whether or not the dramatic rise in trade with low-wage countries like China has in fact been good for the American worker as opposed to the American consumer. This question has gained renewed attention as the nature of U.S. imports have evolved to include more North-South and intra-industry trade. At the same time as manufacturing jobs have been disappearing from the United States, due to both trade and technological progress, the country has seen a hollowing out of the middle class and a stagnation in median household wages. Dissatisfaction with the current economic climate, despite seven years of employment growth, led to the election of perhaps the most protectionist candidate in the United States in decades.

We argue that the changing pattern of international trade has increased the role that bargaining power has played in conditioning the trade - inequality link. As such, this paper estimates the role that trade has on income inequality in the American states from 1987 to 2009. We take a view of the labor market in which wages are partially determined by the relative bargaining power between workers and firms. This builds off previous work on the role of the minimum wage, private sector unionization, and top marginal tax rates in determining that bargaining power. To this framework we add a measure of how exposed a state's economy is to imports from abroad. We estimate the extent to which trade exposure affects various measures of income inequality. We also narrow in on the industry level to uncover how they may behave differently with respect to their effect on income inequality.

Using a state panel data set, we find the states that were more exposed to the global marketplace, in that they produced more that was competing with imports, did see an increase in inequality. We find a positive correlation between our trade exposure index (TEI) and the Gini coefficient and the top 1% share of income. However, we also find that increased trade is also correlated with a lower poverty rate at the state level. Interestingly, services, manufacturing, and agriculture import exposure display differing relationships with

inequality. Increased import exposure for agriculture and manufacturing is associated with higher state-level income inequality, but the opposite seems to be the case in the service sector. While we can tell that the increase in inequality is due to a higher share going to the top 1% and a lower share going to the bottom 90%, we do not know if this is due to the offshoring of production, increased international competition, or some omitted variable.

Even though we consider these results to be preliminary, they highlight the complex roles that bargaining power, institutions, and globalization simultaneously play. Expanding our understanding of these connections is vital in the current political climate, which is characterized by a widening gap between popular sentiment and policy perspectives on the virtues of globalization.

In the next two sections we characterize income inequality in America and put forth an argument that suggests that bargaining power has gained a more prominent role in conditioning the trade - inequality link. In section 4 we discuss our state-level panel data set and our econometric methodology. Section 5 presents results of both fixed effect and Arellano-Bond regressions on four inequality variables, and section 6 concludes and offers avenues of further research.

2 Rising Inequality in the U.S.

As inequality has increased over the last 45 years in the United States, the distinguishing factor in the data has been the amazing increases of annual income (followed by wealth) at the very top of the distribution while those in the middle and bottom have seen their incomes stagnate. The share of income (excluding capital gains) going to the top 1% has risen from under 8% in the mid 1970s to over 18% in 2015. The top 0.01% has seen their share increase even more significantly from half of one percent to over 3% with average real incomes for the very richest over that time going from about $2.4 million to almost $18.9 million. Meanwhile over that same period the average real market income for the bottom

90% of households was $36,000 in 1973 and was $33,000 in 2015 (Piketty and Saez [2003]).

The fact that inequality has mainly been about those at the very top of the income distribution capturing more and more of the pie, combined with the observation that other (non-Anglo) developed countries have not seen such a dramatic rise in inequality over the same time period, suggests that institutional factors, instead of something like skill-biased technological change, is more likely to explain increasing inequality in the U.S. The focus in much recent work has been on the changing relative bargaining position of workers in the United States as compared to executives and firms (Piketty et al. [2014]; Malloy [2016a]). As inequality decreased in the 1940s, 50s, 60s, and at least part of the 1970s, we saw an increasing share of the private sector work force that was unionized, a high real value of the minimum wage (reaching a peak in 1968), and top marginal tax rates that were cut from 90% to 70% in the mid 1960s. These were the few decades in which the American worker was able to claim most of the growth for his own. The bottom 90% saw its average real income grow at about 2.7% per year from 1947 to 1973, while the top 0.01% saw barely any growth at all at 0.3% per year. But in the four decades that followed, the majority of workers saw their bargaining power all but disappear. Private sector unionization rates have fallen to all time lows and the real minimum wage is about a third lower than it was almost 50 years ago. The federal top marginal tax rates are around 40% and likely to be cut again. From 1974 to 2015, the bottom 90% has seen average income fall while the top 1% has seen it grown by an average of 2.5% per year and the top 0.01% by over 5% per year Piketty and Saez [2003].

In the decades in which the American worker experienced their fastest income growth in history, imports as a percent of GDP rose slowly from about 3% after WWII to a little over 5% in 1970. Import growth increased dramatically in the 1970s, reaching 10% by 1980, slowed in the 1980s so that imports still represented about 10% of GDP in 1990, and then took off again. They reached a peak in 2008 of 17.4% before falling off during the Great Recession. GDP growth was somewhat slower in this period than in the decades immediately following

WWII and, as we have seen, the majority of American households saw little to no increase in their annual pre-tax income while the very richest saw incomes growing exponentially.

3 Evolving Trade Patterns, Bargaining Power, and Inequality

The relationship between international trade and inequality is yet to be fully understood. In recent decades in particular, North-South trade and Intra-Industry trade continue to make up a larger and larger share of total U.S. trade. This evolving nature of trade became most apparent in the decade of the 1990s and forced a shift in how economists approached the link between trade and inequality. In this section, we provide a brief overview of these evolving trends and perspectives. Our intent is to underscore the increased role of bargaining power in conditioning the link between trade and inequality.

Prior to the late 1970s, developing countries overwhelmingly exported primary products, rather than manufactured goods. As well, the lion's share of U.S. imports were from other high income economies (Krugman [2000, 2008]). As income inequality began to rise in the U.S. from the 1980s onwards, economists began to more earnestly study the link between international trade and inequality. The well-known trade models predicted that this increased North-South trade would bid down wages for low-skilled labor in the U.S., while putting upward pressure on the more relatively abundant factors of production, capital and high-skill labor (Stolper and Samuelson [1941]). It follows that inequality would rise in the absence of effective re-distribution policies. The empirical evidence, however, didn't suggest that globalization was the main culprit of rising income inequality in the 1980s. Katz and Murphy [1991] attributed most of the inequality to skill biased technological change and Leamer [1996] found that Stolper-Samuelson effects were strong in the 1970s but not in the 1980s. Other notable studies also found that the role of foreign trade in the rise of the college premium were modest at best (Goldberg and Pavcnik [2007]; Machin and Van Reenen [1998];

Berman and Machin [2000]; Feenstra and Hanson [1999]). It wasn't until a decade later that the trade and wages debate more fully blossomed by re-visiting globalization as a cause of rising inequality. In our reading of the literature, it was an outcome of the evolving nature of U.S. trade in the 1990s and early 2000s. As Krugman stated in 2008, "the changing nature of world trade has outpaced our ability to engage in secure quantitative analysis" ([Krugman, 2008, p.27]). From 1991 to 2000, the U.S. share of manufacturing imports coming from low income countries increased by 66% and by more than 200% from 1991 to 2007 David et al. [2013]. Bivens [2007] argued that between 1995 and 2006, the rise in the relative wage of skilled labor stemming from North-South trade had increased by 40%.

This changing nature of trade was also characterized by increased intra-industry trade, outsourcing, and offshoring. The implication of this is that no industry was immune to the threat of offshoring or outsourcing. For example services, once considered untradeable, were now being imported into the U.S. via offshore call centers. The global nature of supply chains increased the exposure of a variety of industries to potential offshoring. Importantly, this implies that more industries are directly affected by international trade and that the direct effect has intensified. Furthermore, this lower wage pressure also effects the wider labor market as wage changes in one sector influence wages in another. David et al. [2013] find that areas that had industries which experienced an increase in competition from imports produced in China experienced lower wage growth and higher unemployment as these areas struggled to find substitutes for the jobs that moved offshore.

This underscores the increased role that bargaining power plays in the contemporary trade landscape. Malloy [2016a] finds that an increase in imports is associated with weaker unions and a higher share of income going to the very top of the income distribution. The argument is fairly straightforward. As firms either move production offshore or threaten to do so, they are able to reduce labor costs and increase executive pay. This increases income inequality mainly by increasing wages at the top while the wages for workers, represented by the bottom 90%, stagnate. Using a simultaneous equation model with national U.S. data

going back to 1930, Malloy [2016a] finds that while the direct effect of higher imports is to increase income growth of the bottom 90%, the total effect, accounting for the indirect effect of higher imports in reducing private sector unionization, is negative. In addition, using a state panel data set similar to the one used in this paper, Malloy [2016b] finds that institutional factors such as the minimum wage, the top marginal tax rate, and private sector unionization all affect a state's level of inequality, especially as measured by the share of income going to the top 1%.

For the empirical sections in the remainder of our paper, we start from the premise that recent trends in North-South and Intra-Industry trade have eroded the bargaining position of a larger group of American workers than in decades past. We use the global import exposure of the American states to test the link between trade and inequality.

4 Data and Methodology

Our data set is a panel of state-level data from 1987 to 2009. Disaggregating the data to the industry level limits us to 1987 as our starting point. We use industry employment and trade data to calculate an annual trade exposure index (detailed below) for each state. Recent research has recognized the fruitful research grounds that sub-national data provides (for example David et al. [2013]) when identifying the effects of trade on labor market outcomes. State level data provides a number of benefits in that a lot of data is collected at the state level, most people live and work in the same state, and state policy differences provide, in some respects, a natural experiment. Much work, such as the minimum wage analysis conducted by Allegretto et al. [2011], takes advantage of border counties between states that adopt different economic policies. For our purposes, this includes different levels of the minimum wage, different tax policies, and different labor policies that influence the level of unionization in the workforce. On the other hand, especially when looking at top incomes by state, the data may lead us astray. Because of different top marginal tax rates, those at

the top of the income distribution have an incentive to claim a state of residence that is not the same as the one in which they actually earn their income. In addition, there may be instances in which the factories and workers of a firm reside in one state, but the executives reside in another, skewing the analysis.

4.1 Trade Exposure Index

The trade exposure index (TEI), first developed by Anderson et al. [2016], is designed to measure whether workers in a given state are in industries in which the United States has a relative comparative advantage. It is made up of two parts and is given in equation (1). The first part measures the relative comparative advantage (RCA) of the state's employees in relation to the U.S. as a whole. This is similar to a Balassa RCA index (Balassa [1965]) but uses employment rather than exports. For the purposes of income inequality, employment is arguably the better measure and also has better data availability. The RCA is non-negative with no upward bound and is used as a weight in the TEI. The second part of the TEI is an import exposure function (IEF), similar to a Grubel-Lloyd index (Grubel and Lloyd [1971, 1975]). This measures the relative net exports for the United States in each industry. It is constructed so that a value of -1 means that the U.S. only exports goods or services in that industry while a value of 1 means that the U.S. only imports goods or services in that industry. The TEI is then summed up across industries.

$$TEI_{st} = \sum_{i}^{I} \left(\frac{Emp_{sit}/Emp_{it}}{Emp_{USit}/Emp_{USt}} \right) * \left(\frac{X_{USit} - M_{USit}}{X_{US_{it}} + M_{USit}} \right) (-1) \tag{1}$$

Equation (1) shows that the TEI for state s in year t is equal to the sum across all industries i of the state's RCA based on employment in that industry compared to the US as a whole and the country's IEF, or relative net export position in that industry, exports X minus imports M. We can interpret the TEI as an index, weighted by the state's employment, on the country's import presence or exposure. That is, is the state aligned with the country's

export strengths (in which case the TEI tends negative) or is it misaligned with industries in which the country is a net importer (in which case the TEI will be more positive). One limitation of the TEI is that not all import exposure within an industry is necessarily harmful for an industry's employees. For example while it will include final goods that may compete with that industry, it will also include intermediate goods which the industry is using in creating its final product.

[Table 1 about here.]

The industries used are approximately at the 2-digit NAICS level, and we use a TEI for each state in total (summed across all industries) and then disaggregate the TEI by major sector: agriculture, manufacturing, and services. Summary statistics for the TEI are given in Table 1 and the state-level average of the four versions are graphed in Figure 1 from 1987 to 2009. As you can see, both the main TEI and the sector TEIs fell (representing less import exposure) during the 1990s as the trade deficit for the U.S. decreased, and then increased thereafter as import exposure increase, before falling during the Great Recession. However, there are significant differences between the sector variables as the agriculture and service sector TEIs tend to be negative (meaning more exports than imports), while the manufacturing sector TEI is positive for the whole period (meaning more imports than exports). In the regressions below, we will see that this appears to be important as the service sector seems to behave differently in relation to inequality than do the other TEIs.

[Figure 1 about here.]

4.2 Institutional Data

Following Malloy [2016b], we use a number of institutional variables that appear to be related to inequality. These include the real value of the state minimum wage, the state's top marginal tax rate, and the state's level of unionization within its labor force. The minimum wage data comes from the Department of Labor (and is adjusted for inflation),

the top marginal tax rates from Feenberg and Coutts [1993], and the level of unionization from Hirsch et al. [2001]. We also include the percent of the workforce with a high school and college education from Frank [2014]. Summary statistics are given in Table 2. While there is somewhat conflicting evidence as to whether a higher minimum wage has an effect on the poverty rate, Malloy [2016b] shows that a higher real minimum wage is associated with a lower share of income going to the top 1%. In addition, Malloy [2016a,b] finds that higher marginal tax rates and higher unionization rates are associated with faster income growth for the bottom 90% at a national level and a smaller share of income going to the top 1% at the state level. These are consistent with the bargaining power theory of wage determination described above.

[Table 2 about here.]

In addition, both state level and country level business cycle data is used as controls in the regressions below. This includes state and country real GDP growth and unemployment rates and a dummy variable for U.S. recessions. This data comes from the Bureau of Economic Analysis and Bureau of Labor Statistics.

4.3 Inequality Data

State-level inequality data comes from Frank [2014, 2009]. We use a number of inequality measures as dependent variables. First we use the Gini coefficient (measured from 0 to 100) to see the effect of the TEI on the overall level of income inequality. We also use the share of income going to the top 1% and the share going to the bottom 90%. Piketty and Saez [2003] have shown that the defining characteristic of increasing inequality over the last 45 years has been a sharp increase in the share of income going to the top while income for the vast majority of households has stagnated. We also look at the state-level poverty rate to see whether or not an increase in trade exposure is associated with a reduction or increase in

those at the very bottom of the income distribution.[1] Summary statistics for the state-level inequality data are presented in Table 3. As you can see, there is a fair amount of variation by state.

[Table 3 about here.]

4.4 Methodology

We test for the effect of trade exposure on inequality using both a fixed effect model and an Arellano-Bond GMM model (Arellano and Bond [1991] and see Roodman [2014] for a how-to). The main explanatory variables are the TEI (first in total and then broken down by sector) and the institutional variables. In addition, we use state and country-level business cycles variables as controls. Because inequality variables tend to be quite persistent, we include two lags of the dependent variable on the right hand side. In the Arellano-Bond models the country-level variables are treated as instruments. Arellano-Bond was designed for panel data in which the cross section is significantly larger than the time series, which is true of our model with 50 states and 23 years.

We first present two-way correlations between the TEI variables and the main inequality variables. These are given in Table 4. The overall TEI is not significantly correlated with the Gini coefficient. This appears to be because while the TEI is positively associated with the Top 1% income share, it is negatively associated with the poverty rate. An increase in the overall import exposure of a state is correlated with a higher share of income going to the top 1% (and a lower share going to the bottom 90%), but also a decrease in poverty. This is true to somewhat different extents with the agriculture and manufacturing TEIs, but the service sector TEI has an opposite sign. A higher service-sector import exposure index for a state is associated with less inequality (measured by the Gini coefficient and the share going to the bottom 90%), but a higher poverty rate.

[1] Not presented here are effects on the median household income and income levels at the 10th and 20th percentile which are similar to the results we do present.

[Table 4 about here.]

5 Results

The main takeaway from the regression results presented in this section is that an increase in the TEI (so that a state's employment is more exposed to imports) is associated with both an increase in the share of income going to the top 1% and a reduction in the poverty rate. These effects somewhat offset in terms of the effect on overall inequality, so that the effect of the total TEI on the Gini coefficient is only modest. The increase in the share of income going to the top 1% is consistent with the hypothesis that labor's bargaining power falls as employment becomes more exposed to imports, and we do also see a slight reduction in the share of income going to the bottom 90% (which is not surprising given that we're only leaving out 9% of households). It is hard to explain the reduction in the poverty rate as a state's workforce experiences an increase in import exposure. When the TEI is disaggregated into agriculture, manufacturing, and services, we find quite a significant difference in how the TEI is associated with our measures of inequality. A higher service sector TEI is most strongly associated with a lower poverty rate, while the manufacturing and service TEIs have opposite signs on the Gini coefficient. Only the agriculture TEI is significantly associated with a higher share of income going to the top 1%.

We start by looking at the effect of the overall state TEI on contemporaneous measures of inequality, the Gini coefficient, the share of income going to the top 1% and bottom 90%, and the poverty rate. Table 5 gives fixed-effect regression results while Table 6 give Arellano-Bond GMM regression results. Both give similar sizes of coefficients with the Arellano-Bond results somewhat less likely to be significant. The first thing to note is that while a higher TEI is associated with a higher Gini coefficient in Table 5, it is a very modest effect given that the Gini is measured on a 0 to 100 scale and the TEI ranges only from -1 to 1. In Table 6 the effect is much smaller and no longer significant. However, both the fixed-effect and

Arellano-Bond regressions find that a higher TEI is associated with both a higher share of income going to the top 1% and a lower poverty rate. While these results are statistically significant, they are still somewhat modest. The state-level TEI has a range of about 1.3, so at most this is explaining about one and half points of the top 1% income share and poverty rate.

[Table 5 about here.]

Adding the TEI to the institutional variables seems only to add a small amount of explanatory power to most of our measures of inequality. Higher levels of the real minimum wage, union membership, and the top marginal tax rate all seem to reduce inequality more, either by reducing the share of income going to the top 1% or increasing income going to the bottom 90%. On the other hand, only union membership (and the share of the labor force who are high school graduates) appears to reduce the poverty rate at a similar level to the TEI. It's difficult to explain why a state with a workforce more exposed to imports (as opposed to one involved in producing for export) would have a lower poverty rate. It's certainly possible that there is some omitted variable that is driving this particular result.

[Table 6 about here.]

We next look at the TEI disaggregated by sector. We now have a state-level TEI for agriculture, manufacturing, and services. Recall from Table 1 and Figure 1 that while the agriculture TEI has a somewhat similar range to the total TEI, both manufacturing and services vary significantly less. In addition, there is no state with a negative manufacturing TEI for even one year, nor a state with a positive services TEI for a year. At least since 1987, manufacturing employment has been, on net, more exposed to imports than exports while services is the exact opposite. When looking at both the fixed-effect regressions in Table 7 and the Arellano-Bond GMM regressions in Table 8, we can see that the manufacturing TEI and service TEI are fairly large and significantly associated with the Gini coefficient, but in

opposite directions. An *increase* in the manufacturing TEI, as a state's economy becomes more exposed to imports, is associated with more income inequality. On the other hand, a *decrease* in the service TEI is associated with more income inequality (as the coefficient is negative). These are still somewhat modest impacts on total income inequality given the range of the variables. However, it is difficult to understand exactly where these effects are coming from, especially for manufacturing. The manufacturing TEI is not significantly associated with any of the other three inequality variables. The service TEI is associated with the poverty rate, but again the causal relationship, if there is one, is difficult to explain. The negative coefficient implies that an increase in service import exposure lowers the poverty rate while an increase in service export exposure increases the poverty rate.

[Table 7 about here.]

Only the agriculture TEI in Tables 7 and 8 is significantly associated with a higher share of income going to the top 1%. This does not do much to support the bargaining power hypothesis as most agriculture produce is presumably not something that can be produced offshore in the same way that manufactured products can be. Somewhat surprisingly, the manufacturing TEI is not associated with a higher share of income going to the top 1% and the coefficients in both regressions are fairly close to zero. This is also true of the service TEI which does little to support either the productivity or bargaining power hypotheses.

[Table 8 about here.]

6 Conclusion

In total, the results presented here provide only modest support for the hypotheses that increased import (or trade in general) exposure will lead to increased levels of inequality by increasing income going to the top 1% and reducing income going to the bottom 90%. While there is some evidence to support that conclusion when looking at the total state-level

TEI, breaking it down by sector raises more questions than it answers. Perhaps the most significant unanswered question is why an increase in the TEI (especially for services) is associated with a lower poverty rate. While there are several statistically significant results of trade exposure on inequality, they appear to pale in comparison with the institutional factors such as the minimum wage, union membership, and the top marginal tax rate. That said, there could be relationships between the explanatory variables that were not explored here. For example, it could be that an increase in import exposure reduces the power of labor unions, reducing their membership numbers, and then leading to an increase in income inequality.

In addition, while this paper explores the contemporaneous relationship between trade exposure and inequality, it could be that there are effects that come with some significant lag. For example, it may be that trade exposure increases before any significant change in employment and inequality in a state which only comes after firms are forced to lay off workers due to the increased competition. On the other hand, if firms (and entire industries) completely close a factory in order to produce offshore, the TEI for the state may actually go down while inequality goes up and workers suffer from lack of work.

The relationship between trade and income inequality, in as much as it exists, is likely to be complex. In the United States, over the last 45 years, we've seen both an increase in trade and an increase in income inequality. However, other developed countries, such as Germany and Sweden, have experienced the same increase in globalization without experiencing as large an increase in income inequality. Our results lend credence to the fact that while there may be some pressure on inequality due to increased trade exposure, institutional factors, such as unionization, the minimum wage, and tax rates play a larger role in determining the distribution of income.

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Table 1: TEI: Summary Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
TEI_s	1150	-0.053	0.234	-0.834	0.476
$TEI_{ag,s}$	1150	-0.093	0.152	-0.736	0.246
$TEI_{mnf,s}$	1150	0.190	0.092	0.021	0.506
$TEI_{svc,s}$	1150	-0.149	0.051	-0.382	-0.044

Table 2: Summary Statistics: State-Level Institutional Data

Variable	Obs	Mean	Std. Dev.	Min	Max
Minimum Wage ($2009)	1150	$6.42	$0.59	$5.33	$8.55
Union Membership (%)	1150	14.91%	6.13%	3.30%	32.90%
Top Marginal Tax Rate	1150	40.0%	4.6%	28.0%	48.2%

Table 3: Summary Statistics: State-Level Inequality Data

Variable	Obs	Mean	Std. Dev.	Min	Max
Gini Coefficient	1150	57.7	3.5	48.9	70.9
Top 1% Income Share	1150	15.50%	3.68%	9.47%	28.24%
Bottom 90% Income Share	1150	59.58%	3.90%	45.37%	67.43%
Poverty Rate	1150	12.49%	3.66%	2.90%	27.20%

Table 4: Correlations Between Trade Exposure Index and State-Level Inequality

	TEI	TEI(ag)	TEI(mnf)	TEI(svc)
Gini Coefficient	0.041	0.1833***	-0.1453***	-0.093***
Top 1% Income Share	0.389***	0.504***	0.157***	0.004
Bottom 90% Income Share	-0.255***	-0.450***	-0.001	0.172***
Poverty Rate	-0.136***	-0.215***	-0.071**	0.141***

Note: *: $p < 10\%$, **: $p < 5\%$, ***: $p < 1\%$

Table 5: Fixed-Effect Regressions with Total Trade Exposure Index

Dependent Variable:	Gini Coeff.	Top 1% Inc. Share	Bottom 90% Inc. Share	Poverty Rate
TEI	0.469**	1.268***	-0.226**	-1.214***
	(0.190)	(0.143)	(0.103)	(0.226)
Log(Real Min Wage)	-2.921***	-1.494***	0.542*	-0.146
	(0.700)	(0.404)	(0.320)	(0.605)
Union Membership (%)	-0.0236	-0.0704***	0.0538***	-0.1000***
	(0.0187)	(0.0208)	(0.0125)	(0.0331)
Top Marginal Tax Rate (%)	-0.104***	-0.0394***	0.0349***	-0.00121
	(0.00908)	(0.00783)	(0.00590)	(0.0113)
High School Graduates	0.0975***	0.0795***	-0.0409**	-0.0471
	(0.0247)	(0.0240)	(0.0194)	(0.0364)
College Graduates	0.0285	0.0813***	-0.103***	-0.0218
	(0.0335)	(0.0268)	(0.0217)	(0.0403)
State Real GDP Growth (%)	0.0192	0.0698***	-0.0558***	-0.00942
	(0.0191)	(0.0191)	(0.0144)	(0.0163)
State Unemployment Rate (%)	0.108**	0.0336	-0.0709***	0.479***
	(0.0439)	(0.0318)	(0.0260)	(0.0579)
US Real GDP Growth (%)	0.0824***	0.212***	-0.202***	0.0393
	(0.0250)	(0.0260)	(0.0239)	(0.0583)
US Unemployment Rate (%)	-0.0702**	0.121***	-0.0964**	0.0220
	(0.0326)	(0.0352)	(0.0360)	(0.0788)
US Recession (Dummy)	-0.960***	-1.116***	1.105***	0.161
	(0.129)	(0.162)	(0.147)	(0.224)
First lag, independent variable	0.917***	1.034***	1.064***	0.290***
	(0.0632)	(0.0298)	(0.0436)	(0.0271)
Second lag, independent variable	-0.101*	-0.231***	-0.206***	0.0822**
	(0.0579)	(0.0352)	(0.0380)	(0.0310)
Constant	14.83***	1.662	10.22***	9.656***
	(1.892)	(1.369)	(1.894)	(2.422)
Observations	1,150	1,150	1,150	1,150
Number of states	50	50	50	50
R-squared	0.923	0.932	0.966	0.866

Clustered robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 6: Arellano-Bond GMM Regressions with Total Trade Exposure Index

Dependent Variable:	Gini Coeff.	Top 1% Inc. Share	Bottom 90% Inc. Share	Poverty Rate
TEI	0.0653	1.205***	-0.0264	-1.655***
	(0.214)	(0.153)	(0.129)	(0.284)
Log(Real Min Wage)	-3.902***	-2.043***	0.0950	-1.129
	(0.968)	(0.508)	(0.419)	(0.839)
Union Membership (%)	0.00263	-0.0735***	0.0496**	-0.125***
	(0.0295)	(0.0237)	(0.0235)	(0.0472)
Top Marginal Tax Rate (%)	-0.115***	-0.0474***	0.0379***	0.0169
	(0.0100)	(0.00794)	(0.00626)	(0.0145)
High School Graduates	0.160***	0.0988***	-0.0582**	-0.141**
	(0.0416)	(0.0300)	(0.0285)	(0.0549)
College Graduates	0.0705	0.127***	-0.199***	0.0773
	(0.0527)	(0.0437)	(0.0389)	(0.0564)
State Real GDP Growth (%)	0.0269*	0.0811***	-0.0625***	0.00572
	(0.0162)	(0.0216)	(0.0154)	(0.0166)
State Unemployment Rate (%)	0.132*	0.0480	-0.0826**	0.631***
	(0.0696)	(0.0404)	(0.0375)	(0.0674)
US Real GDP Growth (%)	0.0524**	0.198***	-0.173***	0.0726
	(0.0237)	(0.0275)	(0.0233)	(0.0556)
US Unemployment Rate (%)	-0.120***	0.0958**	-0.0147	-0.0210
	(0.0425)	(0.0426)	(0.0461)	(0.0917)
US Recession (Dummy)	-0.871***	-1.012***	1.034***	0.130
	(0.119)	(0.161)	(0.138)	(0.201)
First lag, independent variable	0.810***	0.997***	0.979***	0.148***
	(0.0499)	(0.0296)	(0.0461)	(0.0334)
Second lag, independent variable	-0.0880*	-0.242***	-0.210***	0.0134
	(0.0523)	(0.0341)	(0.0368)	(0.0299)
Observations	1,100	1,100	1,100	1,100
Number of st	50	50	50	50

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 7: Fixed-Effect Regressions with Sector Trade Exposure Index

Dependent Variable:	Gini Coeff.	Top 1% Inc. Share	Bottom 90% Inc. Share	Poverty Rate
TEI(agriculture)	-0.359	2.449***	-0.350	-0.864*
	(0.375)	(0.369)	(0.223)	(0.503)
TEI(manufacturing)	5.553***	0.514	0.363	-0.334
	(1.139)	(0.700)	(0.496)	(1.151)
TEI(services)	-4.330***	-1.330	-0.702	-3.579**
	(1.284)	(0.821)	(0.611)	(1.668)
Log(Real Min Wage)	-2.151***	-1.515***	0.627*	0.0337
	(0.648)	(0.421)	(0.336)	(0.642)
Union Membership (%)	-0.0122	-0.0636***	0.0550***	-0.0944***
	(0.0199)	(0.0203)	(0.0124)	(0.0332)
Top Marginal Tax Rate (%)	-0.107***	-0.0510***	0.0348***	-0.00750
	(0.0103)	(0.00758)	(0.00599)	(0.0122)
High School Graduates	0.0927***	0.0591**	-0.0408*	-0.0570
	(0.0251)	(0.0225)	(0.0205)	(0.0389)
College Graduates	0.0210	0.0946***	-0.105***	-0.0174
	(0.0310)	(0.0286)	(0.0223)	(0.0404)
State Real GDP Growth (%)	0.0190	0.0740***	-0.0560***	-0.00806
	(0.0192)	(0.0198)	(0.0145)	(0.0165)
State Unemployment Rate (%)	0.113**	0.0177	-0.0698***	0.471***
	(0.0455)	(0.0305)	(0.0259)	(0.0587)
US Real GDP Growth (%)	0.0745***	0.206***	-0.203***	0.0336
	(0.0240)	(0.0253)	(0.0240)	(0.0584)
US Unemployment Rate (%)	-0.0926***	0.131***	-0.0986***	0.0232
	(0.0336)	(0.0329)	(0.0361)	(0.0789)
US Recession (Dummy)	-0.859***	-1.112***	1.116***	0.189
	(0.122)	(0.156)	(0.146)	(0.227)
First lag, independent variable	0.919***	1.029***	1.063***	0.289***
	(0.0640)	(0.0298)	(0.0438)	(0.0270)
Second lag, independent variable	-0.0978	-0.227***	-0.205***	0.0866***
	(0.0593)	(0.0336)	(0.0381)	(0.0317)
Constant	11.79***	2.868**	9.930***	9.463***
	(2.088)	(1.332)	(1.929)	(2.728)
Observations	1,150	1,150	1,150	1,150
Number of st	50	50	50	50
R-squared	0.925	0.933	0.967	0.866

Clustered robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 8: Arellano-Bond GMM Regressions with Sector Trade Exposure Index

Dependent Variable:	Gini Coeff.	Top 1% Inc. Share	Bottom 90% Inc. Share	Poverty Rate
TEI(agriculture)	-0.366	2.449***	-0.323	-1.083
	(0.401)	(0.382)	(0.274)	(0.673)
TEI(manufacturing)	5.181***	-0.280	1.396**	0.348
	(1.242)	(0.829)	(0.648)	(1.560)
TEI(services)	-5.532***	-0.709	-1.168	-5.761**
	(1.248)	(1.107)	(0.830)	(2.354)
Log(Real Min Wage)	-2.862***	-2.277***	0.485	-0.633
	(0.877)	(0.529)	(0.416)	(0.883)
Union Membership (%)	-0.00527	-0.0690***	0.0585***	-0.112***
	(0.0259)	(0.0228)	(0.0202)	(0.0423)
Top Marginal Tax Rate (%)	-0.118***	-0.0544***	0.0367***	0.00550
	(0.0103)	(0.00785)	(0.00606)	(0.0146)
High School Graduates	0.115***	0.0542*	-0.0488*	-0.152***
	(0.0365)	(0.0291)	(0.0293)	(0.0556)
College Graduates	0.0682	0.162***	-0.191***	0.0739
	(0.0485)	(0.0421)	(0.0370)	(0.0542)
State Real GDP Growth (%)	0.0267	0.0844***	-0.0622***	0.0101
	(0.0177)	(0.0213)	(0.0154)	(0.0177)
State Unemployment Rate (%)	0.136*	0.0228	-0.0791**	0.605***
	(0.0704)	(0.0383)	(0.0377)	(0.0624)
US Real GDP Growth (%)	0.0465**	0.197***	-0.181***	0.0485
	(0.0229)	(0.0257)	(0.0230)	(0.0579)
US Unemployment Rate (%)	-0.139***	0.123***	-0.0359	-0.0252
	(0.0441)	(0.0374)	(0.0453)	(0.0877)
US Recession (Dummy)	-0.788***	-1.041***	1.075***	0.188
	(0.112)	(0.155)	(0.138)	(0.211)
First lag, independent variable	0.832***	1.002***	0.993***	0.169***
	(0.0557)	(0.0301)	(0.0462)	(0.0312)
Second lag, independent variable	-0.0828	-0.235***	-0.208***	0.0289
	(0.0551)	(0.0338)	(0.0371)	(0.0315)
Observations	1,100	1,100	1,100	1,100
Number of st	50	50	50	50

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Figure 1: Average TEI (Total and by Sector), 1987-2009