



Labor Market Effects of International Trade and Globalization

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Study Materials and Reading List

- Slides of the lectures

All materials provided on: <http://home.cerge-ei.cz/pytlikova/LaborSpring19/>

Compulsory Readings:

- Cahuc, Carcillo and Zylberberg: Labor Economics, Chapter 11, Globalization, employment and inequality

Other Relevant Literature:

- Ehrenberg and Smith: Modern Labor Economics, Chapter 16, the Labor Market Effects of International Trade and Production Sharing
- Dutt P., Mitra, D. and P. Ranjan (2009): "International trade and unemployment: Theory and cross-national evidence" Journal of International Economics, 2009, vol. 78, is.1, pp 32-44.
- Felbermayr, G. Prat, J. and HJ Schmerer (2011): "Trade and unemployment: What do the data say" European Economic Review 55 (6), pp. 741-758.
- Hummels, D., Munch J.R. and Ch. Xiang (2016): Offshoring and Labor Markets. IZA DP No 9741.
- Eriksson, T., Pytlikova, M and F. Warzynski (2013): "[Increased Sorting and Wage Inequality in the Czech Republic: New Evidence Using Linked Employer-Employee Dataset.](#)" *Economics of Transition*, Vol. 21, Issue 2, pp. 357-380.

OUTLINE

- **Trends in globalization and labor market outcomes**
- **Trade a theory refresher**
 - Trade between Individuals and the Principle of Comparative Advantage
 - The Incentives for Trade across Different Countries
 - Trade theories and prediction on labor market outcomes
- **The effects of globalization on labor outcomes - Empirical evidence**
 - **On macro level – methodology and evidence**
 - **On micro level – methodology and evidence**

4

Globalisation and Labor Market Effects

- Globalization has made it increasingly unclear what “domestic” output is, and this is due to the geographic dispersion of the various steps in the production process – “*production sharing*”/ “*offshoring*”
- We now experience increased movements of components, services, and final goods across international borders, increased trade of both imports and exports.
- Domestic workers face increased competition from a huge number of lower-paid foreigners.
 - “Production sharing” means work is being outsourced or “offshored” to other (low-wage) countries (*example of American laptop – designed in the US, use a microprocessor produced in Malaysia or Cost Rica, keyboard manufactured in Korea, all assembled in Taiwan and be supported by a telephone help in India*)
- Domestic workers – or at least a large segment of them (mostly low skilled) – are being made worse off by a more integrated world economy (*or ARE THEY??*)

5

Some trends – the rise in the volume of trade

- Through globalization, the volume of trade between the industrialized countries and the emerging economies has risen in terms of both exports and imports.
- The gap in the cost of low-skilled manpower between the rich and the poor countries suggests that the latter have an advantage in the export of goods produced by this type of labor.

6

Some trends – the rise in the volume of trade – evolution of trade (of goods) between industrialized and developing countries

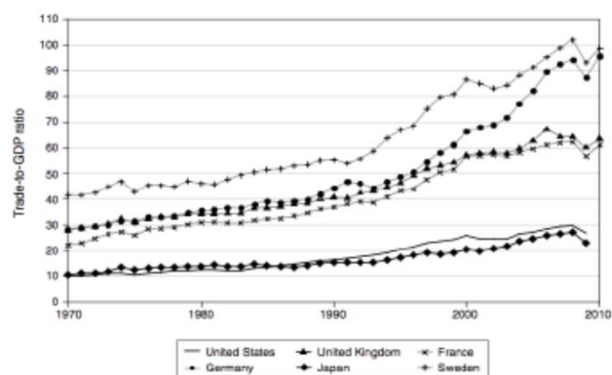


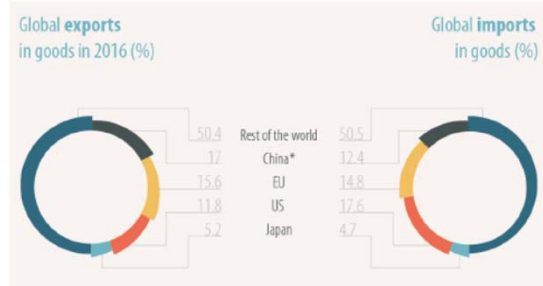
Figure 11.1
Trade openness, 1970–2010.

Note: Trade openness is defined by $(\text{exports} + \text{imports})/\text{GDP}$. Values at constant prices, constant exchange rates (base year 2000).

Source: OECD Macro trade indicators.

Some trends – the rise in the volume of trade

- Previous figure shows that on average rates have grown considerably since 1970, in particular for EU countries (mostly due to a strong integration with other EU members), but also US and Japan experienced an increase from 10% to 30% in 2008.
- At the same time, the shares of exports from the largest economies have shrunk, reflecting the development of trade in other parts of the world, in particular from Asia.
- For instance, the value of exports from the EU and the US represented 24% and 28% of total exports worldwide in 1958 but only 16% and 12% in 2016 (Eurostat). The huge expansion of trade in China has no equivalent among the other developing countries.



Some trends – the rise in the volume of trade –

exports and imports evolution in the OECD countries 1980-2008

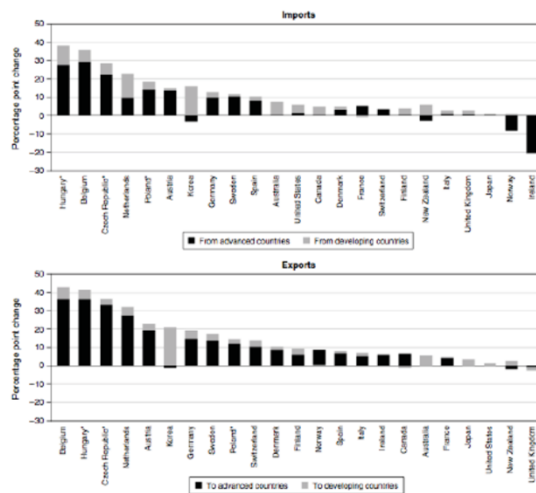


FIGURE 13.2
Change in import and export intensity by region of origin, 1980-2008. Trade in services is not included.
Note: *Import intensity" = imports/GDP; **Export intensity" = exports/GDP.
Source: OECD (2012), Figure 1.3.

Some trends – the rise in the volume of trade

- Previous figure shows that most of the increases of imports stemmed from the development of trade between advanced economies.
 - However, the extent of economic integration was much stronger in the non-EU countries
 - Nearly, all the increase in goods' imports and exports in Australia, New Zealand, Korea and Japan over this period can be attributed to a rise in trade with developing countries
 - Exports appear to have evolved primarily towards the most advanced countries, except Korea and Japan where trade is particularly integrated with other Asian countries
 - As a result China has gained a substantial share of imports into the EU and the US.

Some trends – the rise in the volume of trade

	European Union (27)		U.S.A.		Japan		China
1. China	17.3	China	18.4	China	21.5	EU (27)	12.1
2. Russia	11.8	EU (27)	16.6	EU (27)	9.4	Japan	11.2
3. US	10.9	Canada	14.1	US	8.9	Korea	9.3
4. Norway	5.5	Mexico	11.7	Australia	6.6	Taipei	7.2
5. Switzerland	5.5	Japan	5.9	Saudi Arabia	5.9	US	7.1

Table 1: The origin of imports into the European Union countries, the United States, Japan and China in 2011.

Legend: 18.4 percent of the imports of the United States come from China.

Source: World Trade Organization, <http://www.wto.org>

Some trends – International differences in the cost of labor in manufacturing industry

- In developing countries, large pools of unskilled labor exist
- The differences between the cost per hour of blue-collar worker in developing countries and those in developed countries are considerable, see the next table comparing industry in the US with that of certain developing countries in 1997 and 2011.
- Since workers in poor countries usually consume products locally produced, the differences in purchasing power are less than the differences in cost.
- Even if the developing countries have a technological lag, the size of the cost difference for low-skilled labor gives them an advantage in the production of goods requiring this type of labor.

Some trends – International differences in the cost of labor in manufacturing industry

	In U.S. dollars		U.S.=100	
	1997	2011	1997	2011
Sweden	25.0	49.1	108.6	138.3
Germany	29.2	47.4	126.6	133.4
France	24.9	42.1	107.9	118.5
Italy	19.8	36.2	85.7	101.8
Japan	22.0	35.7	95.4	100.5
United States	23.0	35.5	100.0	100.0
United Kingdom	19.3	30.8	83.7	86.6
Spain	14.0	28.4	60.5	80.1
Korea, Republic of	9.2	18.9	40.0	53.2
Brazil	7.1	11.6	30.7	32.8
Taiwan	7.0	9.3	30.6	26.3
Poland	3.2	8.8	13.7	24.9
Mexico	3.5	6.5	15.1	18.3
Philippines	1.3	2.0	5.6	5.7

Table 2: The cost of labor in manufacturing industry in US dollars, 1997-2011.

Source: Bureau of Labor Statistics, <http://www.bls.gov/fls/>

Some trends – trade and labor market outcomes

- *Did the large increase in trade affected labor market outcomes such as wages, unemployment or the rising inequality?*
- More opened countries seem to feature higher unemployment rates.
- The correlation between unemployment and openness is difficult to interpret since trade can be influenced by unemployment (trade policies can become more restrictive) as much as unemployment can be influenced by trade
- In a same way, the development of wage inequalities could influence trade policies as much as trade could affect policies wage inequalities

Some trends – trade and labor market outcomes

We observe a negative correlation between unemployment and international trade flows in the long run.

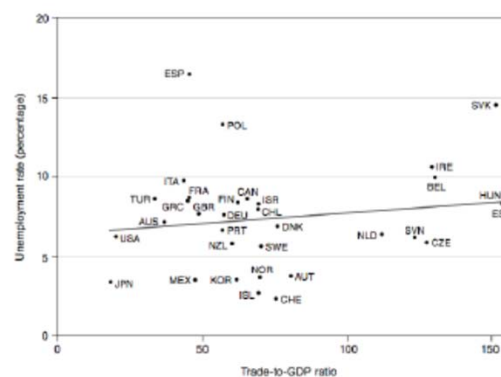


Figure 11.3
Unemployment and openness in the 34 OECD countries, over the period 1980-2010.

Note: Averages of unemployment rates and trade-to-GDP ratios (exports and imports/GDP) over the period 1980-2010, except for Chile, the Czech Republic, Estonia, Hungary, Israel, Poland, the Slovak Republic, and Slovenia for which the period starts between 1989 and 1996.

Some trends – trade and labor market outcomes

We observe a negative correlation between unemployment international trade flows in the long run.

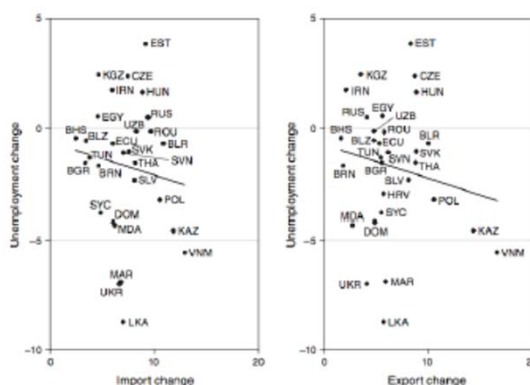


FIGURE 11.5

Change in unemployment and change in exports/imports in the non-OECD countries and in former communist countries, over the period 1990–2012 (percentage points for unemployment, percentage for import and export change).

Note: For imports and exports: average annual percentage change of volume of imports/exports of goods and services over the period 1990–2012; for unemployment: difference between the averages of unemployment rates over the periods 2007–2012 and 1990–1995. Countries selected based on the availability of data for that period.

Some trends – trade and labor market outcomes

- The correlation between unemployment and openness is difficult to interpret since trade can be influenced by unemployment (trade policies can become more restrictive) as much as unemployment can be influenced by trade
- Further, many other macroeconomic changes could be correlated with both employment/unemployment and trade, such as financial markets and the development in new technologies.
- In a same way, the development of wage inequalities (possibly due to other factors such as technological change/education) could influence trade policies as much as trade could affect policies wage inequalities.
- To establish a causal link between changes in trade and labor market outcomes, we need both theory, and then data & sound empirical strategy to disentangle the facts and make sure we can identify a causal relationship between the variables.

Why Does Trade Take Place? A refresher

- The first step in the make-or-buy decision is for each party to perform an *internal* comparison: individuals must consider their *own* opportunity costs of producing the good or service in question.
- Economists agree that *comparative advantage* is the basis of trade between two or more individuals/countries. The principle of comparative advantage underlies all decisions about trade with others.
 - Individuals have the incentive to *specialize* in the production of goods or services, in which they have comparative advantage, and buy from others the goods or services they would find more expensive to produce themselves.

Benefits from free trade – trade theories, a refresher

- **Ricardo:** gains from specialisation on comparative advantage comparative vs. absolute advantage
 - E.g. Ricardo (1817), example of UK and Portugal – In PT possible to produce wine and cloths) with less labor costs than in UK. However the *relative costs* of producing those two goods are different in the two countries. In England it is very hard to produce wine, and only moderately difficult to produce cloth. Therefore while it is cheaper to produce cloth in Portugal than England, it is cheaper still for Portugal to produce excess wine, and trade that for English cloth.
- **Heckscher-Ohlin**
 - gains from specialisation on goods, which intensively use abundant factors in production
 - E.g. Countries export commodities produced through the intensive use of factors, which they possess in abundance. Labor abundant countries export labor-intensive commodities and import capital-intensive commodities

Benefits from free trade – trade theories, a refresher

- **Stolper and Samuelson theorem**, 1947, trade liberalization -> a rise in the relative price of a good will lead to a **rise in the return to that factor**, which is used most intensively in the production of the good, and conversely, to a fall in the return to the other factor.
 - *Impacts on labor market outcomes*
 - The theorem predicts that, when developed economies engage in trade with emerging/developing countries, the unskilled workers of developed economies are expected to lose in terms of wages, while owners of capitals are expected to gain.
 - And conversely, it predicts that the wages of the unskilled workers should decline in developed countries and rise in poor countries as a consequence of trade
 - *For the model, see Cahuc et al, Labor Economics, ch11, section 1.2*

Benefits from free trade – trade theories, a refresher

- **Firms, Selection and Trade**
- **New Trade Theory** (e.g. Krugman, 1985): gains from exploiting economies of scale, increasing product differentiation and higher competition
- Reaction to an evidence that trade happens mostly within industries.



Paul Krugman – 2008 Nobel Prize winner in economics

- explanation of trade between similar countries (JIE 1979)

- Krugman assumes that **consumers prefer a diverse choice** of brands, and that production favors **economies of scale**.

-Consumers' preference for diversity explains the survival of different versions of cars like Volvo and BMW. But because of economies of scale (and saving cost by producing at a larger and more efficient scale), it is not profitable to spread the production of Volvo and BMW all over the world; instead, it is concentrated in a few factories and therefore in a few countries (or maybe just one).

-This logic explains how each country may specialize in producing a few brands of any given type of product, instead of specializing in different types of products.

-In Krugman's "love for variety" model, all firms are identical. However, in reality, exporting firms are bigger, more productive and pay higher wages than non-exporting firms.

-Melitz (2003) incorporates this heterogeneity and highlights the selection effect, *for a model see Cahuc et al. Labor Economics, Ch11, section 1.3.*

Effects of Trade on labor market outcomes – EMPIRICS – Macro level

- The Stolper and Samuelson theorem predicts that, when developed economies engage in trade with emerging or developing economies, the unskilled workers of developed economies are expected to lose, while owners of capitals are expected to gain
- The Stolper-Samuelson model does not fit the evidence very well. Empirical studies tell us that at the macro level, more trade is associated with less unemployment, not more, at least in the long run
- Moreover, the impact of trade on wage inequality is modest at best, and it happens across plants and firms within sectors, and in both developed and developing countries. This is consistent with the fact that trade is mostly intra-industry and driven by product differentiation (Krugman, 1980; Melitz, 2003), inducing reallocation of factors between firms within a sector.

Effects of Trade on labor market outcomes – EMPIRICS –methodology

MACRO LEVEL

- The basic regression used

In cross-section databases, information is only observed at one point in time

A basic regression with cross-section data is:

$$y_i = \alpha + \beta T_i + X_i \gamma + \varepsilon_i$$

- ▶ y_i is a measure of unemployment or income/wage inequality in country i
- ▶ T_i is a measure of trade such as trade openness
- ▶ X_i represents a set of controls such as labor market institutions, demography, and the business cycle

Effects of Trade on labor market outcomes – EMPIRICS –methodology

This equation yields a nonbiased estimate of β if $\mathbb{E}(T|\varepsilon) = 0$

This might not be the case for several reasons:

1. Variables influencing both trade and unemployment may have been omitted. For instance, good macroeconomic policies might lead to more trade openness and less unemployment
2. There may be **reverse causality**: trade and unemployment may be caused by each of them

Moreover, the unemployment rate and trade openness are subject to measurement error, which tends to attenuate their relationship

Effects of Trade on labor market outcomes – EMPIRICS

Estimates of Employment Effects

- It is difficult to isolate the effects of trade on employment levels because there are many other factors (immigration, technology, personal incomes, and consumer preferences) that affect labor supply and demand.
- The labor market structures seem to play a role - In countries with relatively flexible wages & decentralized labor markets, such as the US, the UK, the decline in relative demand for less-skilled labor has translated into lower relative wages for these workers. In contrast, in countries with relatively rigid wages set in centralized labor markets, such as France, Germany, and Italy, it has meant lower relative employment of less skilled.
- about 70 percent of the overall shift in U.S. labor demand in manufacturing was a change in skill demands *within* industries, not *across* industries from less skill-intensive to more skill-intensive.
- income gaps have widened in a number of developing countries as well & labor demand in developing countries has also shifted toward workers with high skill levels relative to the average. For example, research reveals that trade liberalization in Mexico in the mid-to-late 1980s led to increased relative wages of high-skilled workers. We might have expected trade liberalization to boost the demand for unskilled labor & raise unskilled wages, but in fact the opposite has happened in some developing countries.

Effects of Trade on labor market outcomes – EMPIRICS

Estimates of Employment Effects

- Several studies on the effect of opening up to international trade on employment/unemployment
- A study by Trefler, (AER 2004) estimated the effect of the Canadian-US Free Trade Agreement leading to employment fell by 12% in those Canadian industries most affected by the tariffs reduction on imports from the United States, but the *overall employment rate* in Canada was the same in 2002 as it was in 1988.
- Felbemayr et al. (2011) find that trade liberalization lowers unemployment and raises real wage as long as it improves aggregate productivity due to the selection effect.
- Helpman and Itskhoki (2012) show that the relationship between trade and unemployment can be hump shaped – if the labor market of exporting sector is “rigid”, unemployment higher than in the non-exporting sector
- Findings from Denmark, the decline in textile industry (Nielsen, NW)

Empirical application, example Dutt et al, JIE2009

- Dutt et al., 2009, obtain a negative and significant effect of openness to international trade on unemployment rates
- In addition to tariffs, the authors use 2 alternative measures to trade: openness and import duties
- In their first estimation, the unemployment rate is regressed on an indicator of trade and then control variables are added to the basic regression
 - ▶ To account for measurement error, and possible reversed causality, the measure of trade is instrumented by:

$$T_i = \mathbf{Z}_i\delta + \eta_i$$

- ▶ \mathbf{Z}_i a set of instrumental variables influencing trade but not correlated with unemployment, such as country size, distance between trade partners, and other geographical determinants

Empirics, example Dutt et al, 2009

	OLS		IV		IV	
$T_i =$ Unweighted tariff	.351***			.750**		.659*
$T_i =$ Openness		-.024*			-.065**	
$T_i =$ Import duty			.492***			.664***
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Participation	No	No	No	No	No	Yes
Observations	55	55	54	44	55	43
R^2	.28	.20	.33	.	.	.

Table 3: The effect of trade policies on the unemployment rate across countries

Note: controls include the GDP, the output volatility, EPL index, labor union power index, working-age population, civil liberties, black market premium

Source: Dutt et al. (2009) tables 2, 3, 4 and 5/

Empirical specification

- ▶ Alternative specification: to verify the differential impact of trade on the labor market outcomes, the coefficient of the trade variable has to vary according to the level of capital per capita
- ▶ Thus, the basic regression becomes:

$$y_i = \alpha + \beta_1 T_i + \beta_2 T_i \cdot (K_i/L_i) + \beta_3 K_i/L_i + X_i \gamma + \varepsilon_i$$

- ▶ K_i/L_i is the level of capital per head in country i

If the Stolper-Samuelson theorem is verified, then trade restriction should increase unemployment in high-capita-per head countries

Empirical specification, example Dutt et al, 2009

OLS	T_i = Unweighted tariff	T_i = Openness	T_i = Import duty
Trade measure	.227	.158	3.824**
Trade measure × capital-labor ratio	.015	-.017	-.349**
Capital-labor ratio	1.450	1.350	4.521**
Controls	Yes	Yes	Yes
Observations	48	48	47
R^2	.31	.27	.42

Table 4: The effect of trade policies on the unemployment rate depending on the capital to labor ratio.

Note: controls include the GDP, the output volatility, EPL index, labor union power index, working-age population, civil liberties, black market premium .

Source: Dutt et al. (2009) tables 6

Empirical specification, example Dutt et al, 2009

- ▶ If the Stolper-Samuelson theorem is verified, then trade restriction should increase unemployment in high capital-per-head countries
- ▶ Table 4 shows that there is a little support for this theorem: coefficients are insignificant and/or of the wrong sign. Higher tariffs do not lower unemployment in high capital-to-labor-countries, nor does more openness increase it
- ▶ Only higher import duties seem to be associated to lower unemployment
- ▶ But, the authors show that this result does not hold when the measure of trade is instrumented

Empirical specifications, drawbacks of cross-sections

Cross-section analyses have several limitations:

- ▶ They cannot identify how shifts in trade policies impact macroeconomic outcomes within countries over time. For instance, the short-term impact may differ from the long run
- ▶ When the data available are in panel form, the basic regression can be augmented with country effects so as to account for time-invariant characteristics

Empirical specifications, advantages and drawbacks of panel data analysis

- ▶ Adding a longitudinal dimension to the analysis, and taking into account the persistence of some macroeconomic outcomes like unemployment or inequality, the measure of trade becomes:

$$y_{it} = \sum_{s=1}^S \rho_s y_{i,t-s} + \beta T_{it} + \mathbf{X}_{it} \gamma + \mu_i + \varepsilon_{it} \quad (11.27)$$

- ▶ In this equation, all the previous variables now have a time dimension, so that i is the index for the country and t is index for time
- ▶ The dependent lagged variable $y_{i,t-s}$ characterizes the persistence of the dependent variable over time
- ▶ s denotes the total number of lags
- ▶ μ_i is a country-specific effect
- ▶ T_i is a measure of trade such as trade openness
- ▶ \mathbf{X}_i represents a set of controls such as labor market institutions, demography, and the business cycle

Empirical specifications, advantages and drawbacks of panel data analysis

In this setting, the previous problems presented in the cross-sectional framework are still present but take different forms and are dealt with in different ways:

1. The business cycle fluctuations heighten the difficulty of interpreting correlations between trade and unemployment or wages
2. Omitted variables that do not vary over time can be controlled by the country-fixed effects
3. The reverse causality problem is addressed by using the time dimension of data. The measure of trade can be instrumented by past values, which cannot possibly be influenced by the current level of the dependent variable

The time dimension in panel analysis gives rise to autocorrelation of residuals which implies that the OLS estimator is biased

Empirical specifications, advantages and drawbacks of panel data analysis

The Arellano-Bond (GMM) estimator

- ▶ The method comes down to differencing both sides of equation (11.27) and then look for all instrumental variables for the endogenous variables and use the GMM to estimate coefficient
- ▶ Considering the equation with only one lagged dependent variable, and temporarily dropping the set of controls \mathbf{X} to simplify the presentation, we get:

$$\Delta y_{it} = \rho \Delta y_{it-1} + \beta \Delta T_{it} + \Delta \varepsilon_{it}$$

- ▶ For any variable x_{it} , $\Delta x_{it} = x_{it} - x_{it-1}$

Empirical specifications, advantages and drawbacks of panel data analysis

Results with panel data

- ▶ For the panel data analysis, time dummies identify permanent trade liberalization periods: $T_{it} = 1$ after trade liberalization and 0 before
- ▶ They include the lagged trade liberalization dummies to allow the unemployment to vary over time according to trade policies
- ▶ The unemployment falls in the wake of trade liberalization, as presented in table 5
- ▶ Overall, the results of Dutt et al. (2009) show that over the 1985-2004 period, unemployment is correlated negatively not only to international trade across countries but also within countries:
 - ▶ Trade liberalization episode is associated to a decline in unemployment over time

Empirical specifications, advantages and drawbacks of panel data analysis

	OLS	OLS, FE	GMM	GMM
y_{it-1} = lagged unemployment	.963***	.773***	.616***	.267***
T_{it} = liberalization dummy	.814**	.701*	.925***	.818***
T_{it-1} = lagged liberalization dummy	-.841*	-.664*	-1.983**	-1.346***
T_{it-2} = lagged liberalization dummy	-.756*	-.653*	-.412**	-.838**
Controls (output, demography, labor market)	Yes	Yes	Yes	Yes
labor market participation	No	No	No	Yes
Observations	1096	1096	1011	1011
Number of countries	73	73	72	72

Table 5: The effect of trade policies on the unemployment rate within countries

Note: in the GMM estimates, Trade liberalization and labor force participation are treated as endogenous. Source: Dutt et al. (2009) tables 7

Empirical specifications, advantages and drawbacks of panel data analysis

Main results of other empirical work:

- ▶ Felbermayr et al. (2011b) find that unemployment decreases with trade openness, mostly among skilled workers
- ▶ They also show that more severe labor market search frictions in trading partners increase domestic unemployment. Larger trading partners, and more open economies are more sensitive to their partners' unemployment
- ▶ This tends to invalidate the relevance of the "beggar-thy-neighbor" assumption, by which one country may attempt to remedy its own problems in ways that tend to worsen the problems of its partners

Empirical specifications, trade and productivity

Trade is positively correlated with the average per capita income

- ▶ Frankel and Romer (1999) used a sample of 150 countries to analyze the influence of trade on per capita income in 1985. They instrumented trade in the basic regression of measure of trade by geographical determinants
- ▶ They also controlled for within-country trade, proxied by the size of the domestic market

Empirical specifications, trade and productivity

- ▶ They find that the effect of trade on per capita income is positive and significant, and it rises when trade is instrumented by geographical variables compared with OLS estimates, suggesting that OLS underestimates the effect of trade on unemployment
- ▶ Their estimates imply that a one-percentage-point increase in the trade share raises income per capita by 2 percent
- ▶ Based on the same instrumental approach, Alcalá and Ciccone (2004) find a consistent impact of trade on productivity, measured as GDP per worker, and use real openness (imports plus exports relative to purchasing power parity GDP) as a measure of trade. They find that the elasticity of productivity to trade openness is around 1.2

Empirical specifications, trade and wage inequality

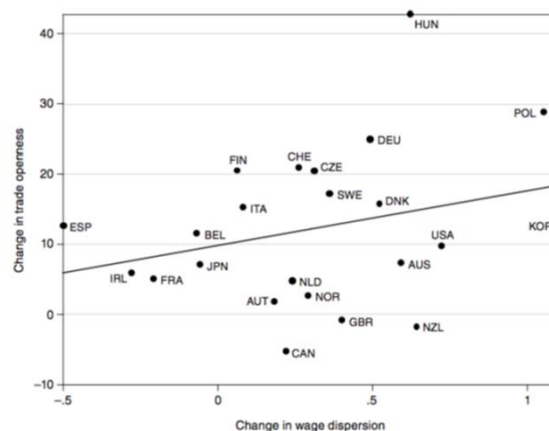


FIGURE 11.8
Trends in wage dispersion and trade openness (1985–2007, 23 countries). (Percentage points.)

Note: Trade exposure is a weighted average of export intensity (exports as a % of GDP) and import penetration (imports as a % of domestic demand); wage dispersion is the D9/D1 ratio for full-time weekly earnings. Data start in the mid-1990s for the Czech Republic, Ireland, Hungary, Norway, Poland, Spain, and Switzerland.

Source: OECD (2012, figure 1.5).

Empirical specifications, trade and wage inequality

- ▶ The impact of trade on wage inequality is less clear
- ▶ Figure 11.8 shows that there is a moderate cross-country positive correlation between changes in trade and changes in wage dispersion
- ▶ Table 6 shows that there is no clear correlation between trade and wage dispersion
 - ▶ Wage dispersion is positively associated with technological progress and the share of the population that has attained secondary education
 - ▶ However, labor market regulation does not alter these results
 - ▶ Column 3 and 4 show that disaggregating the overall trade exposure variable into subcomponents does not change these results
 - ▶ Column 5 shows that the region of origin and destination indicate no apparent relation between wage dispersion and imports from emerging economies

Empirical specifications, trade and wage inequality

Dependent var. : <i>ln</i> D9/D1 ratio	(1)	(2)	(3)	(4)	(5)	(6)
<i>ln</i> Overall trade exposure	.049	.035				
<i>ln</i> Exports			.038			
<i>ln</i> Imports				-.052		
<i>ln</i> Imports for low/med. income countries					-.017	-.037**
<i>ln</i> Imports from low/med. income countries × dummy for low EPL						.073**
dummy for low EPL						.001
<i>ln</i> Union coverage rate		-.039*	-.040**	-.033*	-.039**	-.004
EPL		-.052***	-.052***	-.058***	-.053***	-.066***
<i>ln</i> Tax wedge		-.112***	-.110***	-.106***	-.102***	-.110***
<i>ln</i> Product Market Regulation		-.040**	-.039**	-.041**	-.036**	-.048***
<i>ln</i> Technological change		.097**	.098**	.103**	.093**	.090*
<i>ln</i> % Post-secondary education	-.119*	-.116***	-.120***	-.102***	-.115***	-.089***
Observations	333	333	333	333	333	333
R ²	.45	.55	.55	.55	.55	.57

Table 6: The effect of trade policies on wage inequality in panel of 22 OECD countries.

Note: controls include country and year fixed effects, output gap, and sectorial share of unemployment.

Source: OECD (2012) tables 2.1, and 2.2.

Empirical specifications, trade and inequality, micro-data

- ▶ Macroeconomic studies previously reviewed have some drawbacks:
 - ▶ Lack of reliable data for developing economies
 - ▶ Difficulty of identifying the impact of trade separately from the impact of other factors that can influence trade
- ▶ To bypass these drawbacks, some empirical studies have relied on data at the firm or the individual level
- ▶ Yet identifying the impact of trade at the firm level is a further challenge because many competing factors can influence wages, employment, and job turnover
- ▶ Moreover, firms that export might have unobserved characteristics or might hire workers with special abilities that also influence wages and turnover

Empirical specifications, trade and inequality, micro-data

- ▶ Bernard and Jensen (1997) analyzed the increased demand for skilled labor and rising wage inequality in the 1980s in the US manufacturing sector, using an exhaustive microeconomic data set on individual establishments over the period 1973-1987 at the plant level
- ▶ They examined if the employment and wage share for nonproduction workers were increasing as a within-plant changes in employment and wages across plants

Empirical evidence, trade on wages, micro data

- ▶ Schank et al. (2007) use a large longitudinal set of employer-employee data for Germany between 1995 and 1997, and show that the wage premium in exporting firms does not vanish even when observed and unobserved time-variant characteristics of workers are controlled for
 - ▶ They also find that workers in exporting plants earn more than similar employees in nonexporting firms
- ▶ Munch and Skaksen (2008) give similar results based on their analysis of the wage premium of exporters on Danish data for the period 1995 to 2002:
 - ▶ Even if the most productive firms decide to be exporters, the size of the wage premium could be influenced by the skill intensity of their employees
 - ▶ They introduced an interaction term between the exports variables and the skill intensity and find that its sign on wages is positive

Empirical evidence, effect of trade on wages

Effect of Trade on Wages using matched employer-employee data:

- Jens Suedekum: Adjusting to Globalization-evidence from Worker-Establishment Matches in Germany
- use the Sample of Integrated Labour Market Biographies (SIAB) from the German Institute for Employment Research (IAB) –a random 2% with 2.4m mil workers
- construct a balanced 11-year panel for each of workers between 22 and 54 years old in manufacturing sector,
- Focus on annual earnings relative to worker's earnings in base year (1990, 2000)
- All individual and firm controls..
- Trade data UN commodity trade statistics database (COMTRADE) at 3 digit industry NACE level to create import and export exposure

Empirical evidence, trade on wages, micro data

Effect of Trade on Wages:

- Suedekum, J. et al 2016 *Findings*:
- Rising import penetration reduces cumulative earnings over ten years by about 1,8 %, while rising exports lead to an increase by about 2,2, %.
- Import penetration induces workers to leave the exposed industries. Intra-industry mobility to other firms or regions are less common adjustments. This induced industry mobility mitigates the adverse impacts of import shocks in the workers' subsequent careers, but their cumulated earnings over a longer time horizon are still negatively affected.
- They find much less evidence for sorting into export-oriented industries, but the earnings gains mostly arise within job spells.
- Further, German workers in export exposed industries realize gains by switching employers (within industries)

Empirical evidence, trade on wages, micro data

Using natural experiments

- ▶ The evidence described above should be considered as descriptive because after controlling for external economic factors, there is no certainty that the measured effect is causal
- ▶ A better strategy to identify a causal impact would be to measure the effect of trade following some liberalization “shocks” affecting firms differently

Empirical evidence, trade on wages, micro data

- ▶ Verhoogen (2008) shows that the increase in wage inequalities in Mexico coincided with increase in the exports of manufactured goods
 - ▶ The Krugman-Melitz model suggests that this change stems from the fact that only the most productive high-paying firms should be able to seize the opportunity presented and expand to export markets
 - ▶ The Stolper-Samuelson theorem would predict, on the contrary, that wage inequality should fall in a country with intensive low-skilled labor
 - ▶ Verhoogen compares wages and other outcomes during, before and after the crisis period

Empirical evidence, trade on wages, micro data

- ▶ Verhoogen compares the difference in the change in wages between higher-productivity and lower-productivity firms during and after the crisis period
- ▶ The equation is:

$$\Delta y_{ijr} = \alpha + \beta z_{ijr} + \gamma_j + \gamma_r + \varepsilon_{ijr}$$

- ▶ Δy_{ijr} is the change in the outcome over the considered period (1993-1997 or 1997-2001) in firm i in industry j and in Mexican state r
- ▶ z_{ijr} is the proxied productivity level in the initial year of the period
- ▶ γ_j is an industry fixed effect and γ_r is a state fixed effect

Empirical evidence, trade on wages, micro data

Dependent var.	Δ (export share)	$\Delta \ln$ (white-collar wage)	$\Delta \ln$ (blue-collar wage)
OLS regressions			
1993 – 1997	.020***	.072***	.036***
1997 – 2001	.007***	.016**	.008
Diff (1993 – 1997 vs 1997 – 2001)	.014***	.056***	.028***

Table 7: The effect of the Peso devaluation in Mexico on trade and wage inequality

Note: All regressions include 205 industry dummies and 32 state dummies. Number of observations is 3,263 for all regressions except the last column where it is 844.

Source: Verhoogen, 2008, Tables II and IV.

Empirical evidence, trade on wages, micro data

- ▶ Table 7 shows that there is a greater differential changes in the export share of sales for higher-productivity firms, as well as higher white-collar wage growth, blue-collar wage growth, and higher relative wage of white-collar workers in the peso crisis period than in the placebo period
- ▶ These results confirm the predictions of the Krugman-Meltiz class of models, as well as the potential role of quality upgrading in assessing the impact of trade on emerging economies

Empirical evidence, trade on wages, micro data

- ▶ All in all, the evidence supports the predictions of the Krugman-Melitz model over the Stolper-Samuelson theorem
- ▶ At the aggregate level, there is no evidence that trade increases unemployment or contributes to the rise in inequality
- ▶ At the firm level, the selection effect of the Krugman-Melitz seems to be at play
 - ▶ Exporting firms tend to be larger, create more jobs, and pay higher wages than non-exporting firms
- ▶ The study of exceptional trade liberalization events suggests that these features are the result of the selection effect of trade

NEXT LECTURE on Thursday 14.3.2019: EFFICIENCY WAGES - TO BE GIVEN BY DANIEL

REMEMBER – THE NEXT TUESDAY 19.3. 2019 is THE DEADLINE FOR DRAFT ASSIGNMENTS AND A “PREPARATION DAY” – NO LECTURE!! PLEASE SPEND THE TIME FOR PREPARING YOUR PRESENTATION AND COMMENTS TO YOUR FELLOW STUDENTS’ ASSIGNMENT (which you will receive the same day)

MINI CONFERENCE THURSDAY 21.3.2019, 11.20-14.00

All INFO on our website