Temporary Protection and the Effects of Import Competition on Local Labor Markets

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Abstract

We investigate the impacts of temporary tariff protection measures (TP measures), i.e. anti-dumping, safeguard, and countervailing duty, on the US local manufacturing employment markets over the period of 1990-2007. To resolve the problem of biased and inconsistent estimators resulting from endogenous explanatory variables, we adopt instrument variable estimation, using TP measures and imports data from the European Union as instrument, to examine the casual relationship. We found that TP measures, in general, is helpful at mitigating the negative impact from import competition on the US local employment at commuting zone levels.

Empirical Design

The baseline estimation equation would be an extension of the [1] framework:

$$\Delta L_{it}^{m} = \gamma_t + \beta_1 \Delta IPW_{uit} + \beta_2 \Delta IPW_{uit} \times TP_{uit} + \beta_3 TP_{uit} + \varepsilon_{it} \qquad (1)$$

- ΔL_{it}^{m}: change share of manufacturing employment in commuting zone i.
- ΔIPW_{uit}: change in US import competition in commuting zone i. Following [1], it represents the Δ current period imports from China to US/worker.
- TP_{uit}: average TP measures received by commuting zone i in year t

We expect $\beta_2 > 0$ if TP measures are successful in mitigating the negative impact from import shock.

We break into 4 steps to define TP_{uit}. First, since TP measures are imposed at 10-digit level in the US while they imposed at 8-digit level in the EU, we define HStp as the average TP measure on 6-digit level HS codes as equation (1), where k_i represents the i^{th} product in 10-digit for the US and 8-digit for the EU under the same 6-digit HS code k:

$$HStp_{ket} = \sum_{i=1}^{I} TP_{k_i} \times \frac{IM_{k_i et}}{IM_{ket}} \qquad (2) \qquad TP_{kt} = \sum_{e=1}^{E} HStp_{ket} \times \frac{IM_{ket}}{IM_{kt}} \qquad (3)$$

Second, following [2], we define the share of trade in product k in year t that is subject to a TP measures as (3), where IM_{ket} is the imports from exporter e of product k in year t, and IM_{kt} represents total imports of product k in the US and EU respectively.

Third, we compile the share of trade subject to TP measures in industry j in year t by averaging over all k_j products that make up industry j as (4), where IM_{jt} describes total trade in the SIC j that includes product k.

$$TP_{jt} = \sum_{k=1}^{K} TP_{kt} \times \frac{IM_{kt}}{IM_{jt}} \qquad (4) \qquad TP_{uit} = \sum_{j=1}^{J} TP_{jt} \times \frac{L_{ijt}}{L_{it}} \qquad (5)$$

Finally, using the industry-specific TP_{jt} measure, we obtain the share of protected industries in the US commuting zone i in year t as (5), where $\frac{L_{ijt}}{L_{it}}$ is the share of workers in commuting zone i that work in industry j in year t .

Data

- Sectoral import data: US Census and Eurostat
- Commuting zone labor market information (including employment pattern in local industries) : IPUMS
- Temporary protection data: Temporary Trade Barriers Database

Motivation

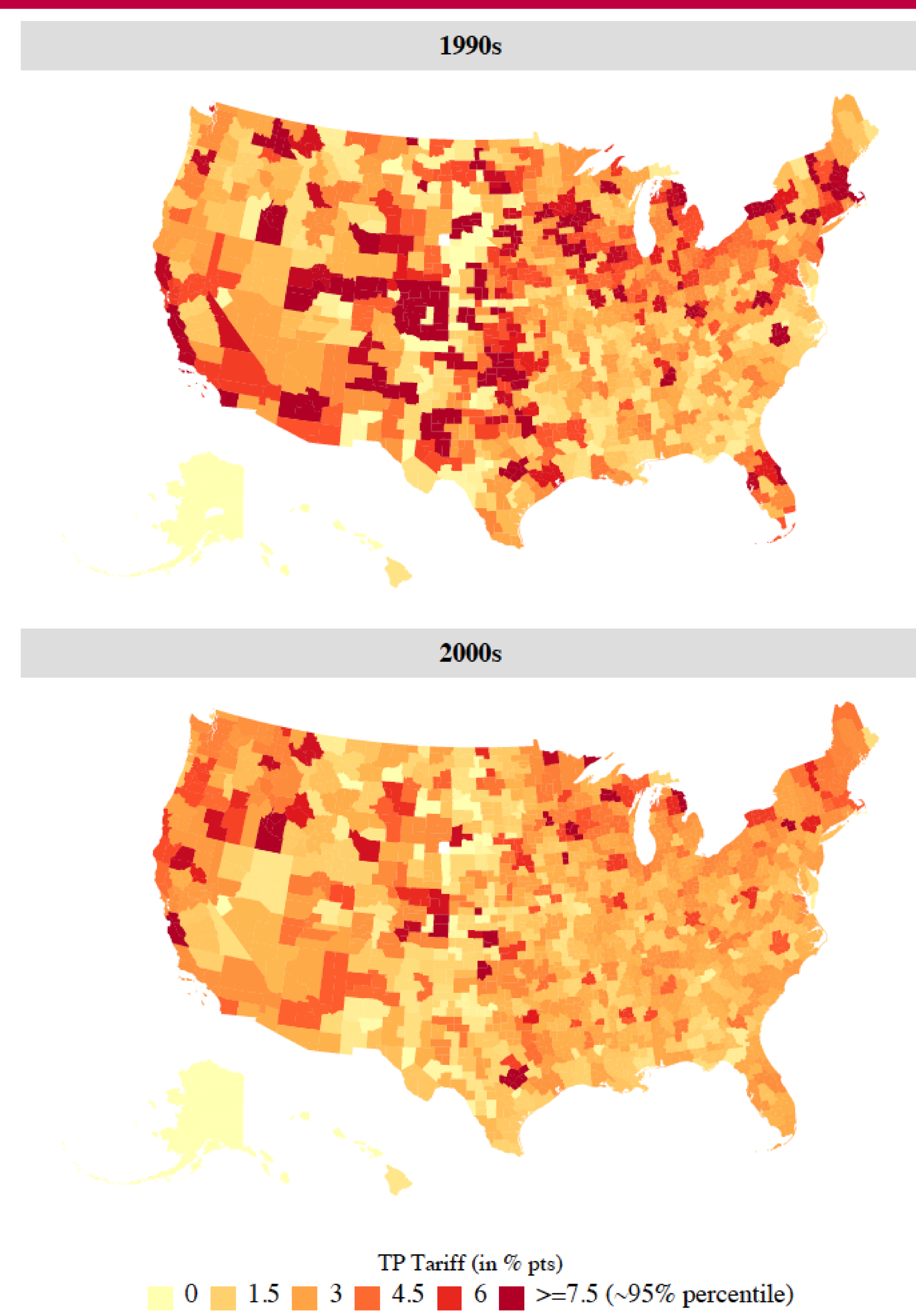
To examine the casual relationship of how change in TP measure affects local employment in the US, we encounter problem of endogeneity: there is a correlation between our explanatory variables and error terms.

For example, TP tariff on the steel industry should help increase the domestic sales of steel and thus increase the employment of steel industry. But on the other hand, though number of workers in the steel industry may not be large, they form powerful labor union to bargain for TP tariff through lobbying. So, the labor employment and TP tariff may be correlated.

To address this issue, we follow [1] and [2] to instrument TP tariff and imports using data from the European Union.: steel industry from both USA and EUN are facing intensifying competitions from abroad, but the decisions of TP tariff from the EUN are not affected by the employment structure in the US. Thus, we examine the casual effect of temporary tariff protection on US employment, but not the other way around.

If TP measures are successful in mitigating adverse labor market effects of import shocks, we should expect that reductions in manufacturing employment should be lower in those commuting zones that have a greater share of sectors which are protected by temporary import barriers (i.e. $\beta_2 > 0$).

Average TP: 1990s to 2000s



Instrumental Regression Results

TEMPORARY TARIFF PROTECTION OF MANUFACTURING EMPLOYMENT IN CZs, 1990-2007: IV ESTIMATES

Dependent variable: 10 × annual change in mfct emp/working-age pop (in % pts)

	ADH Results			Our Results		
	990-2000	2000-2007	1990-2007	1990-2000	2000-2007	1990-2007
	(1)	(2)	(3)	(1)	(2)	(3)
ΔIPW$_{uit}$	-0.886****	-0.718***	-0.746***	-1.12***	-1.11***	-1.19***
	(0.181)	(0.0643)	(0.0680)	(0.308)	(0.337)	(0.172)
ΔIPW$_{uit}$ ×TP$_{uit}$				0.0515*	0.0714	0.0984**
				(0.0301)	(0.131)	(0.0495)
TP$_{uit}$				-0.0616	0.108	-0.157
				(0.0709)	(0.732)	(0.127)

Notes: $N = 1444$. All regressions include a constant and a time dummy. Robust standard erros in parentheses are clustered on state. Models are weighted by the start of period CZ share of national population.
*** : Significant at 1 % level ** : Significant at 5 % level * : Significant at 10 % level

Analysis

From the heat map and the instrumental regression results, we have following conclusions:

- From the color intensity of the heat map, we find that commuting zones in the period over 1990-2000 generally receive higher TP tariff protection than those in the period of 2000-2007
- Looking at the interaction terms of IV results, our instrument variable from the European Union is consistent with empirical results from [1]. i.e. TP protective measures help mitigate adverse effect of import competition as $\beta_2 > 0$
- Though it appears that the average TP protection received by each commuting zone is higher in the period of 1990-2000, temporary tariff protection seems to be more helpful in the period of 2000-2007, as shown as the strength of coefficient β_2
- However, since the coefficient β_2 are not statistically significant for all years, we might need to be cautious in interpreting our results

Future Task

- Expand our analysis to future years, i.e. dividing into 3 period of 1990-2000, 2000-2010, and 2010-2020.
- Explore more possible definition of HStp.
- Find a better instrument other than that from the European Union.

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References

[1] David H. Autor, David Dorn, and Gordon H. Hanson. "The China Syndrome: Local Labor Market Effects of Import Competition in the United States". In: *American Economic Review* 103 (Oct. 2013), pp. 2121–68.

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