CHAPTER 11

On the Electoral Consequences of Increasing Chinese Imports: Insights from the Japanese Lower House General Elections, 2009–2017

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1 Introduction

How does increasing import competition shape domestic politics? Given China's increasing economic growth and exports, the last several decades have witnessed a flourishing debate on how international trade affects domestic politics and local labor markets, both in academia and in the realm of policy. However, despite the existence of an established body of literature on international trade, the presence and directions of causality in this context remain largely disputed. For example, as highlighted in Autor et al. (2013), the observed evidence on international trade flows already shows that the increasing exports from China to the United States are strongly and negatively associated with US manufacturing employment at the community-zone level. This observed correlation, however, does not necessarily reflect an underlying causality if, for example, localities that

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J. Ma and M. Yamamoto (eds.), *Growth Mechanisms and Sustainability*,
https://doi.org/10.1007/978-981-16-2486-5_11

already have declining manufacturing employment tend to be exposed to trade flows from China, which sustain their local economies.

One of the central threats to causal identification in the context of this debate is spurious correlations in the absence of experimental data. The widely employed gravity model of trade, namely the "workhorse" of empirical investigations of international trade (Head and Mayer 2015, 132), reveals empirical regularities in the observed trade flows in tandem with theoretical foundations. However, although the estimated parameters derived from gravity equations may well describe associations between, for example, the geographic distance between a pair of countries and trade flows, they do not necessarily capture causal quantities when not coupled with credible identification strategies.

Most of the empirical investigations into the impacts of increasing trade flows on related economic and political outcomes primarily rely on nonexperimental, observational data and thus face this identification challenge. Here, credible identification strategies play a central role in revealing the causal effects underlying the observed patterns of international trade. Given this challenge, Autor et al. (2013, 2020) recently proposed an innovative identification strategy to uncover the domestic economic and political outcomes of the increasing trade flows from China to the United States. This innovation involves the use of the observed imports from China to other high-income countries to exploit the *supply*-driven component, rather than the *demand*-driven component, of the increasing trade flows from China to the US. The empirical results in the work of Autor et al. (2013) reveal that an increase in Chinese exports to the US indeed increases the unemployment rate, decreases labor force participation, and decreases wages in labor markets at the community-zone level. Autor et al. (2020) extend the original analysis to investigate the political consequences of the increasing Chinese imports and demonstrate that increased exposure to Chinese imports is associated with increased ideological polarization and ideological rightward shifts in the US presidential elections between 2000 and 2016. Primarily focusing on the manufacturing sector, Taniguchi (2019) applies the proposed IV strategy to examine the effects of increased trade flows from China on prefecture-level labor markets. Somewhat in contrast to the earlier findings of Autor et al. (2013), the results in Taniguchi (2019) suggest that first, trade flows from China increase employment in the manufacturing sector, and second, this association is stronger in the context of intermediate products.

This chapter adopts the empirical strategy proposed by Autor et al. (2013, 2020) to explore the domestic political consequences of the increasing trade flows from China to Japan. Specifically, this chapter broadly applies the research design of Autor et al. (2013, 2020) to examine the impacts of the increasing Chinese imports to Japan, both the steel industry-specific increases and the increases in all the manufacturing sectors, on the outcomes of the four national Lower House (*Shūgiin*) General Elections in Japan between 2009 and 2017.

Although the present analysis might suffer from several methodological concerns, which are described below, the estimation results suggest two important patterns at the prefecture level. First, a naive comparison and coefficient estimates derived from ordinary least square models suggest that there is a positive association between increased import exposure in the steel industry and the vote shares of the ruling coalition and the Liberal Democratic Party. Second, and somewhat in contrast to the naive OLS estimates, this positive association becomes invisible once instrumented. In other words, while the naive comparisons are consistent with popular accounts and suggest evidence of rightward ideological shifts within heavily exposed prefectures, the detected association may not reflect an underlying causality. These results are somewhat consistent with the earlier findings in the work of Taniguchi (2019) and contribute to the growing debate in the political economy literature by providing another piece of evidence on the domestic political consequences of exposure to international trade.

2 Research Design

The current empirical analysis broadly follows the instrumental variable (IV) design of Autor et al. (2013, 2020), and utilizes a dataset containing prefecture-level records of the election results of the four national Lower House general elections between 2009 and 2017 and the international trade flows during the same period.

The records of international trade flows are based on the "BACI: International Trade Database at the Product-level" dataset (2020 version) developed by the Centre d'Etudes Prospectives et d'Informations Internationales (CEPII; Gaulier and Zignago 2010).[1] The individual records

[1] Available at http://www.cepii.fr/CEPII/en/bdd_modele/bdd_modele.asp. Accessed February 2, 2021.

of trade flows in the BACI are coded at the annual dyadic (bilateral) level, while the related products are coded according to the Harmonized System (HS) Code system. As discussed in detail below, the current analysis relies on the HS 1992 (HS92/HS0) system to ensure consistency with the coding systems of other sources taken from official governmental statistics below.

The following sections describe the details of the product coding of the trade flows and the measurements of the key variables. I then lay out the IV design based on the approach of Autor et al. (2013, 2020).

2.1 Dependent Variables

Recall that the current analysis primarily focuses on the possible impacts of increasing Chinese imports on political outcomes in Japan. The data for the primary outcome variables, namely the prefecture-level vote shares of the Liberal Democratic Party (LDP) and the ruling parties (LDP and *Komeito party*) in the four national Lower House general elections in 2009, 2012, 2014, and 2017 (the 45th to 48th general elections), come from the Ministry of Internal Affairs and Communications (MIAC).[2]

I obtained prefecture-level vote count records for both the single-seat and large-bloc proportional representation districts. Given the redistricting of single-seat districts during the study period, the current analysis exclusively focuses on each party's vote share relative to the total vote counts at the prefecture level.[3] The resultant dataset contains the vote shares of the individual parties across different prefectures in the four general elections between 2009 and 2017. The two dependent variables take the inter-election equivalents of first differences for the two subsequent elections. Specifically, the dependent variables, $\Delta\text{Share}_{it}^{\text{LDP}}$ and $\Delta\text{Share}_{it}^{\text{RP}}$, measure the change in the vote shares of the LDP and the two ruling parties, respectively, between the elections in years $t-1$ and

[2] Available at https://www.soumu.go.jp/senkyo/senkyo_s/data/shugiin/ichiran.html. Accessed February 2, 2021. The electoral system of the Lower House of Japan comprises single-seat constituencies and proportionally represented multiple-seat constituencies. The vote count records for individual constituencies have been publicly available since the 2009 general elections.

[3] Another reason for this focus on the prefecture level is the availability of the covariates and variables used to compute the trade exposure measure and the instrument specified below. Several key sources of these variables are only available at the prefecture level.

t, rather than the raw vote shares in the individual elections in prefecture i. For example, during the 2012 general election, $\Delta\text{Share}_{it}^{\text{LDP}}$ reflects the change in the LDP's vote share relative to its vote share in the 2009 general election in prefecture i.

2.2 *Chinese Import Exposure*

The coding of the key independent variable follows the work of Autor et al. (2013) and measures the extent of a region's exposure to Chinese imports scaled and weighted by its labor force and employment structure:

$$\text{Exposure}_{it}^{\text{Japan}} = \sum\nolimits_{j} \frac{L_{ijt}}{L_{jt}} \frac{\Delta M_{jt}^{\text{Japan}}}{L_{it}}, \tag{1}$$

where i indexes a prefecture, j an industry, and t a period (election year) of observation. ΔM_{jt} is the recorded change in imports from China between years $t-1$ and t for industry j, and L_{it} denotes the total number of workers in prefecture i during year t. L_{ijt} and L_{jt} capture the number of workers in industry j within prefecture i and Japan, respectively, during period t.

Since the import growth M_{jt} is fixed across the prefectures for a given year t and industry j, the prefecture-level variation in Exposure_{it} arises from the differences in employment structure across the prefectures. Specifically, as stated in Autor et al. (2013), the variation in the weighted and scaled prefecture-level exposure to Chinese imports stems from two sources (p. 2128). First, the variation arises from prefecture-level differences in the degree of concentration in the manufacturing sectors relative to total employment (manufacturing and nonmanufacturing sectors). The more centralized a prefecture's employment is in the manufacturing sector, the greater its weighted exposure to Chinese imports becomes. Second, the exposure measure also reflects prefecture-level differences in the share of each industry relative to the national employment of that industry $\left(\frac{L_{ijt}}{L_{jt}}\right)$. Put another way, $\text{Exposure}_{it}^{\text{Japan}}$ measures the per-worker exposure to increases in Chinese imports for a given product category weighted by the share of the corresponding manufacturing sector in the employment structure of a prefecture.

2.3 Instrumental Variable

The specification of the instrument also generally follows Autor et al. (2013) and is defined analogously to the trade exposure measure:

$$\text{Exposure}_{it}^{\text{OECD}} = \sum_{j} \frac{L_{ijt-1}}{L_{jt-1}} \frac{\Delta M_{jt}^{\text{OECD}}}{L_{it-1}}. \tag{2}$$

Following Autor et al. (2013, 2129–2130), the instrument differs from the trade exposure measure in Eq. (1) in two ways. First, $\text{Exposure}_{it}^{\text{OECD}}$ replaces the measure of the change in the imports of each industry with observed records of Chinese imports to other Organization for Economic Cooperation and Development (OECD) countries, $\Delta M_{jt}^{\text{OECD}}$. The intuition behind this strategy to exploit the variation in the realized imports of China to other high-income countries is that it reflects the same supply-driven component of the Chinese imports, but it is not a function of a demand-driven component other than the common demand shocks across the OECD countries. Second, the expression of $\text{Exposure}_{it}^{\text{OECD}}$ replaces the employment-related terms in the trade exposure measure with temporally lagged variables to mitigate simultaneity bias.

2.4 Other Variables and the Coding of the Product Categories

I also compile a series of prefecture-level attributes to construct the trade exposure measures above and the covariates included in the estimation model below. The original prefecture-level statistics include population estimates from the MIAC; the Census of Manufacturers done by the Ministry of Economy, Trade and Industry (METI); and the Labor Force Survey done by the Statistics Bureau of Japan. I obtain prefecture-level counts of the labor force, the employment in different manufacturing sectors, and the total population and unemployment rate during the study period.

Recall that the examined records of international trade flows are based on the BACI data with individual trade flows coded according to the HS92/HS0 system. Thus, we need an accurate and disaggregated correspondence table to combine the trade flow records with the prefecture-level attributes to construct the import exposure measure and the instrument specified above. As the prefecture statistics of the METI and Statistics Bureau are coded according to the Japan Standard Industrial Classification (JSIC, Rev. 13), I first create two correspondence tables to

match the product codes across the different datasets in two steps. First, I combine the MIAC's correspondence table for JSIC coding and International Standard Industrial Classification (ISIC) with the correspondence table for ISIC versions 3, 3.1, and 4 provided by the UN Statistics Division.[4] The resultant correspondence table provides a concordance list that can be used to link a given product code in the JSIC to the corresponding ISIC code. Second, I rely on the product concordance tables provided in the World Integrated Trade Solution data of the World Bank to match the individual ISIC codes to the HS coding system.[5] Then, I simply combine the JSIC-ISIC correspondence table with the ISIC-HS table, using ISIC as the common key to match the records of international trade flows (coded in the HS system) to the prefecture-level labor market structure (coded in the JSIC system).

The JSIC classification system divides the manufacturing sectors in Japan into 24 mutually exclusive categories, including the steel industry (*Tekko-gyo*). The classification of manufacturing industries in the current analysis follows the JSIC system used to measure industry-specific imports and employment.

2.5 Model Specification

According to the key measures defined above, the main IV estimation reported below builds on the following two-stage specification:

$$\text{Exposure}_{it}^{\text{Japan}} = \gamma \text{Exposure}_{it}^{\text{OECD}} + \mathbf{X}_{it}'\boldsymbol{\beta} + \phi I_t^{2012} + e_{it}, \tag{3}$$

$$Y_{it} = \tau_{\text{IV}} \widehat{\text{Exposure}}_{it}^{\text{Japan}} + \mathbf{X}_{it}'\boldsymbol{\eta} + \zeta I_t^{2012} + u_{it} \tag{4}$$

where Y_{it} represents one of the outcome variables, $\Delta\text{Share}_{it}^{\text{LDP}}$ and $\Delta\text{Share}_{it}^{\text{RP}}$. $\mathbf{X}_{it}$ is a vector of covariates, $\boldsymbol{\beta}$ is the corresponding coefficient vector including intercepts, and I_t^{2012} is a dummy variable that is equal to 1 for 2012 and 0 otherwise. For simplicity, given the limited number

[4] Available at https://www.soumu.go.jp/toukei_toukatsu/index/seido/sangyo/index.htm and https://unstats.un.org/unsd/classifications/Econ. Accessed February 3, 2021. The correspondence table for the different ISIC versions (Revisions 3, 3.1, and 4) is also provided by the UN Statistics Division.

[5] Available at https://wits.worldbank.org/product_concordance.html. Accessed February 3, 2021.

of observations ($47 \times 3 = 141$), $\mathbf{X}_{it}$ only includes the logged unemployment rate and the logged proportion of the population that voted, along with logged total vote counts in the proportional representation districts in prefecture i, in the election in year t. I_t^{2012} denotes the change in the ruling parties from the government coalition led by the Democratic Party of Japan (DPJ) to the 2012 general election and the LDP-led coalition afterward.[6] The number of observations remains at 141, rather than $47 \times 4 = 188$, given that I take the equivalents of the first differences between the subsequent two elections. To account for possible spatial and temporal autocorrelations in the regression residuals, I report the standard errors robust to multiway clustering at the prefecture and year levels.

Our primary variable of interest is τ_{IV}, which captures the local average treatment effect (LATE) of exposure to Chinese imports on the election outcomes. For comparison, I also report the corresponding, uninstrumented ordinary least square estimates. Given the focus of this volume, I also replicate the estimation separately for the steel-related industries and for all the manufacturing industries. The current analysis follows the recommendation of Angrist and Pischke (2008, 197–205) and builds on two-stage least square (2SLS) models rather than nonlinear models, which require additional estimation assumptions.

3 Results

Table 1 reports the main estimation results with the change in the vote share of the ruling coalition (LDP and *Komeito*) in the proportional representation districts as the dependent variable. Columns (1) to (3) report the first- and second-stage results of the IV-2SLS estimates of the import exposure in all the manufacturing sectors along with the uninstrumented OLS estimate, and columns (4) to (6) display the corresponding estimates with the import exposure measure replaced with the steel-related industry exposure measures. Table 2 replicates these regression estimates with the change in the LDP's vote share in the proportional representation districts as the dependent variable.

[6] The 2012 general election was the first Lower House election after the 2011 *Tōhoku* earthquake and tsunami, which is one of the strongest earthquakes in the recorded history in Japan.

Table 1 Chinese imports and the change in the ruling coalition's vote share, 2009–2017

	Dependent variable: $\Delta Share_{it}^{RP}$					
	OLS (1)	*First stage* (2)	*IV-2SLS* (3)	*OLS* (4)	*First stage* (5)	*IV-2SLS* (6)
$Exposure^{Japan}$	−0.001		0.028			
	(0.005)		(0.044)			
$Exposure^{Japan,\ steel}$				0.013**		0.02
				(0.006)		(0.017)
$Exposure^{OECD}$		0.546**				
		(0.209)				
$Exposure^{OECD,\ steel}$					0.699***	
					(0.237)	
Covariates	✓	✓	✓	✓	✓	✓
Observations	141	141	141	141	141	141
Adjusted R^2	0.181	0.94		0.224	0.879	
F-statistic (weak instrument)		6.804	6.804		8.718	8.718
Stock and Yogo's critical value		16.38	16.38		16.38	16.38

Notes $^{*}p < 0.1$; $^{**}p < 0.05$; and $^{***}p < 0.01$. Reported in parentheses is standard errors adjusted for two-way clustering at the prefecture and year levels

3.1 Electoral Consequences of the Increasing Chinese Imports in Japan

Two patterns are visible in the regression estimates with different model specifications. First, the uninstrumented OLS estimates (columns 1 and 4 in Tables 1 and 2) suggest a positive association between the increasing Chinese imports in the steel industry and the change in the vote shares of the ruling coalition and the LDP. The coefficients of $Exposure^{Japan,\ steel}$ are consistently positive and are statistically significant at the conventional 5% level. In contrast, the coefficient estimates of the import exposure measure, $Exposure^{Japan}$, which accounts for all the manufacturing industries, remain small and statistically indistinguishable from zero. In other words, the naive regression results indicate that the increasing imports in the steel industry, if not in the whole industry, are associated with increased support for the ruling coalition led by the conservative LDP.

Second, the IV-2SLS estimates suggest a different picture that undermines the naive interpretation of the OLS estimates as causal effects. As

Table 2 Chinese imports and the change in the LDP's vote share, 2009–2017

	Dependent variable: $\Delta Share_{it}^{LDP}$					
	OLS (1)	*First stage* (2)	*IV-2SLS* (3)	*OLS* (4)	*First stage* (5)	*IV-2SLS* (6)
$Exposure^{Japan}$	−0.002		0.016			
	(0.004)		(0.027)			
$Exposure^{Japan,\ steel}$				0.008***		0.012
				(0.003)		(0.009)
$Exposure^{OECD}$		0.546**				
		(0.209)				
$Exposure^{OECD,\ steel}$					0.699***	
					(0.237)	
Covariates	✓	✓	✓	✓	✓	✓
Observations	141	141	141	141	141	141
Adjusted R^2	0.205	0.94		0.241	0.879	
F-statistic (weak instrument)		6.804	6.804		8.718	8.718
Stock and Yogo's critical value		16.38	16.38		16.38	16.38

Notes $^{*}p < 0.1$; $^{**}p < 0.05$; and $^{***}p < 0.01$. Reported in parentheses is standard errors adjusted for two-way clustering at the prefecture and year levels

reported in columns (3) and (6) in Tables 1 and 2, the coefficients of the import exposure measures, for both the steel industry and all the manufacturing industries, fail to retain substantial and statistical significance regardless of the outcome variables examined. The coefficients remain small and statistically insignificant at the conventional 5% level. Although the IV-2SLS should be interpreted with caution given the relatively weak first-stage associations, these contrasting results warn of the potential endogeneity biasing the naive comparisons. The OLS estimations suggest a systematic correlation between the increasing Chinese imports and the vote shares of the ruling coalition and the LDP; however, this correlation may not reflect an underlying causality.

3.2 Notes on the Remaining Methodological Concerns

Other than the difference in the estimands (average treatment effect (ATE) in the OLS estimations and LATE in the IV designs), the discrepancy between the OLS and the IV-2SLS estimates may reflect

bias remaining in the OLS estimates, the IV estimates, or both. First, as mentioned above, the OLS estimates might be biased due to omitted confounding, simultaneity, and other sources of endogeneity. For example, the OLS estimates could suffer from upward bias if the exposure to Chinese imports is severer in prefectures with high baseline tendencies of support for the ruling coalition and the LDP than in other prefectures.

Second, the IV-2SLS estimates might also be biased or inconsistent due to the weak first-stage associations and potential violation of the exclusion restriction assumption induced by instrument-outcome confounders and mediators (Garabedian et al. 2014). For example, if the current analysis fails to adjust for any omitted variables that affect the instrument (namely, Chinese imports to OECD countries other than Japan) and the outcome (IV-outcome confounder) or that are affected by the instrument while influencing the outcome (IV-outcome mediator), these unadjusted factors would introduce bias into the IV-2SLS estimates by violating the exclusion restriction assumption.[7] As noted above, the IV estimates might also suffer from a lack of instrument relevance, as the *F*-statistics failed to reach Stock and Yoga's (2005)'s critical value of against the null hypothesis that the instrument is weak.

Admittedly, the present analysis is inadequate to allow us to interpret either the OLS or the IV-2SLS estimates as unbiased causal effect estimates. Focused investigations into the remaining methodological concerns and falsification tests are beyond the scope of the current volume. However, the discrepancy between the reported OLS and the IV-2SLS estimates is still capable of serving as a warning that underlines the inadequacies of naive comparisons to guide policy efforts.

4 Conclusion

How do increasing Chinese imports shape political outcomes in Japan? Due to the lack of experimental data, any empirical investigation into the impacts of these increasing trade flows faces the ever-present challenge of spurious correlations and other forms of endogeneity. Despite related scholarly and policy interests, the potential political consequences of trade flows remain largely disputed. This chapter has followed the recently proposed IV design of Autor et al. (2013, 2020) to examine how

[7] See, for example, Imbens (2014), Garabedian et al. (2014), and Davies et al. (2017) for identification checks for IV designs.

exposure to increasing trade flows from China affects electoral outcomes in Japan.

While several identification concerns remain in the present analysis, this chapter suggests two empirical patterns that carry important implications for future studies and policymakers. First, the naive comparisons of the OLS estimates suggest a positive association between exposure to Chinese imports and electoral support for the ruling coalition and the LDP in the four general elections of the Lower House in Japan. Second, and somewhat in contrast to the OLS results, the IV-2SLS estimates fail to uncover a similar positive association between the local geography of import exposure and electoral outcomes. Naive comparisons and popular accounts might suggest that increasing trade exposure causes rightward ideological shifts; however, the empirical analysis in this chapter fails to support such predictions. Several remaining methodological concerns, which are highlighted in the previous section, and other possible consequences of Chinese imports in Japan, are open for future studies.

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