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Can labour market institutions mitigate the China syndrome? Evidence from regional labour markets in Europe

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Abstract

A large literature has shown that trade shocks, such as the rise of China in the global markets, have had negative effects on employment in manufacturing both in the United States and in Europe. This paper analyzes how trade shocks interact with labor market regulations. More specifically, it investigates whether differences in labor market frictions mitigate or amplify the labor market effects of Chinese imports on European regions between 1997 and 2006. To do so, the paper constructs measures of regional exposure to China based on previous literature and on regional labor market frictions exploiting involuntary labor reallocations. The paper finds that regions more exposed to the rise of China have suffered from a reduction in manufacturing employment shares. This shock grows larger with regional labor market friction, hence it exacerbates the impact of trade shock on employment. Moreover, the paper finds that employment in public services, and not in construction or private services sector, absorbed the negative shock to the manufacturing sector. The unemployment rate, the labor force participation rate, and wages in all sectors are unresponsive to import competition from China.

(*JEL* F14, F16, J21, R23)

Keywords: Empirical Trade, Regional Labor Markets, Employment Structure, Labor Reallocation

1 Introduction

The academic and public debate about the impact of trade with low-wage countries on labor markets in advanced economies received a boost in recent years. The discussion of the 1990s on this issue focused mainly on the wage impact of skilled vs. unskilled workers, but no major impact was found. However, Wood (2018) argues that the debate ended prematurely and Krugman (2008) adds that the small effects found in the 1990s are not surprising given the low levels of trade between high- and low-wage countries at the time.

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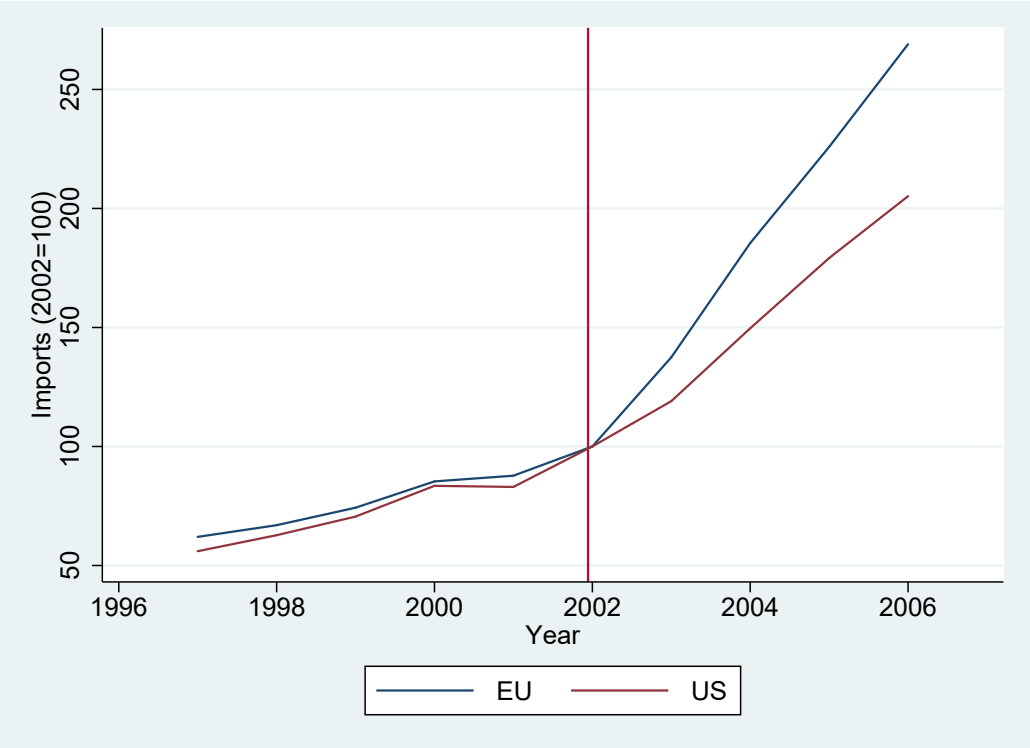
The share of trade of European economies and the United States with low-income countries has been rising sharply in the period around the new millennium, which is largely due to China and its entry in the World Trade Organization (WTO). Figure 1 shows that Chinese export growth to Europe exceeds that of the United States since 2002. Autor et al. (2013) are the first to exploit supply-driven import exposure per worker in US local labor markets from China and to analyze the impact on manufacturing employment. Examples of other single-country studies exploiting the same instrument are Donoso et al. (2015) for Spain and Balsvik et al. (2015) for Norway. All of these studies find a significant negative response of manufacturing employment when import competition from China is high. Both studies find different point estimates relative to Autor et al. (2013) for the adverse impact of Chinese import competition on manufacturing employment and hypothesize that this may be due to different labor market institutions.

Figure 1: EU vs. US imports from China



The figure shows the increase in Chinese exports to the eight European countries under investigation and the United States. Aggregate bilateral trade flows are taken from the OECD International Merchandise Trade Statistics. They are originally measured in US Dollar, and here normalized to 100 in 2002 to present percentage growth over the time period 1997 to 2006. The vertical line represents the date of entry of China into the WTO on 11 December 2001.

This study contributes to this literature in two ways. First, the paper investigates whether labor market frictions modifies the impact of import competition from China on manufacturing employment shares by including an interaction term between import competition and labor market frictions. Standard economic theory predicts that high labor market frictions, specifically in the form of employment protection, reduces job flows as argued by Bertola and Rogerson

(1997). More recently, Caliendo et al. (2019) implement labor market frictions in the form of sector-region reallocation costs for workers. Similarly, Dix-Carneiro (2014) also estimates large and heterogeneous sectoral reallocation costs for workers. Instead, this paper focuses on involuntary reallocation of employees caused by the local adoption of temporary contracts.

The second contribution is to investigate the response of other employment and non-employment alternatives due to Chinese import competition. The employment option implies working in another sector than manufacturing, and non-employment can be either unemployment or exiting the labor force. Caliendo et al. (2019) argue that other sectors, such as construction and services can expand due to access to cheaper intermediate inputs. Charles et al. (2016) argue that the housing boom, and hence employment in construction, masked the overall decline in job growth in the US. For Spain, Donoso et al. (2015) show that the employment reduction in the manufacturing sector was absorbed by other sectors, specifically construction. In terms of unemployment and labor force participation, Autor et al. (2013) find an increase in the former and decrease in the latter. Overall, the empirical evidence is mixed if any sector absorbs, and if yes, which sector absorbs the adverse impact of the trade shock on manufacturing.

The setup of the study is similar to other reduced-form analyses examining China's rise in world markets and how this affects various outcomes in Western countries. Bloom et al. (2016) examine firms in a panel of 12 European countries following the "value share" approach, which exploits *industry* level exposure to China compared to regional import exposure. To the author's knowledge, Colantone and Stanig (2017) are the first to consider regional import exposure in a multi-country setting. They investigate voting pattern changes conditional on import exposure, whereas this paper is concerned with labor market outcomes in various sectors, in particular employment shares over working-age population and hourly wages.

In order to answer the above-mentioned research questions, this paper relates changes in employment shares of manufacturing, services, construction, public services, the unemployment rate and labor force participation rate between 1997 until 2006 to exposure to supply-driven Chinese exports and labor market friction on the NUTS 2 level for eight European economies, i.e. Austria, Belgium, France, Germany, Italy, Spain, Sweden and the United Kingdom. To identify the supply-driven component of imports from China, this paper follows Autor et al. (2013) by exploiting within-manufacturing composition in terms of employment on the regional level and by instrumenting for EU country imports using changes in imports of the US from China, similar to previous studies.

The paper develops two measures of regional labor market frictions based on the idea that employment protection differs for temporary and permanent jobs. The first measure accounts for the involuntary, i.e. because they could not find a permanent contract, flow from unemployment into temporary jobs relative to all unemployed. The second measure exploits the flows of temporary employed persons in the previous year to unemployment because the temporary contract expired, relative to all employed. Both measures are increasing with labor market frictions as they exemplify a higher use of temporary contracts as permanent contracts are associated with

higher costs. In other words, temporary employment is linked to stronger employment protection legislation, therefore implying stronger frictions.

The identification strategy first acknowledges that, as import competition is an endogenous regressor, its interaction with regional labor market friction is likely to be endogenous as well. However, Nizalova and Murtazashvili (2016) and Bun and Harrison (2018) show that the interaction term can be interpreted as exogenous once the main effect of the endogenous variable has been taken account of, and the OLS estimator of the interaction term is unbiased and consistent. Alternatively, the paper applies two further identification strategies, which encompass two first stage regressions, one for import competition and one for its interaction with labor market frictions. The two identification strategies differ in their instrument(s) for the interaction term: one follows Bun and Harrison (2018) in that it exploits the vector of second-order polynomials of the instrument and the control variables as instruments for the interaction term. The other one follows the empirical application of Aghion et al. (2005), who instrument for the interaction term of the endogenous regressor and the modifying variable with the interaction term of the instrument and the modifying variable. All identification strategies yield qualitatively equal results.

The results suggest that regional import competition per worker reduces manufacturing employment sizably and significantly in the eight European economies under investigation. An increase of $ 1,000 (in 2005 value) in import exposure per worker is related to a decline of 1.04 percentage points in the manufacturing employment share relative to the working-age population over a 5-year period in a regional labor market with average friction.[1] Irrespective of the measure, stronger labor market frictions tends to further decrease the manufacturing employment share. This finding shows that employment protection exacerbates the employment response in the manufacturing sector, which is in line with the hypothesis postulated in Balsvik et al. (2015) and Donoso et al. (2015).

To determine what happens to displaced workers affected adversely by rising import competition from China, this paper investigates other sectors and two non-employment rates. The paper runs the same empirical exercise with employment shares of services, the construction sector and non-market services. The empirical evidence suggests that workers reallocated to public services, including health and education, and tended to do the same with private services with rising labor market frictions, though noisily estimated. The construction sector, on the other hand, did not absorb the shock. In terms of non-employment responses, the unemployment rate did not change, if anything unemployment fell in regions more exposed to Chinese import competition. On the other hand, the labor force participation rate tends to drop, in particular with rising labor market frictions. However, these estimates are also statistically insignificant.

The results for hourly wages, which should be treated cautiously due to potential biases, do not react to Chinese import competition. One reason is that wage cuts are less likely in Europe compared to the United States, which could also explain the much higher adverse impact found

[1] The 1.04 percentage points is an average over all six point estimates.

on manufacturing employment shares. In Europe, employers cannot adjust wages downward, so they react stronger in terms of employment, whereas in the United States, employers can adjust along both margins.
The paper is structured as follows: Section 2 introduces the measure for regional import competition from China and the two measures of regional labor market friction. Section 3 discusses the identification strategies and presents the results. Section 4 concludes.

2 Regional indicators

To determine the causal effects of supply-driven Chinese exports and labor market institutions on regional labor market dynamics, the first crucial step is to establish suitable indicators. This section introduces the measure for import exposure per worker and its instrument. It continues to present both measures for regional labor market friction based on how common the use of temporary contracts are. The section also describes the data used in the analysis and provides descriptive statistics.

2.1 Import competition

The construction of the index for import exposure per worker follows both Autor et al. (2013) in employing the start of period employment of manufacturing subsectors for regional variation of the instrument. The changes in EU country-specific imports from China are then instrumented with US imports, based on the modification of, among others, Colantone and Stanig (2017). Due to the same regional focus, i.e. NUTS 2 regions in Europe, the subdivision of the manufacturing sector further follows Colantone and Stanig (2017), i.e. both employment and trade data are determined on the 2-digit level of the manufacturing sector according to NACE Rev.1.1. The measure of import competition is constructed the following:

$$\Delta IPW_{rt}^{EU} = \sum_{j} \frac{L_{rjt}}{L_{cjt}} \frac{\Delta IMP_{cChinajt}}{L_{rt}}, \tag{1}$$

where ΔIPW_{rt}^{EU} is defined as the import exposure per worker in region r at time t using bilateral trade of the individual EU country with China. L_{rjt} is the number of employees in manufacturing subsector j in region r at the initial year of each 5-year period t, divided by the number of employees in manufacturing subsector j in the country c (L_{cjt}) in the respective year. This fraction computes the degree of specialization of subsector j in region r relative to the rest of the respective country, and simply reflects a regional weighting coefficient. This fraction is multiplied by the normalized change in real imports of manufacturing goods of the individual European country c from China in subsector j over period t ($\Delta IMP_{cChinajt}$). Normalization means that the real change in imports is divided by the number of workers in region r in the initial year of period t (L_{rt}), resulting in import exposure *per worker*.
Bilateral trade between the European economies and China bears the potential for endogeneity

as imports could be correlated with domestic factors, instead the main interest is to isolate the supply-driven component of Chinese exports. The most important factor, which could potentially introduce a bias in the estimation, is industry-specific demand for Chinese goods. This bias would lead to an underestimate of the true effect of supply-driven imports from China. To circumvent this endogeneity bias, the instrument exploits the change in US imports for the change in EU imports by manufacturing subsector over the same period:

$$\Delta IPW_{rt}^{US} = \sum_{j} \frac{L_{rjt}}{L_{cjt}} \frac{\Delta IMP_{USChinajt}}{L_{rt}}, \tag{2}$$

The only difference between equations (1) and (2) is visible in the numerator of the second fraction, i.e. the destination country of exports from China differs. In equation (2), US imports are shown, but an alternative is to use other (advanced) destination countries. These additional countries are Australia, Canada, Korea, Japan and New Zealand. A second alternative is to consider only net exports (NPW), which is potentially more relevant for European countries compared to the United States because they have a less unbalanced trade deficit with China. However, only Germany sees a strong rise in exports to China over the time horizon considered in the analysis. Hence the results for net import exposure are expected to be similar to import exposure.

2.2 Regional labor market frictions

The two measures of labor market frictions in this paper exploit "involuntary" reallocations compared to voluntary reallocations in the recent literature investigating labor dynamics induced by trade shocks with general equilibrium models, e.g. Caliendo et al. (2019). Other studies also exploit typically voluntary reallocations to estimate reallocation costs using structural models, for example Dix-Carneiro (2014) and Artuç et al. (2010). However, Jolivet et al. (2006) present evidence that involuntary reallocations are forming a substantial part of total reallocations, in particular in high-turnover countries. Further, the aforementioned theoretical studies exploit reallocations between sectors, i.e. job-to-job transitions, and disregard involuntary transitions into unemployment or vice versa. In contrast to the aforementioned theoretical studies, more reallocations are implying stronger labor market frictions. This is simply due to their involuntary nature compared to the voluntary transitions used in these papers.

The basic idea of the two measures of labor market friction the paper puts forward relies on (Boeri and Van Ours, 2013, Fig. 10.3) and Kalleberg (2000) arguing that higher employment protection legislation (EPL) for permanent contracts exhibits a strong positive relationship with the share of temporary workers. Strict EPL for open-ended contracts induces higher costs for employers in the cases of firing, hence job seekers may work under temporary contracts even though they prefer to work under permanent contracts. This means that the labor market cannot absorb job seekers into permanent contracts because of higher employment protection, i.e. the labor market is the more rigid the more employees work under temporary contracts.

One issue with labor market institutions is that they are typically enforced on the national level and do not vary by region. However, Boeri and Jimeno (2005) demonstrate that EPL is not uniformly enforced within an economy due to the various exemptions, e.g. for small companies below certain threshold of employees. For companies exempted from strict employment protection for permanent contracts, it is easier to hire and fire workers under permanent contracts because they face lower costs. Thus, this paper constructs both measures on the same level of regional variation as import competition induced by Chinese goods, and not on the more aggregate, national level. The only attempt to get insights into subnational differences of EPL is Hantzsche et al. (2018), but the authors take on a sectoral perspective, not a regional one.

To isolate those temporary contracts, which are due to strict employment protection legislation and not due to preferences of the employees, both measures of labor market friction make use "involuntary" temporary contracts. The first measure exploits the flows from unemployment into a temporary job from one year to another conditional on that the unemployed could not find a permanent job. This measure of involuntary flows into temporary jobs is normalized by the number of unemployed in the previous year in order to account for the size of local unemployment, which would otherwise put a greater weight on larger regions:

$$RLMF_{rt}^{UE \rightarrow Temp.Job} = \frac{Flow_{rt}^{UE \rightarrow Temp.Job}}{UE_{rt-1}}, \tag{3}$$

This indicator measures the chance of an unemployed to enter a temporary contract despite his initial objective to find work under a permanent contract. It is assumed that the firm considers the costs to hand out an infinite-horizon contract to the worker as too high because its high employment protection, hence it only offers fixed-period jobs.

The second indicator reverses the direction of the flow, i.e. it looks at whether an individual entered unemployment in period t because a temporary ended. Hence, it measures how many temporary contracts were used the year before and did not result in further employment, may it be a permanent or a renewed temporary contract.[2] This is normalized by total employment in the previous period:

$$RLMF_{rt}^{Temp.Job \rightarrow UE} = \frac{Flow_{rt}^{Temp.Job \rightarrow UE}}{Employment_{rt-1}}, \tag{4}$$

Both measures highlight the use of "involuntary" temporary contracts, which are more commonly used if the regional labor market is rigid as permanent contracts are more expensive to the firm relative to temporary contracts. Hence, both indicator rise with regional labor market friction. Flows in both directions are roughly equal in absolute numbers, the normalization factors for each measure, i.e. denominators in both equations, differ strongly, both indicators are standardized for the empirical analysis. This allows for a more comparable interpretation of the results.

[2]This measure may not also include a certain degree of skill mismatch between employee and employer as temporary contracts also allow for the screening of the quality of the match.

This paper argues that both measures of labor market friction are exogenous to the trade shock from Chinese imports, even though a common concern is that labor market institutions are endogenous to globalization. It is often argued that trade openness erodes labor market standards. However, the empirical evidence is quite mixed on whether globalization has an impact on labor market institutions, with results varying by labor market setting and with different country samples and identification strategies. They are summarized in Potrafke (2013), who in his analysis does not find any evidence that globalization impacts labor market institutions. Further, most studies focus on trade between advanced economies, which is due to the above-mentioned phenomenon that trade between advanced economies and developing countries did not occur until the rise of China in global commodity markets. To the author's knowledge, Häberli et al. (2012) is the only study examining how trade agreements between countries with different stages of economic development affect labor market institutions. The main finding is that trade between two advanced economies reduces institutional labor market standards, whereas trade between an advanced economy and developing countries does not impact the institutional setting of the importing country. For these reasons, the identification strategy treats the modifying variable, i.e. labor market friction, as exogenous to the supply-driven component of Chinese imports.

2.3 Data

This paper focuses on eight European economies, which include Austria, Belgium, France, Germany, Italy, Spain, Sweden and the United Kingdom between 1997 and 2006. These countries have been selected for two reasons. The first reason is that this paper concentrates on countries, which are likely to suffer from a direct impact of Chinese import competetion. Cabral et al. (2018) show that Portugal only loses manufacturing employment due to the indirect effect of Chinese exports crowding out Portuguese exports. These indirect effects are occurring in European low-wage countries. This leads to the omission of all East European countries, Greece and Portugal. The second reason are data limitations on the remaining countries. The Netherlands and Denmark do not provide regional information in the EU LFS, which is the main data source to compute regional labor market frictions. The exclusion of Finland and Norway is based on the lack of employment data in the manufacturing subsectors previous to 2002. Finally, Luxembourg and Ireland are left out because they consist of only one and two, respectively, NUTS 2 regions, hence it does not allow for within-country identification. Analogous to previous studies, the time horizon is chosen to capture periods of the same length around China's entry into the WTO in 2001 and to predate the Great Financial Crisis (2007-2009).

Employment data for six sectors comes from the European Regional Database (ERD), and are aggregated to manufacturing, services, construction and private services.[3] The data is available on the NUTS 2 level, which comprises also the geographical degree of variation. The sectoral employment shares are computed relative to working-age population, similar to previous studies

[3] Private services sector encompasses "wholesale, retail, transport, accommodation & food services, information and communication" and "financial & business services".

investigating whether import competition from China affects manufacturing employment. The working-age population is restricted to the age from 20 to 64 and stems from Eurostat Regional Database. One main issue with this feature could be that this study, in contrast to Autor et al. (2013), exploits variation in administrative units instead of commuting zones. Administrative regions do not form closed labor markets in the same form, but comparing data on region of residence and region of work in the EU LFS exhibits that the share of workers crossing administrative borders is 4.47% for the NUTS 2 regions in this study, hence any potential bias arising from non-closed labor markets are negligible.

The main explanatory variable, i.e. import exposure per worker, exploits three different data sources. Trade statistics on the manufacturing subsector level are taken from World Integrated Trades Solutions (WITS) by the World Bank, which provides trade data on the level of manufacturing subsectors (NACE Rev.1) based on the UNComtrade database.[4] This feature of the WITS provides concordance of imported goods and exports to manufacturing subsectors. Employment on the manufacturing subsector level is taken from Eurostat Regional Database and the initial values of 1997 and 2002 are used to compute the regional weighting factor in equation (1).[5] Working-age population, which is the normalization factor in the same equation, comes from Eurostat.

Both measures of regional labor market friction originate, as mentioned above, from individual level data in the EU LFS.[6] The survey contains information of employment status in the year the survey was conducted and the year before. Further, it asks whether the currently employed person has a permanent or a temporary contract, and in the case of the latter, also why this is the case. One possible answer is because the interviewee could not find a job with a permanent contract. These information are exploited to construct the "involuntary" inflow into temporary work out of unemployment for the first measure of labor market friction in equation (3).[7] This inflow is then normalized by the total number of unemployed in the same region based on data from the same source. The second measure reverses this movement as the EU LFS also asks currently unemployed why this is the case. One of the potential answers is that a temporary contract ended. Equation (4) restricts this flow out of temporary employment into unemployment to those who were employed the year before the survey was conducted. Again, normalization is necessary, and for this measure the total number of employees is used.

The sources which were used to construct the variables of interest, i.e. labor market friction and import exposure per worker, are the same as for the control variables. The initial share of sectoral employment shares relative to working-age population also come from the ERD and

[4] See Table A1 in the appendix for an overview of manufacturing subsectors.

[5] For the UK, data in and before 1997 is not available, hence 1998 is used to compute regional specialization.

[6] Regional information is not available for Germany prior to 2002, hence the national average is used for all regions in Germany for the pre-entry period. Further, region of residence is only available on the NUTS 1 level for Germany and the United Kingdom, so all NUTS 2 regions within the same NUTS 1 region are assigned the same values for both measures of friction.

[7] France only provides the information on the "involuntary" inflow in 2006, when 65% of all inflows are involuntary. Hence, for France the indicator exploits the overall inflow into temporary contracts.

Table 1: Summary Statistics

	Pre-WTO entry			Post-WTO-entry		
	Obs.	Mean	Std.Dev.	Obs.	Mean	Std.Dev.
Δ Manufacturing Employment Share	146	-0.099	1.079	146	-0.944	0.842
Δ Service Employment Share	146	2.982	1.673	146	1.320	1.537
Δ Construction Employment Share	146	0.236	1.133	146	0.277	0.680
Δ Public Service Employment Share	146	1.494	0.915	146	1.121	0.907
Δ Unemployment Rate	146	-2.821	5.043	146	0.328	4.181
Δ Labor Force Particpation Rate	146	2.433	2.816	146	1.968	2.900
Δ Manufacturing Log Hourly Wage	146	0.061	0.111	146	0.049	0.130
Δ Service Log Hourly Wage	146	0.068	0.087	146	0.026	0.084
Δ Construction Log Hourly Wage	146	0.038	0.175	146	0.007	0.140
Δ Public Service Log Hourly Wage	146	0.046	0.085	146	0.016	0.084
Δ IPW (EU)	146	0.263	0.314	146	0.958	0.599
Δ NPW (EU)	146	0.192	0.255	146	0.694	0.431
RLMF (Involuntary Emp → UE)	146	0.191	0.133	146	0.184	0.191
RLMF (Involuntary UE → Temp. Job)	146	5.595	7.187	146	5.893	8.465
Employment share Manufacturing	146	13.674	4.769	146	13.261	4.849
Employment share Services	146	27.374	7.170	146	30.633	7.277
Employment share Construction	146	5.054	1.597	146	5.298	1.316
Employment share Public Services	146	20.617	3.771	146	22.421	3.936
Unemployment Rate	146	9.857	7.898	146	7.522	8.186
Labor Force Particpation Rate	146	76.816	7.584	146	79.924	6.898
Percent tertiary education	146	18.330	6.362	146	21.266	7.129
Percent of employment among women	146	53.126	12.204	146	58.000	11.242
Share Water	146	2.194	2.449	146	2.189	2.446
Coarse Fragements	146	13.481	4.262	146	13.496	4.246

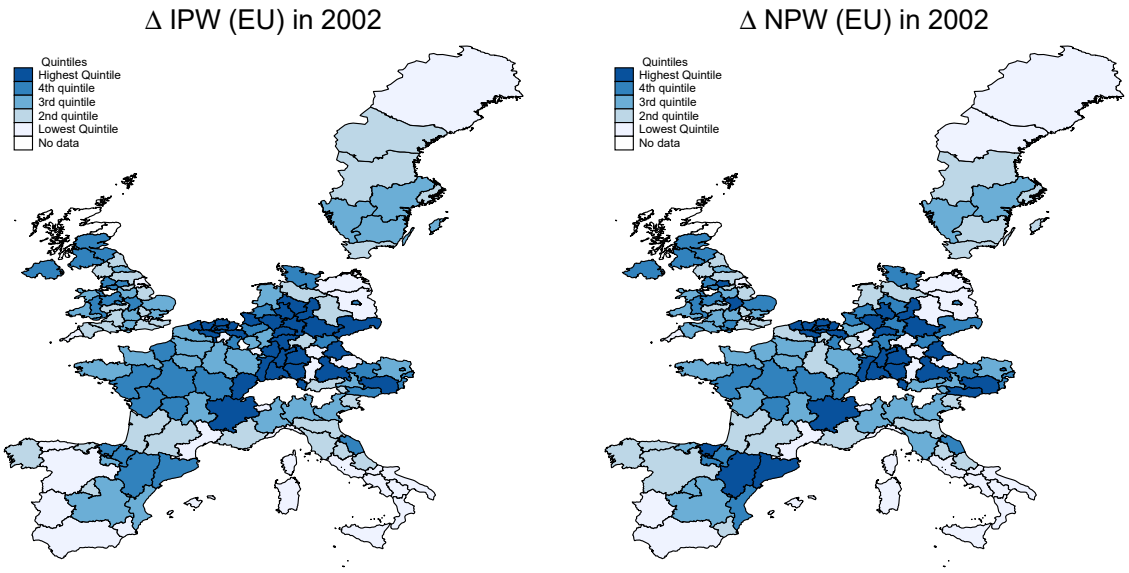
Notes: The table compares outcome and explanatory variables of the 146 NUTS II regions in the data set before and after China joined the WTO. In case of changes, the first period goes from 1997 to 2001, while the post-WTO entry period goes from 2002 to 2006. When levels are used, the summary statistics give the beginning-of-period values, i.e. 1997 and 2002 for the respective period.

Eurostat. With the help of the EU LFS, this paper computes both the share of tertiary education and the percentage of women in employment in each region. As Chinese import competition can be amplified through housing markets (see Xu et al. (2019)), the analysis accounts for geographic housing supply conditions, by including two indicators. First, the percentage of land covered by water and wetlands provided by Eurostat, and second the percentage of coarse fragments is taken from the LUCAS Topsoil data Panagos et al. (2012). Both variables are measured in the year 2009, however due to the difficulty to change these variables in a significant manner, they are included to account for geographic constraints of the housing market.

Table 1 shows summary statistics subdivided into pre- and post-entry period for changes in sectoral employment shares, (net) import exposure per worker using bilateral trade between the EU countries and China, both measures of regional labor market friction and various control variables. The reduction in manufacturing employment is more than ninefold between 2002 and 2006 compared the previous five-year period, which suggests that Chinese imports affected

manufacturing as (net) import competition is significantly higher in the post-period. On the other hand, the services sector experiences stronger rise in the first period compared to the post-entry years. Possibly, this reflects that other factors such as technological progress influence - see e.g. argumentation in Dauth et al. (2017) - are responsible for the rise in the service sector. The construction sector experiences a slightly higher inflow relative to working-age population in the second period, while the increase in public service employment is somewhat larger in the first period. The unemployment rate drops sharply during the first period and rises slightly during the second period, generating a huge gap between the pre- and post-entry periods.
Interestingly, real log hourly wages are always increasing less during the second period, i.e. after China entered the WTO. This finding holds for all sectors, but is particularly strong in the non-manufacturing sectors. Relative to the first period, e.g. in construction the rise in real wages during the second period only equals about 18% that of the first period, and in public services this is equal to about 35%. On the other hand, the reduction in wage increase in manufacturing is equal to 20%. This is an indication that low-skilled workers are more adversely affected by the rise in Chinese import competition than high-skilled workers.

Figure 2: Quintile distribution of regional indicators for (net) import exposure in 2002



These maps shows the spatial variation of (net) import exposure (Δ IPW and Δ NPW) for the eight European economies in the year 2002. Each NUTS 2 region is sorted into one out of five quintiles, with darker colors indicating a higher degree of import competition from China.

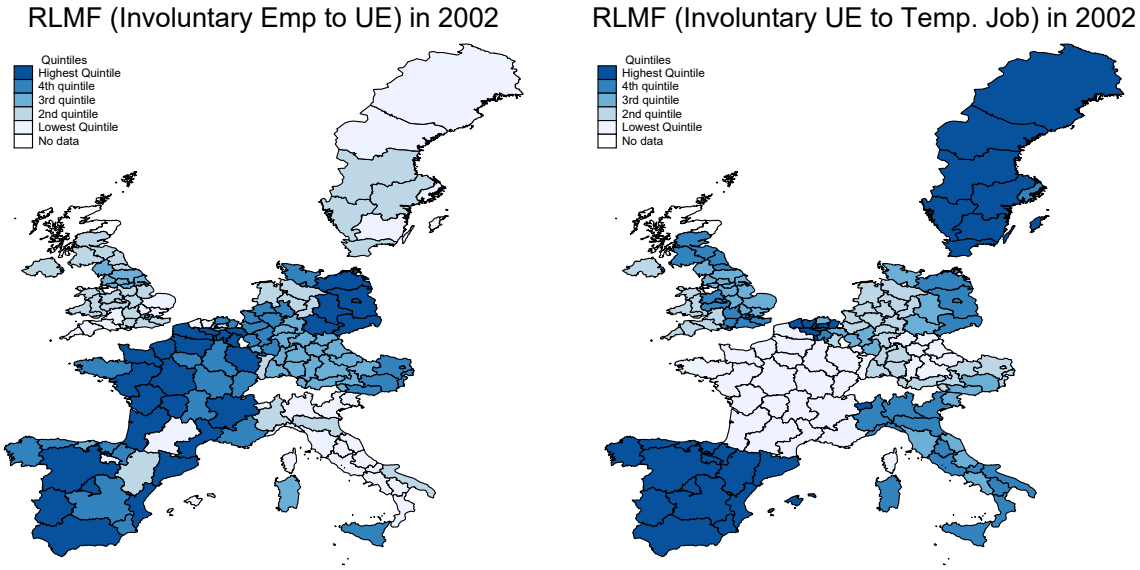
Flows from unemployment into involuntary temporary jobs are also rising, indicating a higher use of temporary contracts for workers entering employment. On the other hand, the flow from temporary contracts to unemployment falls slightly, which may be due to the fact that more often successive temporary contracts are handed out to employees. Murray (1999) highlights the high limits on the duration of successive temporary contracts. Berton et al. (2011) and Gash (2008) highlight the high chance for successive temporary contracts. Further, as a result Berton et al. (2011) find that the transition from a temporary position into a permanent contract

can be long.

The services sector is by far the largest sector in the eight European economies under scrutiny as it is nearly double the size of manufacturing in 1997. Both import and (net) import exposure grow significantly over time, which reflects China's rising importance in world trade. The control variables behave over time as expected, both the share of tertiary education and of employment among women grow substantially, groups typically associated with the growth of service employment. There are no changes over time in the share of water or of coarse fragments.

Figure 2 shows the spatial distribution of the import and net import shock per worker in the European economies included in this study. The resemblance with the geographic dispersion with (Colantone and Stanig, 2017, Fig. 4) is striking and supports the correct measurement of the exposure to Chinese exports. As visible in the left panel of the figure, the regions most exposed to Chinese import competition are located in South and Central Germany, North East Spain and the North of Italy. The North West of England is also quite strongly exposed to Chinese goods' penetration. The right panel of the same figure shows that the geographic distribution of the net import shock is very similar to the one of import exposure. However, some German regions are less exposed when accounting for exports. This finding is not surprising given that Germany is the only European economy that could substantially increase its exports to China.

Figure 3: Quintile distribution of regional labor market friction measures 2002



These maps shows the spatial variation of regional labor market friction (RLMF) for the eight European economies in the year 2002. The right panel shows the involuntary flow from unemployment (UE) into a temporary job, whereas the right panel shows the flow in the opposite direction. Each NUTS 2 region is sorted into one out of five quintiles, with darker colors indicating a higher degree of import competition from China.

Figure 3 presents the spatial variation of both regional labor market friction measures in the same year, namely 2002. The left panel shows the flow from unemployment into "involuntary" employment with a temporary contract, and the right panel shows the measure exploiting the

flow from temporary employment into unemployment. France and Spain are the most rigid with both measures, and all their regions are in one of the highest two quintiles. This is not surprising giving that, as Bentolila and Dolado (1994) finds, temporary contracts already spread in both countries already in the 1980s. Generally, these two countries are also considered to have more rigid labor markets within continental Europe. Italy and the United Kingdom are medium rigid with both measures, though the South of Italy is considered more rigid than the North, especially with the latter measure. The south of Italy historically suffered from higher unemployment rates - which is often interpreted as a sign of labor market frictions - compared to North Italy, hence suggesting that the regional difference in labor market frictions is reflected in this sense as well. Germany, somewhat surprisingly, is the least rigid in 2002, given that it was considered "sick man" of Europe previous to the Hartz Reforms implemented between 2003 and 2005. Probably, these measures are low because fixed-term contracts were not strongly used in Germany before the labor market reforms, hence in- and outflow out of these contracts was low compared to other countries. The main argument behind the lower values for Germany compared to the United Kingdom seem to be that the reason for not having a permanent job is that many temporary jobs are covering training periods in Germany, not because a permanent job could not be found. For the second measure, the reason for being unemployed during the interview is relatively more common in the United Kingdom than in Germany, where the main reason is, by far, dismissal. Coinciding with previous research, however, is the regional distribution of friction within Germany. Burda (2006) finds that labor markets in East Germany do not adjust because they are more rigid than those in West Germany, which is reflected in both measures of labor market friction.

3 Analysis

This section presents three different identification approaches using instrumental variable estimation for import exposure to Chinese imports, and acknowledge that its interactions with labor market frictions are endogenous as well. The three different estimation strategies differ in their way how to treat the interaction term. The first part explains how these treatments differ. Subsequently, the paper reviews the results for all major sectors of employment and the non-employment rates applying all three different identification strategies. The sectoral differentiation helps in understanding the shifting mechanisms induced by trade and whether labor market frictions exacerbate or mitigate these market forces. It discusses the conditional impact of regional trade exposure on manufacturing employment shares in NUTS II regions first, as China's supply-driven exports occur in this sector. It then investigates other sectors of employment, namely (private) services, construction and non-market services. Finally, the paper studies the two non-employment options, namely unemployment and labor force participation. The results indicate that public service employment absorbs most of the adverse shock on manufacturing, while construction and the unemployment rate are unresponsive. The ser-

vices sector tends to absorb the trade shock as well, while the labor force participation rate is falling. However, the estimates are estimated with noise.

3.1 Identification strategy

The instrument for the main effect, i.e. import competition per worker, was developed by Autor et al. (2013). The authors exploit exports from China to other advanced economies to explain US imports of Chinese imports in order to identify the supply-driven component of Chinese goods' penetration to the US. As this study focuses on a panel of countries in Europe, European imports from China are explained using Chinese exports to the US (and other high-income countries), similar to Colantone and Stanig (2017). Thus, this paper's identification strategy also constitutes a two-stage least squares (2SLS) similar to most previous studies.
The main research question of this paper is to causally identify whether labor market friction conditions the response of labor market outcomes, especially with respect of sectoral employment shares and wages. In order to determine whether labor market responses are idiosyncratic subject to different degrees of the use of temporary contracts in the regional labor market, the estimation equation includes an interaction term between the endogenous import competition per worker and labor market friction:

$$\Delta Y_{rt}^{k} = \gamma_t + \gamma_c + \beta_1 \Delta IPW_{rt}^{EU} + \beta_2 RLMF_{rt} + \beta_3 (\Delta IPW_{rt}^{EU} \times RLMF_{rt}) + \boldsymbol{X'}_{rt}\Theta + \varepsilon_{rt}, \qquad (5)$$

where ΔY_{rt}^{k} is the quinquennial change of either employment shares or log hourly wages of the respective sector k in region r. The regional change in sectoral employment shares or log wages are explained by regional differences in both import exposure per worker (ΔIPW_{rt}^{EU}) and labor market friction ($RLMF_{rt}^{i}$), their interaction, a set of controls and a period fixed effect. In case of differences, five-year changes are used in the estimation, while level variables, such as the measurement of regional labor market friction and the control variables, constitute beginning-of-period values. As argued in section 2.2, the identification treats the modifying variable, i.e. regional labor market frictions, as exogenous. To avoid any potential reverse causality caused by labor market developments due to trade between China and European countries, the estimation strategy exploits initial values for labor market friction. Beginning-of-period values help to circumvent this potential bias as labor market institutions are typically sluggish to adjust to market forces such as trade.
The parameters of interest are β_1 for comparison with previous studies, β_2 to determine the impact of the use of temporary contracts and β_3 for the interplay of globalization and labor market institutions, i.e. whether $RLMF_{rt}^{i}$ as the modifying variable reshapes the impact of import exposure per worker on employment shares and wages. The expected sign for β_1 for manufacturing employment shares is negative, as other studies like in Autor et al. (2013), Balsvik et al. (2015) and Donoso et al. (2015). For the other sectoral employment shares, the sign is expected to be positive except for the workers entered unemployment. However, as Curuk and Vannooren-

berghe (2017) highlight occupational proximity, the point estimate is expected to be larger for construction than services. The coefficient β_2 for labor market friction is assumed to be positive for sectors, where permanent employment is relatively more dominant compared to finite horizon contracts, which - based on EU LFS data - are manufacturing, services and construction (in this order). The point estimate of the interaction term, i.e. β_3 is possibly negative for manufacturing, conditional on a high use of temporary contracts, the import shock allows firms to adjust stronger in terms of employment. On the other hand, point estimates for the other sectors are likely to be positive as the higher outflow of the manufacturing sector may result in a stronger inflow of workers into unaffected sectors.

The vector of control variables $\boldsymbol{X'}_{rt}$ encompasses start-of-period employment share or log hourly wage of the respective sector k in order to account for regional convergence. To account for further regional demographic characteristics, the vector of controls includes both the share of the population with tertiary education and percentage of women in employment. Finally, Xu et al. (2019) show that the China shock operated partially through housing markets and show that the impact is reduced by 20-30% accounting for the amplification impact. Due to data constraints on regional house price developments in European regions, the vector of controls accounts for geographic housing supply restrictions based on Saiz (2010). He identifies the steepness of terrain and water as major constraints. Therefore, the vector of controls also includes the share of coarse fragments as a proxy for the former and measures the latter exactly. The estimation equation contains a period-fixed effect (γ_t) for the period prior and after China's inclusion in the WTO, i.e. before and after 2002, and a country-fixed effect (γ_t). Hence, identification relies on within-period and within-country variation. Observations are weighted by their relative size of the working-age population, and standard errors are clustered on the regional level.

The first out of three treatment methods of the endogenous interaction term ($\Delta IPW^{EU}_{rt} \times RLMF_{rt}$) follows the argumentation of Nizalova and Murtazashvili (2016) and Bun and Harrison (2018). Both argue that, if the impact of the main endogenous regressor is controlled for, then the interaction term can be treated as exogenous and its OLS estimator is unbiased and consistent. In other words, if the estimation strategy applies the 2SLS approach for the constitutive term of the endogenous regressor, its interaction with the modifying variable can be interpreted as any other OLS coefficient. Subsequently, this paper refers to this treatment of the interaction term as the "OLS" estimates. Hence, the first stage for the OLS estimation strategy takes on the following form:

$$\Delta IPW^{EU}_{rt} = \gamma_t + \gamma_c + \alpha_1 \Delta IPW^{US}_{rt} + \alpha_2 RLMF_{rt} + \alpha_3 (\Delta IPW^{EU}_{rt} \times RLMF_{rt}) + \boldsymbol{X'}_{rt}\Gamma + \zeta_{rt}, \quad (6)$$

which is analogous to Autor et al. (2013) with the modification of Colantone and Stanig (2017) to use US imports of Chinese goods to explain regional import competition for European labor markets. As standard, with the 2SLS, the other control variables, in this case the vector of controls, regional labor market friction and its interaction with EU import competition. The OLS approach does not use US import exposure in the interaction term as this variable can be

interpreted as standard OLS coefficient in equation (5).

The second approach follows another approach by Bun and Harrison (2018) to treating the endogenous interaction term, who were inspired by Kelejian (1971) to exploit a vector of second-order polynomials as instruments. The authors argue that the previous literature focused on IV estimation of linear models, and hence this approach did not receive much attention. This treatment of the endogenous interaction term implies two first-step regression equations before estimating equation (5):

$$\Delta IPW_{rt}^{EU} = \gamma_t + \gamma_c + \pi_1 \Delta IPW_{rt}^{US} + \pi_2 RLMF_{rt} + \boldsymbol{X'}_{rt}\Phi + \boldsymbol{Z'}_{rt}\Psi + \kappa_{rt}, \text{and} \tag{7a}$$

$$\Delta IPW_{rt}^{EU} \times RLMF_{rt} = \gamma_t + \gamma_c + \delta_1 \Delta IPW_{rt}^{US} + \delta_2 RLMF_{rt} + \boldsymbol{X'}_{rt}\Omega + \boldsymbol{Z'}_{rt}\Lambda + \xi_{rt}, \text{where} \tag{7b}$$

$$\boldsymbol{Z}_{rt} = [RLMF_{rt}^2 \qquad \boldsymbol{X'}_{rt}^2 \qquad RLMF_{rt} \times \boldsymbol{X'}_{rt}]'. \tag{7c}$$

This approach does not require any external instruments for the interaction term, but relies only on internal instruments. These are the square product of the modifying variable, the squares of the control variables in the vector $\boldsymbol{X'}_{rt}$ and their cross-products.[8] In the following, this paper refers to this estimation approach as the "functional form" because this instrument relies on polynomial approximation of the interaction term, i.e. it is exploits on the functional form of the interaction term.

The third approach follows an empirical application of Aghion et al. (2005), who instrument for the endogenous constitutive term and the interaction term using the instrumental variable itself and the interaction of the instrument with the conditioning variable, here regional labor market frictions ($RLMF$). This strategy, which will subsequently be referred to as "IV" approach, also assumes that the interaction term is endogenous and requires it to be instrumented, hence, like the "functional form", resulting in two first-stage regressions:

$$\Delta IPW_{rt}^{EU} = \gamma_t + \gamma_c + \lambda_1 \Delta IPW_{rt}^{US} + \lambda_2 RLMF_{rt} + \lambda_3 (\Delta IPW_{rt}^{US} \times RLMF_{rt}) + \boldsymbol{X'}_{rt}\Pi + \omega_{rt}, \text{and} \tag{8a}$$

$$\Delta IPW_{rt}^{EU} \times RLMF_{rt} = \gamma_t + \gamma_c + \tau_1 \Delta IPW_{rt}^{US} + \tau_2 RLMF_{rt} + \tau_3 (\Delta IPW_{rt}^{US} \times RLMF_{rt}) + \boldsymbol{X'}_{rt}\Upsilon + \rho_{rt}. \tag{8b}$$

The correct interpretation of the interaction term is a crucial element of this paper, especially for policy recommendations based on the results shown in the next section. In order to also gain graphical evidence on whether and how the impact of regional import exposure from China on labor market outcomes in different sectors varies over the whole distribution, this paper presents marginal effects plots based on Brambor et al. (2005). In general, these plots are helpful because the point estimates may not be of particular interest, instead the marginal effect of import exposure in equation (5), i.e. $(\beta_1 + \beta_3 \times RLMF_{rt})$, is of interest. Marginal effect

[8] Bun and Harrison (2018) also include the product of the squared modifying variable with the control variables, and the product of the square of all exogenous variables with the conditioning variable, but are left out here.

plots indicate how this marginal effect changes over the distribution of the modifying variable, including the correct standard errors for each point in the distribution of the modifying variable.

3.2 Employment

The empirical specifications outlined at the beginning of the section allow this paper to determine the causal relationship between sectoral employment shares and both import shocks and labor market frictions on a regional level for eight European economies. The empirical findings help to answer the research questions laid out in the beginning: First, whether and by how much manufacturing employment shares contract subject to higher import competition as previous studies have shown. Second, if stronger local labor market frictions mitigate or amplifies the adverse shock to the manufacturing, represented by the point estimates of the interaction terms. To answer the third question, namely whether, and if yes, which sector absorbs the negative impact on the manufacturing sector, the paper conducts the same analysis for services, construction, private services, the unemployment rate and labor force participation rate.
The remainder of this section presents the regression results for employment shares and (log) hourly wages by sector with both indicators of regional labor market friction and the three different identification strategies, resulting in six estimation results for each sector. Marginal effects plots based on Brambor et al. (2005) complement the analysis because only the point estimates do not provide enough information about the whole distribution of the modifying variable if it is non-binary. Further, robustness checks exploiting net imports and imports to other advanced economies validate the baseline results.

3.2.1 The decline of the manufacturing sector

Hanson and Robertson (2008) show that between 2000 and 2005 the share of manufacturing accounted for 89% of China's merchandise exports. Given it's sharply rising exports to advanced economies, the increasing import competition most likely affects the manufacturing sector directly. Table 2 illustrates that the import shock reduces manufacturing employment in an economically and statistically significant way, the point estimates for the second stage are shown in panel I. Column (1) indicates that an increase of $1,000, with 2005 as the base year, in import exposure per worker over a five-year period reduces the manufacturing employment share relative to the working-age population by 1.29 percentage points. However as Brambor et al. (2005) highlight, this coefficient is only true if the modifying variable takes on the value zero. As both conditioning variables have been standardized, this means that the reduction of the manufacturing employment share by 1.29 percentage points occurs in regional labor markets with average labor market frictions.

The average of all six point estimates is minus 1.04 percentage points. The sign is in line with previous research and the subsequent assumption about the sign of β_1 in equation (5). The size of the same parameter exceeds the point estimate of around .6 by Autor et al. (2013,

Table 2: Conditional effect of import exposure on manufacturing employment shares per working-age population

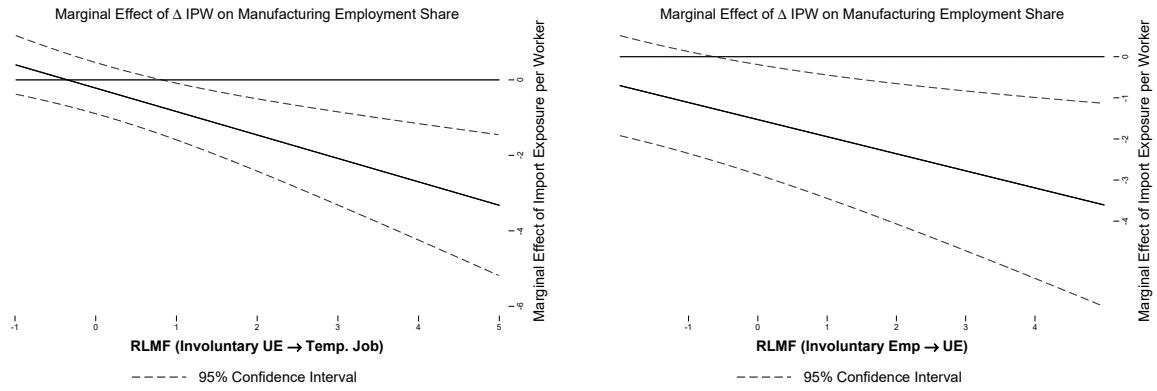
Treatment of Interaction Term	OLS		Functional		IV	
I. Second-stage 2SLS Estimates	(1)	(2)	(3)	(4)	(5)	(6)
Δ IPW (EU)	-1.29**	-0.33	-1.53***	-1.36***	-1.53**	-0.22
	(-1.99)	(-1.22)	(-4.26)	(-4.03)	(-2.24)	(-0.63)
RLMF (Involuntary Emp → UE) × Δ IPW (EU)	-0.23		-0.34		-0.42**	
	(-1.62)		(-1.64)		(-2.56)	
RLMF (Involuntary UE → Temp. Job) × Δ IPW (EU)		-0.53***		-0.14		-0.62***
		(-2.89)		(-0.57)		(-3.44)
Observations	292	292	292	292	292	292
II. First-Stage Estimates						
Δ IPW (US)	0.01***	0.02***	0.01***	0.01***	0.01***	0.01***
	(3.69)	(5.29)	(3.50)	(3.68)	(4.01)	(4.36)
R^2	0.67	0.74	0.74	0.74	0.67	0.68
F-Statistic	13.62	27.95	12.23	13.53	16.04	19.00
III. First-Stage Estimates (Interaction Term)						
RLMF (Involuntary Emp → UE) × Δ IPW (US)					0.04***	
					(7.15)	
RLMF (Involuntary UE → Temp. Job) × Δ IPW (US)						0.05***
						(13.16)
R^2			0.75	0.40	0.80	0.91
F-Statistic			3.59	2.17	51.12	173.09

Notes: The dependent variable of the second stage of the 2SLS approach in panel I is the change in manufacturing employment share per working-age population. Both modifying variables measuring regional labor market rigidity are standardized. All specifications instrument for endogenous bilateral imports of EU countries using US imports from China as an instrument. Panel II presents the estimation results for all specifications for this first-stage. Columns (1) and (2) report results for the estimation approach, where the interaction term is taken as exogenous. Columns (3) and (4) show the results for the identification strategy, which instruments for the interaction term exploiting a vector of second-order polynomials of the control variables and the conditioning variable. Due to the size of the vector and the non-economic nature of these estimates, the results are not shown in panel III. Columns (5) and (6) display the results of the approach, which instruments for the interaction term using the interaction of the instrument for the endogenous explanatory variable and the modifying variable. The results are shown in panel III. Standard errors are clustered on the regional level. 95% confidence intervals in brackets. *** denotes 1% significance, ** denotes 5% significance, * denotes 10% significance.

Table 3) for the United States. However, this is not surprising given the sample of countries included in the study. Donoso et al. (2015) find significantly larger impact on Spanish regional labor markets, with point estimates around two for Spain, and Balsvik et al. (2015) find a point estimate of .78 for Norway. Further, though the results are not directly comparable because these studies use growth rates instead of differences, both Malgouyres (2017) for France and Federico (2014) for Italy find strong reductions in manufacturing employment growth due to rising import competition from low-wage countries.

Balsvik et al. (2015) and Donoso et al. (2015) argue that key differences in the magnitudes may be due to labor market institutions. Especially the latter argue that adjustment in quantities is stronger in Spanish regions because in a rigid labor market adjustments of demand shock are mainly remarkable in quantities, i.e. employment. The point estimates of the interaction support this view as all six of them are negative and with one exception is statistically significant at the 5% level - again in line with our expectations about β_3 in equation (5). The negative coefficients imply that, conditional on a higher labor market frictions, the contraction in manufacturing employment share due to higher import exposure is stronger. As Spain and France have more rigid labor markets, these are the countries which are hit the strongest by supply-driven imports from China. On the other hand, less rigid labor markets like Germany and the United Kingdom did not experience a statistically significant reduction in manufacturing employment shares as the marginal effects plots in Figure 4 show. In the figure, both panels show that with lower labor market frictions the impact on manufacturing employment is less pronounced and possibly even insignificant.

Figure 4: Marginal Effects of Import Exposure per Worker on Manufacturing Employment conditional on Regional Labor Market Frictions



The marginal effects plots show the response of manufacturing employment per working age population to Chinese import competition. The left panel uses the involuntary inflow from unemployment as a measure of regional labor market friction (RLMF Involuntary UE $\rightarrow$ Temp. Job), while the right panel uses the involuntary outflow from temporary employment to unemployment (RLMF Involuntary Emp $\rightarrow$ UE). Results are based on the IV treatment of the interaction, i.e. columns (5) and (6) of Table 2.

Panels II and III in table 2 shows the point estimates of the first-stage regressions. As outlined above, all three different identification strategies only differentiate in their treatment

of the interaction term. Thus, all three approaches take into acount that the main effect, i.e. import competition endogenous to (industry) demand for Chinese goods, is endogenous. Hence, following Autor et al. (2013) the imports of European countries from China is instrumented using US imports of Chinese goods. Panel II shows the point estimates of import exposure using US for explaining import competition with European imports. The range of the point estimates is between 0.01 and 0.02, and all of them are statistically significant at the 1% level and the F-Statistic is above 10 in all six specifications. The coefficients are significantly smaller than in Autor et al. (2013) for the United States, but are about half as large as those in previous studies focusing on Europe, may it be cross-country studies like Colantone and Stanig (2017) or single-country studies as Donoso et al. (2015). The lower estimates in the first stage are linked to the fact that the paper exploits imports to a large economy, i.e. the United States, as an instrumental variable for imports to smaller countries, especially Belgium, the Netherlands and Sweden.

The different treatments of the endogenous interaction term is visible in panel III of Table 2. The first two columns, which represent the "OLS" approach, show the results assuming that the interaction term can be treated as exogenous because the main effect has been taken account for. Hence, only one first stage exists for this identification strategy and panel III is empty. Columns (3) and (4) reflect the "functional" estimation method, which acknowledges that the interaction term is endogenous. Bun and Harrison (2018) propose a vector of second-order polynomials as instruments for the interaction term as it constitutes a non-linearity in itself. Because this vector is quite extensive and does not contain any economically meaningful information for the first stage, panel III only reports the R^2 and the F-Statistic, which are below 10 in both cases. This is largely due to the introduction of country-fixed effects, which limit the variation, and the large second-order polynomial of control variables used as instruments. However, as the interaction term itself, or rather its functional form, gives rise to this estimation approach, the typical value of 10 does not hold. Finally, the only specification where the interaction term is insignificant on conventional levels is Column (4), specifically where the R^2 is by far the lowest.

The last two columns show the results for the preferred specification, i.e. the "IV" approach, which instruments for the interaction term using the product of the instrument of the main effect and the conditioning variable. In this case, these are US imports from China and the measure for regional labor market frictions. The IV approach of the interaction terms constitutes the preferred specification, hence Figure 4 shows the results based on this estimation method. The point estimates are statistically significant at the 1% level and are about double the magnitude compared to the point estimates for the first stage of the main effect in Panel II. The F-Statistics exceed 50 and 174, respectively.

Table 3: Conditional effect of import exposure on services employment shares per working-age population

Treatment of Interaction Term	OLS		Functional		IV	
I. Second-stage 2SLS Estimates	(1)	(2)	(3)	(4)	(5)	(6)
Δ IPW (EU)	0.05	-0.17	1.23**	0.43	0.24	-0.32
	(0.08)	(-0.36)	(2.39)	(0.97)	(0.49)	(-0.53)
RLMF (Involuntary Emp → UE)	-0.04		-0.87**		-0.18	
	(-0.25)		(-2.34)		(-0.98)	
RLMF (Involuntary Emp → UE) × Δ IPW (EU)	0.05		1.26**		0.27	
	(0.39)		(2.44)		(1.30)	
RLMF (Involuntary UE → Temp. Job)		-0.34		0.13		-0.62
		(-0.54)		(0.12)		(-1.00)
RLMF (Involuntary UE → Temp. Job) × Δ IPW (EU)		0.25		-0.12		0.47**
		(0.91)		(-0.18)		(2.02)
Observations	292	292	292	292	292	292
II. First-Stage Estimates						
Δ IPW (US)	0.02***	0.02***	0.02***	0.02***	0.02***	0.02***
	(4.94)	(5.97)	(4.32)	(4.57)	(5.18)	(5.29)
R^2	0.64	0.71	0.71	0.71	0.64	0.64
F-Statistic	24.41	35.61	18.64	20.86	26.79	27.99
III. First-Stage Estimates (Interaction Term)						
RLMF (Involuntary Emp → UE) × Δ IPW (US)					0.04***	
					(7.39)	
RLMF (Involuntary UE → Temp. Job) × Δ IPW (US)						0.05***
						(13.35)
R^2			0.75	0.74	0.80	0.91
F-Statistic			2.61	2.91	54.65	178.10

Notes: The dependent variable of the second stage of the 2SLS approach in panel I is the change in services employment share per working-age population. Both modifying variables measuring regional labor market rigidity are standardized. All specifications instrument for endogenous bilateral imports of EU countries using US imports from China as an instrument. Panel II presents the estimation results for all specifications for this first-stage. Columns (1) and (2) report results for the estimation approach, where the interaction term is taken as exogenous. Columns (3) and (4) show the results for the identification strategy, which instruments for the interaction term exploiting a vector of second-order polynomials of the control variables and the conditioning variable. Due to the size of the vector and the non-economic nature of these estimates, the results are not shown in panel III. Columns (5) and (6) display the results of the approach, which instruments for the interaction term using the interaction of the instrument for the endogenous explanatory variable and the modifying variable. The results are shown in panel III. Standard errors are clustered on the regional level. 95% confidence intervals in brackets. *** denotes 1% significance, ** denotes 5% significance, * denotes 10% significance.

3.2.2 Noisy response of the services sector

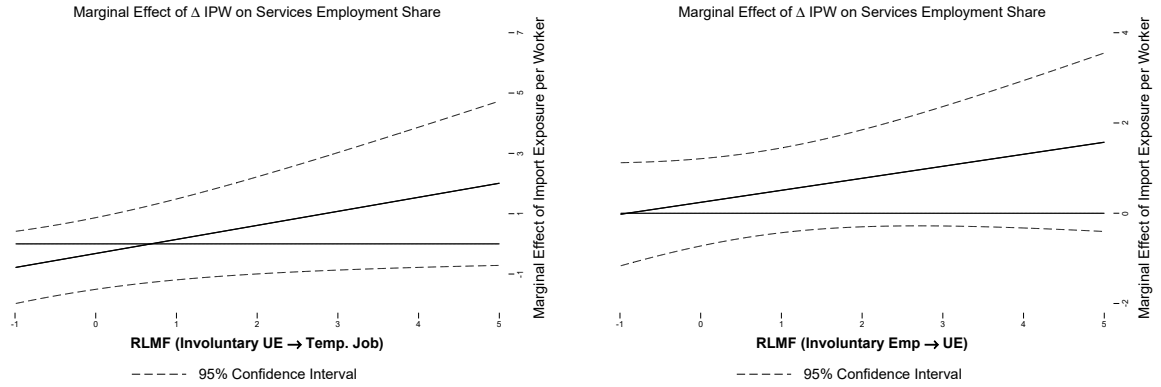
The natural question following from the result of an adverse impact on manufacturing employment is what happens to displaced workers. They can potentially enter either employment in other sectors, become unemployed or leave the labor force altogether. Theoretically, Caliendo et al. (2019) argue that other sectors such as services and construction profit from the trade shock due to cheaper intermediate inputs from China, which should lead to a rise in employment in these sectors. However, the empirical evidence is mixed. Autor et al. (2013) find no change in non-manufacturing employment, instead unemployment rises due to higher import competition from China. Balsvik et al. (2015) find that employment in "other" sectors rises slightly, but find that the largest increase occurs in unemployment. Donoso et al. (2015) find an increase in employment related to construction and services related to it. For Denmark, Keller and Utar (2016) find that mid-skilled workers in manufacturing reallocate to either high-skilled or low-skilled service jobs after a trade shock, contributing to the polarization of labor markets. Keeping in mind the timing of the rise of the service sector documented in the descriptive statistics in Table 1, it seems improbable that the service sector absorbs displaced workers from manufacturing after the rise in Chinese import competition. Instead, Autor and Dorn (2013) highlight the ongoing polarization of labor markets in the US, especially in the service sector, but they argue that both consumer preferences favoring variety and cheaper automation technology are the main drivers. These determinants hold particularly for low-skilled jobs, while Buera and Kaboski (2012) emphasize the role of education and the returns to skill for high-paid jobs in services, which were crucial to the rise of this sector. Further, as mentioned previously, the rise in female labor market participation lead to an increase in the share of service employment in advanced economies.

Table 3 displays the estimation results for the services sector, i.e. how employment in services relative to the working-age population responds to the import shock conditional on local labor market frictions. The point estimates change signs and mostly vary around zero ranging from -.24 to .33 in five out of six specifications. These five point estimates are statistically insignificant on conventional levels. Only in Column (3) the point estimate is positive, large and statistically significant at 5%. Unsurprisingly, the values of F-Statistics and point estimates of the instrument for the main effect are similar or even slightly higher in Table 3 compared to 2 for manufacturing.

All point estimates of the interaction terms are positive, but only two of them are statistically significant. The marginal effects plots in Figure 5 show the importance of meaningful standard errors if the modifying variable is non-binary. Even though the interaction term in Column (6) is statistically significant at 5%, this does not translate into a statistically significant effect across the whole distribution of the measure of regional labor market frictions. The lack of a response in services to trade shocks (at least with low-wage countries) supports the notion that

other drivers, such as rising skills and decreasing automation costs, are important determinants of the rise of the service sector.

Figure 5: Marginal Effects of Import Exposure per Worker on Services Employment conditional on Regional Labor Market Friction



The marginal effects plots show the response of service employment per working age population to Chinese import competition (Δ IPW). The left panel uses the involuntary inflow from unemployment as a measure of regional labor market friction (RLMF Involuntary UE → Temp. Job), while the right panel uses the involuntary outflow from temporary employment to unemployment (RLMF Involuntary Emp → UE). Results are based on the IV treatment of the interaction, i.e. columns (5) and (6) of table 3.

3.2.3 No absorption by the construction sector

The subsequent option for the absorption of the trade shock is the construction sector. Caliendo et al. (2019) argue that the service sector is more important than the construction sector for the absorption of the trade shock in the United States. The importance of the construction sector is shown by Charles et al. (2016) and Donoso et al. (2015), The former argue that the rise in construction masked the decline of manufacturing employment in the United States, especially for low-skilled workers, while the latter shows that construction experience a large expansion during the decline of manufacturing in Spain. Further, Curuk and Vannoorenberghe (2017) point out that occupational similarity and regional proximity matter for labor reallocation. Regional proximity is typically given for both the services and the construction sector as they constitute non-tradable sectors and hence locate close to their customers due to high transportation costs. However, using job flows in Sweden Neffke and Henning (2013, Fig. 1) show that occupational similarity between manufacturing and construction is higher than between the former and services.

The findings in this study do not corroborate the findings of Charles et al. (2016) and Donoso et al. (2015) on a European level. Again remembering the summary statistics in Table 1, this does not come surprising as there was no substantial difference in the increase of the construction sector before and after China entered the WTO in 2001. Table 4 shows the results for the construction sector using the three different treatments of the interaction terms and the two

Table 4: Conditional effect of import exposure on construction employment shares per working-age population

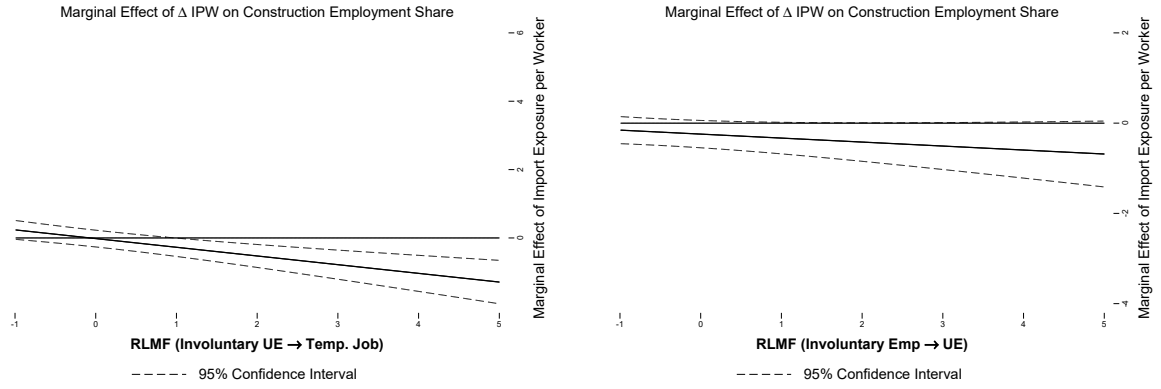
Treatment of Interaction Term	OLS		Functional		IV	
I. Second-stage 2SLS Estimates	(1)	(2)	(3)	(4)	(5)	(6)
Δ IPW (EU)	-0.19	-0.09	-0.16	-0.11	-0.24	-0.02
	(-1.24)	(-0.85)	(-0.91)	(-0.77)	(-1.57)	(-0.14)
RLMF (Involuntary Emp → UE)	0.04		-0.03		0.08	
	(0.84)		(-0.31)		(1.38)	
RLMF (Involuntary Emp → UE) × Δ IPW (EU)	-0.03		0.06		-0.09	
	(-0.54)		(0.46)		(-1.44)	
RLMF (Involuntary UE → Temp. Job)		0.32***		0.49***		0.44***
		(2.69)		(2.67)		(3.89)
RLMF (Involuntary UE → Temp. Job) × Δ IPW (EU)		-0.15**		-0.29**		-0.25***
		(-2.51)		(-1.98)		(-4.19)
Observations	292	292	292	292	292	292
II. First-Stage Estimates						
Δ IPW (US)	0.02***	0.02***	0.02***	0.02***	0.02***	0.02***
	(5.15)	(6.02)	(5.29)	(5.65)	(5.23)	(5.53)
R^2	0.66	0.72	0.70	0.71	0.66	0.66
F-Statistic	26.55	36.24	28.01	31.89	27.32	30.55
III. First-Stage Estimates (Interaction Term)						
RLMF (Involuntary Emp → UE) × Δ IPW (US)					0.04***	
					(7.35)	
RLMF (Involuntary UE → Temp. Job) × Δ IPW (US)						0.05***
						(13.77)
R^2			0.74	0.77	0.80	0.92
F-Statistic			3.62	1.60	54.06	189.67

Notes: The dependent variable of the second stage of the 2SLS approach in panel I is the change in construction employment share per working-age population. Both modifying variables measuring regional labor market rigidity are standardized. All specifications instrument for endogenous bilateral imports of EU countries using US imports from China as an instrument. Panel II presents the estimation results for all specifications for this first-stage. Columns (1) and (2) report results for the estimation approach, where the interaction term is taken as exogenous. Columns (3) and (4) show the results for the identification strategy, which instruments for the interaction term exploiting a vector of second-order polynomials of the control variables and the conditioning variable. Due to the size of the vector and the non-economic nature of these estimates, the results are not shown in panel III. Columns (5) and (6) display the results of the approach, which instruments for the interaction term using the interaction of the instrument for the endogenous explanatory variable and the modifying variable. The results are shown in panel III. Standard errors are clustered on the regional level. 95% confidence intervals in brackets. *** denotes 1% significance, ** denotes 5% significance, * denotes 10% significance.

measures of regional labor market frictions. The point estimates of the main effect, i.e. import competition from China, are largely negative and range between -.27 and .09. Only the former is statistically significant at the 10% level, the other five parameters are statistically insignificant. Analogous to the results of the first stages for manufacturing and the services sector, the point estimates for the instrumental variable shown in Panel II are about .02, and the F-Statistics always exceed 10.

The interaction terms are also largely negative, and in three out of these five specifications statistically significant on conventional levels. The only specification, where it is positive, is Column (3), i.e. the functional approach using the involuntary inflow from employment to unemployment as the measure for regional labor market frictions. Coincidentally, this is the same specification, for which the point estimate of the main effect is positive. The estimation results provide evidence that the construction sector does not absorb the adverse impact of the trade shock on the manufacturing sector, independent of the level of regional labor market frictions. Figure 6 show this very clearly. The right panel does not show any significant impact on construction employment across the whole distribution, the left panel even predicts a negative impact of the trade shock on construction employment.

Figure 6: Marginal Effects of Import Exposure per Worker on Construction Employment conditional on Regional Labor Market Friction



The marginal effects plots show the response of construction employment per working age population to Chinese import competition (Δ IPW). The left panel uses the involuntary inflow from unemployment as a measure of regional labor market friction (RLMF Involuntary UE → Temp. Job), while the right panel uses the involuntary outflow from temporary employment to unemployment (RLMF Involuntary Emp → UE). Results are based on the IV treatment of the interaction, i.e. columns (5) and (6) of table 4.

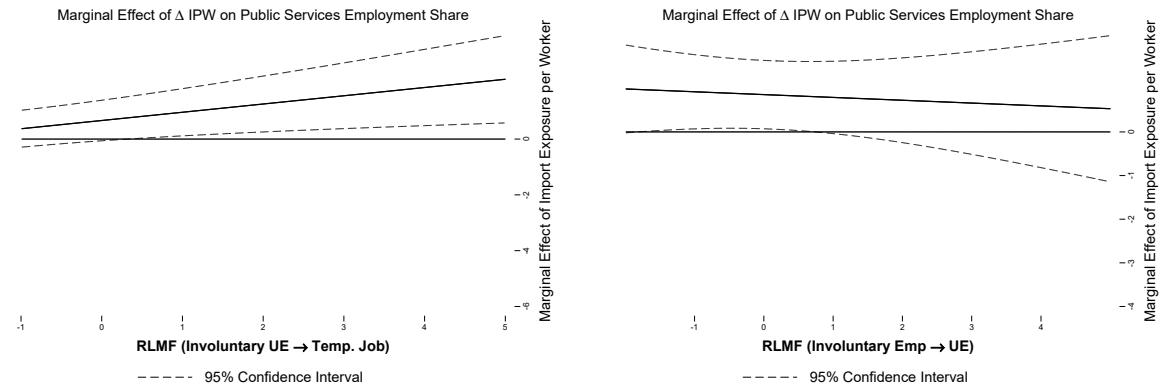
These findings about the construction sector can still be in line with the argument by Xu et al. (2019) that the import shock operates partly through the housing market and the findings by Donoso et al. (2015) and Charles et al. (2016). Either, the rise in import competition from China is not directly related to the house price developments and the demand for construction employment, or the import shock occurred simultaneously to a financial shock in the form of credit supply or speculative bubbles.

3.2.4 Shock Absorption by Public Service Sector

This non-significant results might be explained by the focus on private services employment. For the United States, Caliendo et al. (2019) show that, apart from "Other Services", education and health are contributing most to employment gains in non-manufacturing, which are typically considered as non-market services in most European countries. Therefore, this section investigates whether a similar response takes place in the economies subject to investigation, i.e. whether public services absorb the adverse impact of the import shock on the manufacturing sector.

Table 5 presents the estimation results in the same fashion as above for manufacturing, (private) services and construction. All of the six specifications exhibit positive coefficient estimates of the main effect, i.e. given average regional labor market frictions, and four of them are statistically significant at least at the 10% significance level. These findings support the notion that public service employment tends to absorb the adverse impact of the trade shock on the manufacturing sector. Non-market services encompass education and health, and thus the findings here for eight European countries support the notion by Caliendo et al. (2019) that these sectors absorb the trade shock. Both panels in Figure 7 support this notion across most of the distribution of regional labor market frictions with meaningful standard errors included.

Figure 7: Marginal Effects of Import Exposure per Worker on Public Services Employment conditional on Regional Labor Market Friction



The marginal effects plots show the response of construction employment per working age population to Chinese import competition (Δ IPW). The left panel uses the involuntary inflow from unemployment as a measure of regional labor market friction (RLMF Involuntary UE → Temp. Job), while the right panel uses the involuntary outflow from temporary employment to unemployment (RLMF Involuntary Emp → UE). Results are based on the IV treatment of the interaction, i.e. columns (5) and (6) of table 4.

3.2.5 Non-employment alternatives

As argued above, displaced manufacturing workers have three broad options after losing employment induced by rising import competition. Besides working in another sector, two non-

Table 5: Conditional effect of import exposure on public services employment shares per working-age population

Treatment of Interaction Term	OLS		Functional		IV	
I. Second-stage 2SLS Estimates	(1)	(2)	(3)	(4)	(5)	(6)
Δ IPW (EU)	0.86*	0.49	0.54**	0.38	0.86**	0.67*
	(1.90)	(1.56)	(2.06)	(1.39)	(2.14)	(1.80)
RLMF (Involuntary Emp → UE)	0.03		-0.15		0.03	
	(0.29)		(-1.08)		(0.26)	
RLMF (Involuntary Emp → UE) × Δ IPW (EU)	-0.06		0.18		-0.06	
	(-0.48)		(0.97)		(-0.42)	
RLMF (Involuntary UE → Temp. Job)		-0.57**		-1.35***		-0.27
		(-2.09)		(-3.59)		(-1.16)
RLMF (Involuntary UE → Temp. Job) × Δ IPW (EU)		0.52***		1.13***		0.30***
		(3.24)		(4.27)		(2.62)
Observations	292	292	292	292	292	292
II. First-Stage Estimates						
Δ IPW (US)	0.02***	0.02***	0.02***	0.02***	0.02***	0.02***
	(4.77)	(5.80)	(4.35)	(4.69)	(5.00)	(5.09)
R^2	0.64	0.71	0.70	0.70	0.64	0.64
F-Statistic	22.79	33.68	18.94	22.01	25.01	25.93
III. First-Stage Estimates (Interaction Term)						
RLMF (Involuntary Emp → UE) × Δ IPW (US)					0.04***	
					(7.18)	
RLMF (Involuntary UE → Temp. Job) × Δ IPW (US)						0.05***
						(13.36)
R^2			0.75	0.44	0.80	0.91
F-Statistic			4.25	2.10	51.53	178.57

Notes: The dependent variable of the second stage of the 2SLS approach in panel I is the change in public services employment share per working-age population. Both modifying variables measuring regional labor market rigidity are standardized. All specifications instrument for endogenous bilateral imports of EU countries using US imports from China as an instrument. Panel II presents the estimation results for all specifications for this first-stage. Columns (1) and (2) report results for the estimation approach, where the interaction term is taken as exogenous. Columns (3) and (4) show the results for the identification strategy, which instruments for the interaction term exploiting a vector of second-order polynomials of the control variables and the conditioning variable. Due to the size of the vector and the non-economic nature of these estimates, the results are not shown in panel III. Columns (5) and (6) display the results of the approach, which instruments for the interaction term using the interaction of the instrument for the endogenous explanatory variable and the modifying variable. The results are shown in panel III. Standard errors are clustered on the regional level. 95% confidence intervals in brackets. *** denotes 1% significance, ** denotes 5% significance, * denotes 10% significance.

employment responses are possible. First, they can be unemployed and seek re-entering the labor force. Dauth et al. (2017) show that the rise in service employment in Germany comes from re-entrants, i.e. former employees in the manufacturing sector first entered unemployment and then re-entered the service sector. The second alternative is exiting the labor force, which is more likely to be an option for older workers who are close to retirement and simply advance it. Autor et al. (2013) find that the trade shock affects both non-employment options, namely that the unemployment rate is rising and that labor force participation is falling. Neither any of the two single-country studies, i.e. Balsvik et al. (2015) for Norway and Donoso et al. (2015) for Spain, fully confirm the results. The former finds an increase in unemployment, especially for low-skilled workers, and no significant change in labor force participation. The latter even finds a negative impact of the trade shock on the unemployment rate, though estimated with noise, and also no effect on the labor force participation rate.

Tables 6 and 7 show the estimation results for the unemployment rate and the labor force participation rate, respectively. The results support the findings by Donoso et al. (2015), i.e. the point estimates are all negative and, with one exception in Column (3), all statistically insignificant. This non-response is independent of the level of labor market frictions as indicated by the interaction terms, i.e. the unemployment rate never reacts in a statistically significant way. The sign of the point estimates of the interaction terms differs, two are positive and four are negative. However, the interaction terms are, again with one exception in Column (4), estimated with noise. Figure 8 depicts the marginal effects plots using the preferred estimation method, i.e. the "IV" approach of the interaction term. In both cases, the meaningful standard errors are so large that the unemployment rate is never statistically significant across the whole distributions of either measure of regional labor market frictions, even though the estimated signs of the interactions terms differ.

The second non-employment alternative is dropping out of the labor force. For the two single-country studies in Europe there was no significant effect on the labor force participation rate. The estimation results in Table 7 support these findings. The point estimates of the main effect, conditional on average regional labor market frictions, are ranging between -.91 and .09, and are always estimated with noise. This is in line with expectations and that some displaced workers are advancing retirement. The non-employment alternative of dropping out of the labor force is more likely for older workers, which is why the estimated effected may be insignificant due to the lack of age information in the data. As with all other specifications, the coefficients of US imports from China in the first stage are around .02, statistically significant and the F-Statistics exceed 10.

The interaction terms using either measure of regional labor market frictions are negative in five cases, indicating that a higher difficulty to re-enter employment (under a permanent contract) provides more reason to drop out of the labor force, and in the case of older displaced workers to advance retirement. However, only one of the five coefficients of the interaction term with a negative sign is statistically significant, the remaining ones are estimated with noise similar to

Table 6: Conditional effect of import exposure on the unemployment rate

Treatment of Interaction Term	OLS		Functional		IV	
I. Second-stage 2SLS Estimates	(1)	(2)	(3)	(4)	(5)	(6)
Δ IPW (EU)	-0.77	-1.16	-4.00*	-3.64	-1.04	-1.16
	(-0.47)	(-0.87)	(-1.95)	(-1.62)	(-0.66)	(-0.75)
RLMF (Involuntary Emp → UE)	-0.31		0.49		-0.11	
	(-0.57)		(0.63)		(-0.21)	
RLMF (Involuntary Emp → UE) × Δ IPW (EU)	0.67		-0.37		0.39	
	(1.23)		(-0.38)		(0.75)	
RLMF (Involuntary UE → Temp. Job)		1.55		-2.68		1.54*
		(1.54)		(-1.18)		(1.87)
RLMF (Involuntary UE → Temp. Job) × Δ IPW (EU)		-0.63		2.64*		-0.63
		(-0.93)		(1.68)		(-1.29)
Observations	292	292	292	292	292	292
II. First-Stage Estimates						
Δ IPW (US)	0.02***	0.02***	0.02***	0.02***	0.02***	0.02***
	(4.92)	(5.96)	(4.58)	(4.62)	(5.11)	(5.26)
R^2	0.64	0.72	0.70	0.70	0.64	0.65
F-Statistic	24.16	35.48	20.99	21.34	26.12	27.65
III. First-Stage Estimates (Interaction Term)						
RLMF (Involuntary Emp → UE) × Δ IPW (US)					0.04***	
					(7.18)	
RLMF (Involuntary UE → Temp. Job) × Δ IPW (US)						0.05***
						(13.26)
R^2			0.75	0.73	0.80	0.91
F-Statistic			3.46	2.58	51.55	175.77

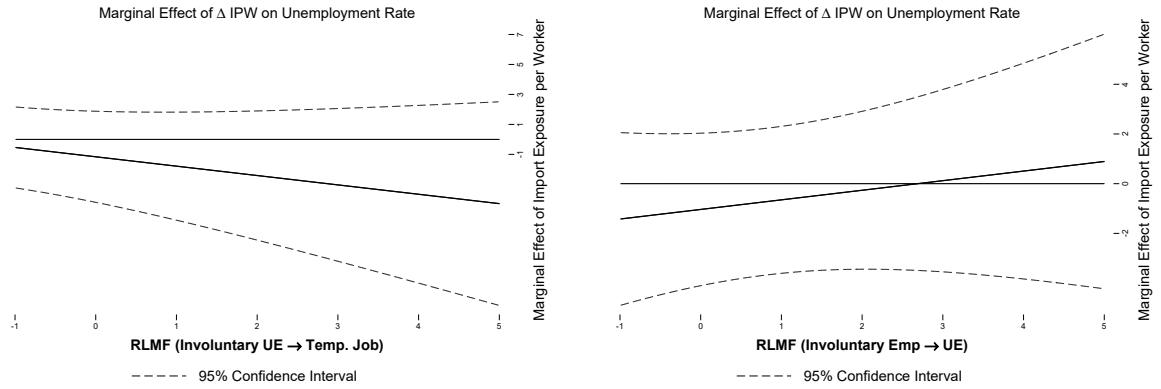
Notes: The dependent variable of the second stage of the 2SLS approach in panel I is the change in the unemployment rate. Both modifying variables measuring regional labor market rigidity are standardized. All specifications instrument for endogenous bilateral imports of EU countries using US imports from China as an instrument. Panel II presents the estimation results for all specifications for this first-stage. Columns (1) and (2) report results for the estimation approach, where the interaction term is taken as exogenous. Columns (3) and (4) show the results for the identification strategy, which instruments for the interaction term exploiting a vector of second-order polynomials of the control variables and the conditioning variable. Due to the size of the vector and the non-economic nature of these estimates, the results are not shown in panel III. Columns (5) and (6) display the results of the approach, which instruments for the interaction term using the interaction of the instrument for the endogenous explanatory variable and the modifying variable. The results are shown in panel III. Standard errors are clustered on the regional level. 95% confidence intervals in brackets. *** denotes 1% significance, ** denotes 5% significance, * denotes 10% significance.

Table 7: Conditional effect of import exposure on the labor force participation rate

Treatment of Interaction Term	OLS		Functional		IV	
I. Second-stage 2SLS Estimates	(1)	(2)	(3)	(4)	(5)	(6)
Δ IPW (EU)	-0.79	-0.03	-0.90	-0.70	-0.79	0.08
	(-0.82)	(-0.05)	(-1.25)	(-1.14)	(-0.90)	(0.10)
RLMF (Involuntary Emp → UE)	0.33		0.37		0.32	
	(1.03)		(0.75)		(0.88)	
RLMF (Involuntary Emp → UE) × Δ IPW (EU)	-0.44		-0.50		-0.44	
	(-1.36)		(-0.87)		(-1.17)	
RLMF (Involuntary UE → Temp. Job)		0.74		-0.12		0.94*
		(1.22)		(-0.10)		(1.75)
RLMF (Involuntary UE → Temp. Job) × Δ IPW (EU)		-0.53		0.13		-0.68**
		(-1.25)		(0.16)		(-2.16)
Observations	292	292	292	292	292	292
II. First-Stage Estimates						
Δ IPW (US)	0.02***	0.02***	0.02***	0.02***	0.02***	0.02***
	(5.00)	(6.00)	(5.47)	(5.64)	(5.24)	(5.33)
R^2	0.64	0.71	0.69	0.70	0.64	0.64
F-Statistic	25.00	35.97	29.94	31.84	27.41	28.46
III. First-Stage Estimates (Interaction Term)						
RLMF (Involuntary Emp → UE) × Δ IPW (US)					0.04***	
					(7.22)	
RLMF (Involuntary UE → Temp. Job) × Δ IPW (US)						0.05***
						(13.33)
R^2			0.75	0.73	0.80	0.91
F-Statistic			4.02	2.04	52.12	177.59

Notes: The dependent variable of the second stage of the 2SLS approach in panel I is the change in the labor force participation rate. Both modifying variables measuring regional labor market rigidity are standardized. All specifications instrument for endogenous bilateral imports of EU countries using US imports from China as an instrument. Panel II presents the estimation results for all specifications for this first-stage. Columns (1) and (2) report results for the estimation approach, where the interaction term is taken as exogenous. Columns (3) and (4) show the results for the identification strategy, which instruments for the interaction term exploiting a vector of second-order polynomials of the control variables and the conditioning variable. Due to the size of the vector and the non-economic nature of these estimates, the results are not shown in panel III. Columns (5) and (6) display the results of the approach, which instruments for the interaction term using the interaction of the instrument for the endogenous explanatory variable and the modifying variable. The results are shown in panel III. Standard errors are clustered on the regional level. 95% confidence intervals in brackets. *** denotes 1% significance, ** denotes 5% significance, * denotes 10% significance.

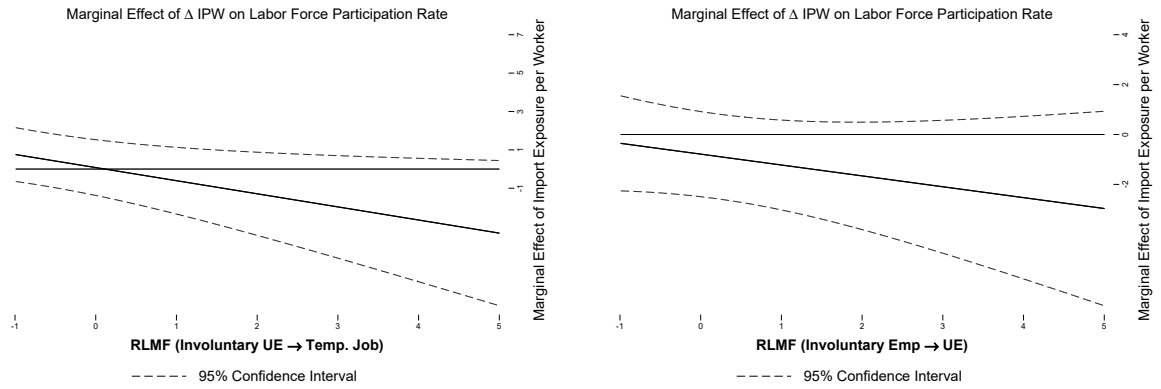
Figure 8: Marginal Effects of Import Exposure per Worker on Public Services Employment conditional on Regional Labor Market Friction



The marginal effects plots show the response of the unemployment rate to Chinese import competition (Δ IPW). The left panel uses the involuntary inflow from unemployment as a measure of regional labor market friction (RLMF Involuntary UE → Temp. Job), while the right panel uses the involuntary outflow from temporary employment to unemployment (RLMF Involuntary Emp → UE). Results are based on the IV treatment of the interaction, i.e. columns (5) and (6) of table 6.

the one with a positive sign. However, the left panel of Figure 9 shows the marginal effects plot where the interaction term is negative and statistically significant at the 5% level, i.e. Column (6) of Table 7. Yet, the meaningful standard errors indicate that the labor force participation rate never show a significant response across the whole distribution of regional labor market frictions. This conclusion also holds for the second measure of regional labor market frictions in the right panel.

Figure 9: Marginal Effects of Import Exposure per Worker on Public Services Employment conditional on Regional Labor Market Friction



The marginal effects plots show the response of the unemployment rate to Chinese import competition (Δ IPW). The left panel uses the involuntary inflow from unemployment as a measure of regional labor market friction (RLMF Involuntary UE → Temp. Job), while the right panel uses the involuntary outflow from temporary employment to unemployment (RLMF Involuntary Emp → UE). Results are based on the IV treatment of the interaction, i.e. columns (5) and (6) of table 7.

3.3 Wages

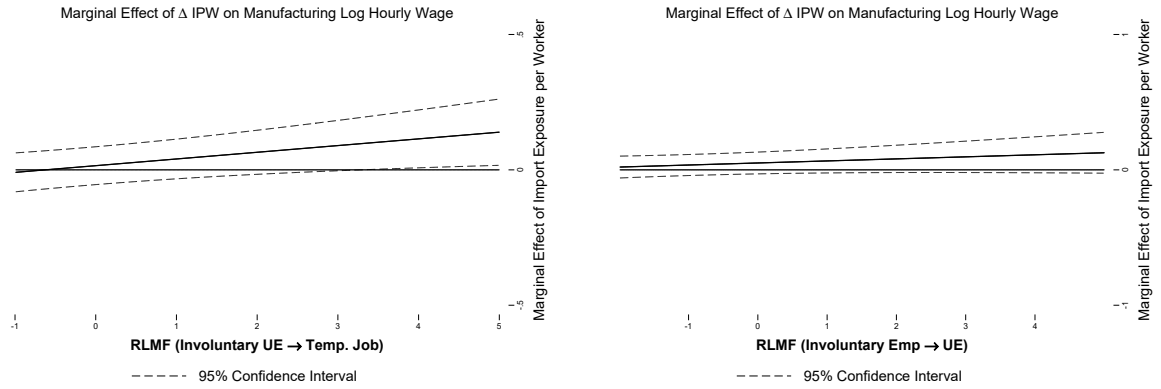
Besides employment shares per working-age population, wages are another area how employers can adjust to an adverse trade shock. Due to probable changing workforce compositions in all sectors, the results of this section need to be interpreted cautiously. For the United States, Autor et al. (2013) find an adverse impact of Chinese import competition on manufacturing wages despite an upward bias on wages as low-skill manufacturing workers are more prone to lose employment. Using the same empirical estimation strategy as for the employment response, now this study exploits the quinquennial changes in log hourly wage of the same sectors as dependent variables. Given that this paper cannot determine which groups of workers are more hit by the rising Chinese exports, the bias can go in both directions. However, the standard results from empirical studies is that demand for low-skilled workers falls with rising imports from low-income countries. Hence, an upward bias is also likely to be prevalent in these estimation results.

Analogous for the employment response, Figures 10 to 13 show the marginal effects plots based on the IV estimates for the three sectors manufacturing, (non-public) services, construction and non-market services. The results with the other two estimation approaches, i.e. the OLS and the functional approach, yield very similar and are shown in Tables B1 to B4 in the appendix. Figure 10 shows a slight upward trend in log hourly wages if labor market frictions are higher, i.e. also when the loss in manufacturing employment is larger. This would be in line with previous findings, that the adverse trade shock affects low-skilled workers stronger. However, there is no statistically significant impact on manufacturing wages across the whole distribution of regional labor market frictions. Log hourly wages in the services and in the construction sector also seem to rise with labor market frictions, but are hardly statistically significant at the 5% significance level.

Figure 13 illustrates the wage response of non-market services to the import shock conditional on the level of regional labor market frictions. Despite the absorption of the trade shock in terms of employment, there is no visible reaction in terms of wages, independent of the level of labor market frictions. Two potential explanations are possible. First, there might be a downward bias of wage in public services, especially if less-skilled workers enter this sector after displacement in the manufacturing sector. The second explanation is that public wages are independent of local shocks, and rather subject to national developments.

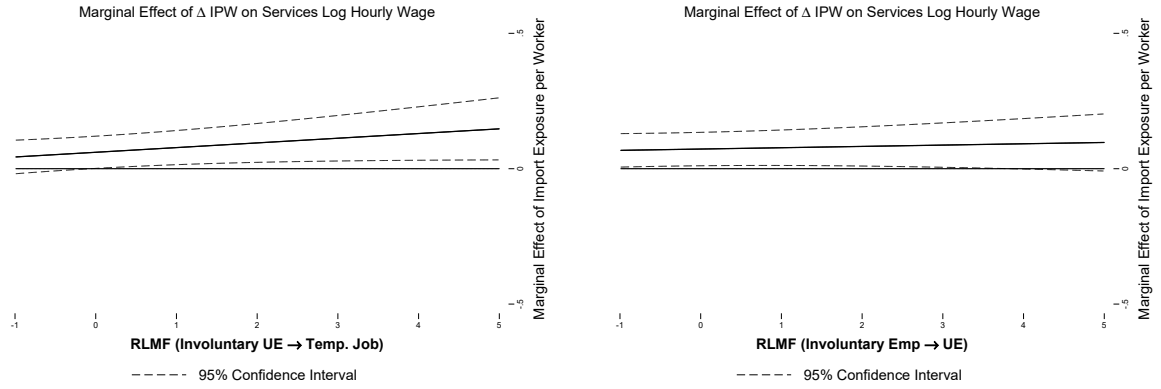
The difference in wages in manufacturing compared to Autor et al. (2013) can have three different reasons. First, this paper uses log hourly wages instead of log weekly wages, which can lead to differences in results due to hours worked per week. Second, wage cuts are much less frequent in Europe compared to the United States. Downward nominal friction is typically not comparable over countries due to different data, estimations and time periods used, but Holden (2004) and references therein argue that the requirement of mutual consent for wage cuts is not given in the United States, which increases the occurrence of wage reductions con-

Figure 10: Marginal Effects of Import Exposure per Worker on Manufacturing Wages conditional on Regional Labor Market Frictions



The marginal effects plots show the response of manufacturing hourly wages to Chinese import competition (Δ IPW). The left panel uses the involuntary inflow from unemployment as a measure of regional labor market friction (RLMF Involuntary UE → Temp. Job), while the right panel uses the involuntary outflow from temporary employment to unemployment (RLMF Involuntary Emp → UE). Results are based on the IV treatment of the interaction, i.e. columns (5) and (6) of table B1.

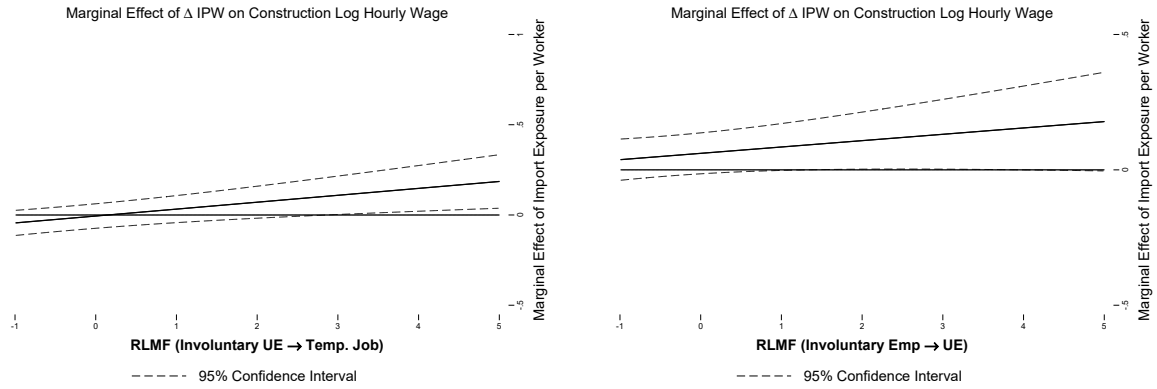
Figure 11: Marginal Effects of Import Exposure per Worker on Services Wages conditional on Regional Labor Market Frictions



The marginal effects plots show the response of service hourly wages to Chinese import competition (Δ IPW). The left panel uses the involuntary inflow from unemployment as a measure of regional labor market friction (RLMF Involuntary UE → Temp. Job), while the right panel uses the involuntary outflow from temporary employment to unemployment (RLMF Involuntary Emp → UE). Results are based on the IV treatment of the interaction, i.e. columns (5) and (6) of table B2.

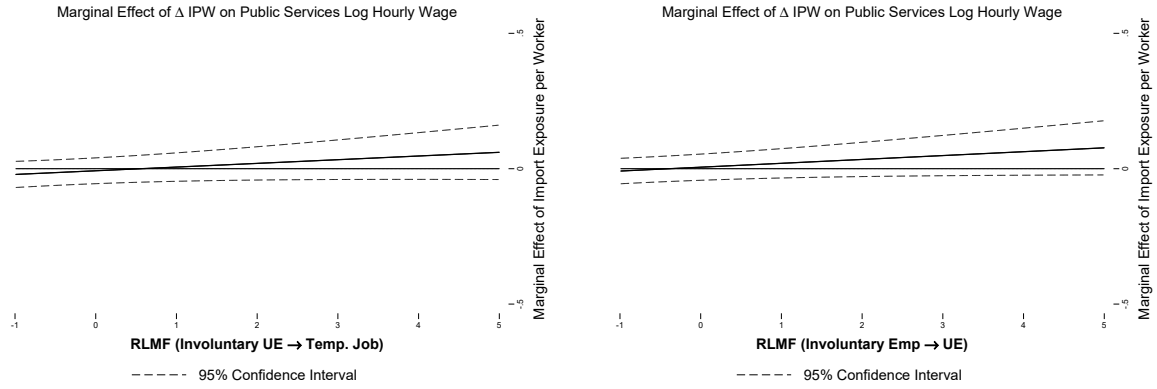
siderably. Third, the upward bias could stronger in Europe, which is the case if increased import competition affects low-skilled workers in Europe more adversely than in the United States. The combination of the employment effects being larger for Europe - even with average labor market frictions - compared to the findings by Autor et al. (2013) and no negative impact on log hourly wages in seems to point at the second explanation. This indicates that employers in the United States can adjust in terms of both employment and wages, while employers in Europe have to adjust more in terms of employment due to stronger downward nominal wage rigidity

Figure 12: Marginal Effects of Import Exposure per Worker on Construction Wages conditional on Regional Labor Market Frictions



The marginal effects plots show the response of construction hourly wages to Chinese import competition (Δ IPW). The left panel uses the involuntary inflow from unemployment as a measure of regional labor market friction (RLMF Involuntary UE → Temp. Job), while the right panel uses the involuntary outflow from temporary employment to unemployment (RLMF Involuntary Emp → UE). Results are based on the IV treatment of the interaction, i.e. columns (5) and (6) of table B3.

Figure 13: Marginal Effects of Import Exposure per Worker on Public Services Wages conditional on Regional Labor Market Frictions



The marginal effects plots show the response of construction hourly wages to Chinese import competition (Δ IPW). The left panel uses the involuntary inflow from unemployment as a measure of regional labor market friction (RLMF Involuntary UE → Temp. Job), while the right panel uses the involuntary outflow from temporary employment to unemployment (RLMF Involuntary Emp → UE). Results are based on the IV treatment of the interaction, i.e. columns (5) and (6) of table B4.

and the lesser extent of acceptance of wage cuts. However, more detailed data on employment losses across different skill groups is necessary and requires more detailed data on skill type and hours worked.

3.4 Robustness analyses

The robustness analysis of this paper focuses on the results for employment shares because the results for wages are not statistically significant. To test for the validity of the baseline results shown above, this paper applies sensitivity analyses that are similar to those of previous studies, such as Autor et al. (2013) and Colantone and Stanig (2017). They mainly focus on various modifications to the definition of the regional trade shock described in equations 1 and 2. Tables C1 to C6 in the appendix exploit net imports from China instead of realized imports in order to account for potential gains from exports, which were highlighted by Feenstra and Sasahara (2018), especially for the service sector. The point estimate of the constitutive term of the trade shock per worker, which measures the impact on manufacturing employment conditional on average labor market friction, drops slightly (to .99 on average) in this robustness analysis. This does indicate gains from exports to China in terms of manufacturing employment. However, only Germany experiences a rise in exports of manufacturing goods to China over the time horizon under scrutiny, which is an alternative to the findings by Dauth et al. (2017). The point estimates of the other variables of interest are largely unchanged. Further, the F-Statistic for all first-stage regressions is still very high and the explained variation of the instrumented variable always exceeds 67%.

For the services and the construction sector, the results are qualitatively unaltered. All six specifications exhibit noisy estimates of the import shock on services employment share conditional on average labor market friction. This is not necessarily contradictory to the findings of Feenstra and Sasahara (2018) as other advanced countries probably constitute the destination of US service exports. For the construction sector, the average of the point estimates - given the mean use of temporary contracts - rise compared to the baseline results and equal the losses in the manufacturing (in absolute terms). The estimates for the interaction terms are more noisy in some cases, but are qualitatively unchanged with one exception. Similar to the manufacturing sector, all first stage regressions exhibit large F-values and explain the variation of both the EU net import shock and its interaction with labor market friction well.

The second modification to the instrument of the import shock with bilateral trade data between the European economies and China is to use import data of other advanced economies, excluding the US. As previous research, this paper undertakes this sensitivity analysis for two reasons. First, because Chinese exports to the US might have been different compared to other advanced economies, and second because US imports from China were much larger in the period under consideration, which would yield - by definition - very similar results to the baseline approach. The results for manufacturing, services and construction are displayed in the appendix, i.e. tables D1 to D6. In this case, over all six specifications, the average decline of manufacturing to a $ 1,000 rise in import competition from China is equal to 1.01, conditional on average labor market friction. This value is just in between the baseline analysis and the previous sensitivity analysis with net imports. The point estimates of the constitutive term of import exposure

for the service sector are also slightly increasing relative to the benchmark results, and now three out of six specifications exhibit statistical significance on at least one of the conventional levels. The point estimates for the construction sector, on the other hand, are unchanged compared to the baseline results discussed above. For all estimations, regardless of the sector and the identification strategy, the conditional responses are qualitatively unchanged, as well as the instruments are also considered strong for all first-stage regressions.

4 Conclusion

This study builds on the notion of previous studies that the quantitative adjustment in the employment share of the manufacturing sector may differ with institutional labor market settings. Based on the same literature, this paper applies an instrumental variable estimation approach to measure the supply-driven import exposure to Chinese goods of regional labor markets in eight European economies. It then investigates the conditional response of employment shares in manufacturing to labor market frictions. The study introduces two measures of regional labor market frictions building on the idea that temporary contracts are more common in rigid labor markets as the costs associated with permanent contracts are too high. Both indicators exploit the flow between involuntary temporary jobs and unemployment, one for each direction. The identification strategy accounts for the idea that the conditional response, i.e. the interaction term of regional import exposure and labor market frictions, is endogenous as well and applies three different estimation approaches. Further, it extends the analysis to other sectors of employment, namely services, construction and non-market services, and to both the unemployment and labor force participation rate.

The results confirm the idea that labor market friction exacerbates the magnitude of the impact of the trade shock on job losses in the manufacturing sector. In other words, with a higher adoption rate of temporary contracts due to high labor market market frictions, employment shares in manufacturing decline even stronger when facing an adverse trade shock. Especially in more frictional labor markets, where the decline in manufacturing is stronger, it is important to determine what happens to displaced workers. The services sector only shows a noisy increase in employment shares relative to the import shock, whereas the construction sector is unresponsive to the trade shock. Instead non-market services, which includes health and education, absorbs the adverse impact. Considering non-employment alternatives, the unemployment rate does not rise across Europe due to the trade shock. If anything, its response is negative. The labor force participation rate tends to fall with rising competition from China, and is also exacerbated with labor market frictions. Probably, older workers advance retirement and exit the labor force. However, the results are estimated with noise and to verify this hypothesis would require more detailed data.

In all sectors, wages do not respond to import competition from China irrespective of the level of labor market frictions. Downward nominal wage rigidity is a potential explanation for these

observations, in particular for the manufacturing sector because it is adversely affected by the trade shock. This could explain the stronger response of employers in terms of employment across Europe relative to the United States. The findings in this study for Europe of no rising wages in non-manufacturing sectors provides evidence against the "option value" in Artuç et al. (2010), where workers in the import-competing sector can benefit from liberalization due to rising real wages in other sectors than manufacturing.

Policymakers should try to reduce the adverse impact of trade shocks from low-wage countries on manufacturing by reducing labor market frictions. When considering the adoption of temporary contracts, several options are available: First, employment protection for temporary workers could be raised again, which, as theory suggests, would probably be associated with a loss in overall employment rates. Second, a reduction in the employment protection of permanent contracts, which would raise uncertainty on the worker's side. A third option is a wage premium for temporary contracts due to higher uncertainty and flexibility, which would also reinforce the original idea of temporary contracts, namely to allow firms to adjust to demand shocks. The policy needs to be well designed such that entrance for groups who use temporary contracts to get access to the labor market, such as young and returning workers, is not jeopardized.

Finally, to account for the losers of adverse trade shocks, policymakers have two main options. First, moving subsidies and retraining. Dix-Carneiro (2014) shows for Brazil that the former is more relevant than the latter. However, the question is whether this holds for Europe or the United States given the structural changes in terms of employment structures in advanced economy, in particular the rise of the service sector.

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5 Appendices

5.1 Manufacturing Subsectors

Table A1: Manufacturing subsectors for trade exposure

NACE	Industry Description
DA	Manufacture of food products, beverages and tobacco
DB	Manufacture of textiles and textile products
DC	Manufacture of leather and leather products
DD	Manufacture of wood and wood products
DE	Manufacture of pulp, paper and paper products; publishing and printing
DF	Manufacture of coke, refined petroleum products and nuclear fuel
DG	Manufacture of chemicals, chemical products and man-made fibers
DH	Manufacture of rubber and rubber products
DI	Manufacture of other non-metallic mineral products
DJ	Manufacture of basic metals and fabricated metal products
DK	Manufacture of machinery and equipment n.e.c.
DL	Manufacture of electrical and optical equipment
DM	Manufacture of transport equipment
DN	Manufacture n.e.c.

5.2 Regression Results Log Hourly Wages

Table B1: Conditional effect of import exposure on manufacturing log hourly wage

Treatment of Interaction Term	OLS		Functional		IV	
I. Second-stage 2SLS Estimates	(1)	(2)	(3)	(4)	(5)	(6)
Δ IPW (EU)	0.05	0.01	-0.04	-0.03	0.05	0.02
	(1.10)	(0.41)	(-0.89)	(-0.91)	(1.24)	(0.43)
RLMF (Involuntary Emp → UE)	-0.01		-0.01		-0.01	
	(-1.05)		(-0.49)		(-0.94)	
RLMF (Involuntary Emp → UE) × Δ IPW (EU)	0.01		0.01		0.02	
	(0.80)		(0.26)		(1.37)	
RLMF (Involuntary UE → Temp. Job)		-0.02		-0.01		-0.01
		(-0.73)		(-0.14)		(-0.48)
RLMF (Involuntary UE → Temp. Job) × Δ IPW (EU)		0.03**		0.02		0.02**
		(2.20)		(0.70)		(2.48)
Observations	292	292	292	292	292	292
II. First-Stage Estimates						
Δ IPW (US)	0.02***	0.02***	0.02***	0.02***	0.02***	0.02***
	(4.96)	(5.99)	(5.03)	(5.42)	(5.20)	(5.31)
R^2	0.64	0.71	0.71	0.71	0.64	0.64
F-Statistic	24.64	35.94	25.34	29.33	27.05	28.21
III. First-Stage Estimates (Interaction Term)						
RLMF (Involuntary Emp → UE) × Δ IPW (US)					0.04***	
					(7.43)	
RLMF (Involuntary UE → Temp. Job) × Δ IPW (US)						0.05***
						(13.47)
R^2			0.74	0.76	0.80	0.91
F-Statistic			2.34	3.90	55.14	181.46

Notes: The dependent variable of the second stage of the 2SLS approach in panel I is the change in manufacturing log hourly wage. Both modifying variables measuring regional labor market rigidity are standardized. All specifications instrument for endogenous bilateral imports of EU countries using US imports from China as an instrument. Panel II presents the estimation results for all specifications for this first-stage. Columns (1) and (2) report results for the estimation approach, where the interaction term is taken as exogenous. Columns (3) and (4) show the results for the identification strategy, which instruments for the interaction term exploiting a vector of second-order polynomials of the control variables and the conditioning variable. Due to the size of the vector and the non-economic nature of these estimates, the results are not shown in panel III. Columns (5) and (6) display the results of the approach, which instruments for the interaction term using the interaction of the instrument for the endogenous explanatory variable and the modifying variable. The results are shown in panel III. Standard errors are clustered on the regional level. 95% confidence intervals in brackets. *** denotes 1% significance, ** denotes 5% significance, * denotes 10% significance.

Table B2: Conditional effect of import exposure on services log hourly wage

Treatment of Interaction Term	OLS		Functional		IV	
I. Second-stage 2SLS Estimates	(1)	(2)	(3)	(4)	(5)	(6)
Δ IPW (EU)	0.07**	0.05**	0.02	0.04	0.07**	0.06**
	(1.97)	(1.99)	(0.78)	(1.46)	(2.31)	(2.00)
RLMF (Involuntary Emp → UE)	-0.01*		-0.00		-0.02**	
	(-1.65)		(-0.08)		(-1.96)	
RLMF (Involuntary Emp → UE) × Δ IPW (EU)	-0.00		-0.02		0.00	
	(-0.20)		(-1.11)		(0.61)	
RLMF (Involuntary UE → Temp. Job)		-0.04*		0.01		-0.02
		(-1.96)		(0.48)		(-1.25)
RLMF (Involuntary UE → Temp. Job) × Δ IPW (EU)		0.03**		-0.01		0.02*
		(2.15)		(-0.53)		(1.76)
Observations	292	292	292	292	292	292
II. First-Stage Estimates						
Δ IPW (US)	0.02***	0.02***	0.02***	0.02***	0.02***	0.02***
	(4.95)	(5.96)	(5.18)	(5.62)	(5.19)	(5.30)
R^2	0.63	0.71	0.70	0.70	0.64	0.64
F-Statistic	24.50	35.53	26.84	31.55	26.97	28.06
III. First-Stage Estimates (Interaction Term)						
RLMF (Involuntary Emp → UE) × Δ IPW (US)					0.04***	
					(7.30)	
RLMF (Involuntary UE → Temp. Job) × Δ IPW (US)						0.05***
						(13.41)
R^2			0.75	0.76	0.80	0.91
F-Statistic			3.12	3.31	53.26	179.92

Notes: The dependent variable of the second stage of the 2SLS approach in panel I is the change in services' log hourly wage. Both modifying variables measuring regional labor market rigidity are standardized. All specifications instrument for endogenous bilateral imports of EU countries using US imports from China as an instrument. Panel II presents the estimation results for all specifications for this first-stage. Columns (1) and (2) report results for the estimation approach, where the interaction term is taken as exogenous. Columns (3) and (4) show the results for the identification strategy, which instruments for the interaction term exploiting a vector of second-order polynomials of the control variables and the conditioning variable. Due to the size of the vector and the non-economic nature of these estimates, the results are not shown in panel III. Columns (5) and (6) display the results of the approach, which instruments for the interaction term using the interaction of the instrument for the endogenous explanatory variable and the modifying variable. The results are shown in panel III. Standard errors are clustered on the regional level. 95% confidence intervals in brackets. *** denotes 1% significance, ** denotes 5% significance, * denotes 10% significance.

Table B3: Conditional effect of import exposure on construction log hourly wage

Treatment of Interaction Term	OLS		Functional		IV	
I. Second-stage 2SLS Estimates	(1)	(2)	(3)	(4)	(5)	(6)
Δ IPW (EU)	0.05	-0.00	0.01	-0.03	0.06	-0.01
	(1.26)	(-0.14)	(0.17)	(-0.84)	(1.58)	(-0.17)
RLMF (Involuntary Emp → UE)	-0.01		-0.05**		-0.02	
	(-1.01)		(-2.29)		(-1.14)	
RLMF (Involuntary Emp → UE) × Δ IPW (EU)	0.02		0.06*		0.02	
	(0.95)		(1.94)		(1.51)	
RLMF (Involuntary UE → Temp. Job)		0.01		0.03		0.01
		(0.47)		(0.59)		(0.37)
RLMF (Involuntary UE → Temp. Job) × Δ IPW (EU)		0.04**		0.02		0.04***
		(2.53)		(0.67)		(3.02)
Observations	292	292	292	292	292	292
II. First-Stage Estimates						
Δ IPW (US)	0.02***	0.02***	0.02***	0.02***	0.02***	0.02***
	(4.99)	(6.00)	(4.91)	(5.25)	(5.23)	(5.34)
R^2	0.64	0.71	0.70	0.70	0.64	0.64
F-Statistic	24.87	35.95	24.11	27.53	27.33	28.49
III. First-Stage Estimates (Interaction Term)						
RLMF (Involuntary Emp → UE) × Δ IPW (US)					0.04***	
					(7.19)	
RLMF (Involuntary UE → Temp. Job) × Δ IPW (US)						0.05***
						(13.50)
R^2			0.75	0.74	0.80	0.91
F-Statistic			3.82	2.80	51.72	182.33

Notes: The dependent variable of the second stage of the 2SLS approach in panel I is the change in construction log hourly wage. Both modifying variables measuring regional labor market rigidity are standardized. All specifications instrument for endogenous bilateral imports of EU countries using US imports from China as an instrument. Panel II presents the estimation results for all specifications for this first-stage. Columns (1) and (2) report results for the estimation approach, where the interaction term is taken as exogenous. Columns (3) and (4) show the results for the identification strategy, which instruments for the interaction term exploiting a vector of second-order polynomials of the control variables and the conditioning variable. Due to the size of the vector and the non-economic nature of these estimates, the results are not shown in panel III. Columns (5) and (6) display the results of the approach, which instruments for the interaction term using the interaction of the instrument for the endogenous explanatory variable and the modifying variable. The results are shown in panel III. Standard errors are clustered on the regional level. 95% confidence intervals in brackets. *** denotes 1% significance, ** denotes 5% significance, * denotes 10% significance.

Table B4: Conditional effect of import exposure on public services log hourly wage

Treatment of Interaction Term	OLS		Functional		IV	
I. Second-stage 2SLS Estimates	(1)	(2)	(3)	(4)	(5)	(6)
Δ IPW (EU)	-0.01	-0.00	-0.03	-0.02	0.01	-0.01
	(-0.27)	(-0.20)	(-1.31)	(-0.73)	(0.23)	(-0.31)
RLMF (Involuntary Emp → UE)	-0.02**		-0.02		-0.03***	
	(-2.47)		(-1.28)		(-3.43)	
RLMF (Involuntary Emp → UE) × Δ IPW (EU)	-0.00		-0.01		0.01*	
	(-0.01)		(-0.41)		(1.83)	
RLMF (Involuntary UE → Temp. Job)		-0.02		-0.02		-0.03
		(-1.20)		(-0.58)		(-1.55)
RLMF (Involuntary UE → Temp. Job) × Δ IPW (EU)		0.01		0.01		0.01
		(0.85)		(0.35)		(1.62)
Observations	292	292	292	292	292	292
II. First-Stage Estimates						
Δ IPW (US)	0.02***	0.02***	0.02***	0.02***	0.02***	0.02***
	(5.02)	(5.99)	(5.09)	(5.47)	(5.26)	(5.36)
R^2	0.64	0.71	0.70	0.70	0.64	0.64
F-Statistic	25.18	35.92	25.94	29.97	27.67	28.71
III. First-Stage Estimates (Interaction Term)						
RLMF (Involuntary Emp → UE) × Δ IPW (US)					0.04***	
					(7.20)	
RLMF (Involuntary UE → Temp. Job) × Δ IPW (US)						0.05***
						(13.30)
R^2			0.74	0.74	0.80	0.91
F-Statistic			2.67	3.17	51.88	176.97

Notes: The dependent variable of the second stage of the 2SLS approach in panel I is the change in public services' log hourly wage. Both modifying variables measuring regional labor market rigidity are standardized. All specifications instrument for endogenous bilateral imports of EU countries using US imports from China as an instrument. Panel II presents the estimation results for all specifications for this first-stage. Columns (1) and (2) report results for the estimation approach, where the interaction term is taken as exogenous. Columns (3) and (4) show the results for the identification strategy, which instruments for the interaction term exploiting a vector of second-order polynomials of the control variables and the conditioning variable. Due to the size of the vector and the non-economic nature of these estimates, the results are not shown in panel III. Columns (5) and (6) display the results of the approach, which instruments for the interaction term using the interaction of the instrument for the endogenous explanatory variable and the modifying variable. The results are shown in panel III. Standard errors are clustered on the regional level. 95% confidence intervals in brackets. *** denotes 1% significance, ** denotes 5% significance, * denotes 10% significance.

5.3 Robustness Results for Employment - Net Import Exposure

Table C1: Conditional effect of net import exposure on manufacturing employment shares per working-age population

Treatment of Interaction Term	OLS		Functional		IV	
I. Second-stage 2SLS Estimates	(1)	(2)	(3)	(4)	(5)	(6)
Δ NPW (EU)	-1.04**	-0.34	-1.64***	-1.45***	-1.19**	-0.30
	(-2.14)	(-1.26)	(-4.47)	(-4.00)	(-2.29)	(-1.01)
RLMF (Involuntary Emp → UE)	0.17**		0.31**		0.27**	
	(2.49)		(2.28)		(2.28)	
RLMF (Involuntary Emp → UE) × Δ NPW (EU)	-0.32*		-0.57**		-0.50**	
	(-1.96)		(-1.98)		(-2.48)	
RLMF (Involuntary UE → Temp. Job)		0.72***		0.19		0.79***
		(2.95)		(0.52)		(2.84)
RLMF (Involuntary UE → Temp. Job) × Δ NPW (EU)		-0.66***		-0.14		-0.73***
		(-3.21)		(-0.46)		(-3.45)
Observations	292	292	292	292	292	292
II. First-Stage Estimates						
Δ NPW (US)	0.02***	0.02***	0.02***	0.02***	0.02***	0.02***
	(6.03)	(7.29)	(6.47)	(6.29)	(6.35)	(6.45)
R^2	0.68	0.71	0.74	0.74	0.68	0.68
F-Statistic	36.31	53.21	41.80	39.60	40.32	41.57
III. First-Stage Estimates (Interaction Term)						
RLMF (Involuntary Emp → UE) × Δ NPW (US)					0.04***	
					(8.24)	
RLMF (Involuntary UE → Temp. Job) × Δ NPW (US)						0.05***
						(12.92)
R^2			0.74	0.76	0.82	0.93
F-Statistic			3.44	3.41	67.95	166.90

Notes: The dependent variable of the second stage of the 2SLS approach in panel I is the change in manufacturing employment share per working-age population. Both modifying variables measuring regional labor market rigidity are standardized. All specifications instrument for endogenous bilateral net imports of EU countries using US net imports from China as an instrument. Panel II presents the estimation results for all specifications for this first-stage. Columns (1) and (2) report results for the estimation approach, where the interaction term is taken as exogenous. Columns (3) and (4) show the results for the identification strategy, which instruments for the interaction term exploiting a vector of second-order polynomials of the control variables and the conditioning variable. Due to the size of the vector and the non-economic nature of these estimates, the results are not shown in panel III. Columns (5) and (6) display the results of the approach, which instruments for the interaction term using the interaction of the instrument for the endogenous explanatory variable and the modifying variable. The results are shown in panel III. Standard errors are clustered on the regional level. 95% confidence intervals in brackets. *** denotes 1% significance, ** denotes 5% significance, * denotes 10% significance.

Table C2: Conditional effect of net import exposure on services employment shares per working-age population

Treatment of Interaction Term	OLS		Functional		IV	
I. Second-stage 2SLS Estimates	(1)	(2)	(3)	(4)	(5)	(6)
Δ NPW (EU)	0.01	-0.21	1.33**	0.52	0.16	-0.33
	(0.02)	(-0.39)	(2.34)	(0.92)	(0.32)	(-0.52)
RLMF (Involuntary Emp → UE)	-0.05		-0.80**		-0.16	
	(-0.37)		(-2.38)		(-0.95)	
RLMF (Involuntary Emp → UE) × Δ NPW (EU)	0.11		1.60**		0.33	
	(0.59)		(2.51)		(1.33)	
RLMF (Involuntary UE → Temp. Job)		-0.36		0.24		-0.61
		(-0.59)		(0.20)		(-0.98)
RLMF (Involuntary UE → Temp. Job) × Δ NPW (EU)		0.32		-0.27		0.56**
		(1.21)		(-0.30)		(2.05)
Observations	292	292	292	292	292	292
II. First-Stage Estimates						
Δ NPW (US)	0.02***	0.03***	0.02***	0.03***	0.02***	0.02***
	(6.62)	(7.50)	(7.10)	(7.00)	(6.94)	(6.88)
R^2	0.65	0.69	0.72	0.72	0.65	0.65
F-Statistic	43.81	56.25	50.40	48.95	48.21	47.40
III. First-Stage Estimates (Interaction Term)						
RLMF (Involuntary Emp → UE) × Δ NPW (US)					0.04***	
					(8.41)	
RLMF (Involuntary UE → Temp. Job) × Δ NPW (US)						0.05***
						(12.99)
R^2			0.74	0.75	0.83	0.93
F-Statistic			2.53	3.08	70.72	168.66

Notes: The dependent variable of the second stage of the 2SLS approach in panel I is the change in services employment share per working-age population. Both modifying variables measuring regional labor market rigidity are standardized. All specifications instrument for endogenous bilateral net imports of EU countries using US net imports from China as an instrument. Panel II presents the estimation results for all specifications for this first-stage. Columns (1) and (2) report results for the estimation approach, where the interaction term is taken as exogenous. Columns (3) and (4) show the results for the identification strategy, which instruments for the interaction term exploiting a vector of second-order polynomials of the control variables and the conditioning variable. Due to the size of the vector and the non-economic nature of these estimates, the results are not shown in panel III. Columns (5) and (6) display the results of the approach, which instruments for the interaction term using the interaction of the instrument for the endogenous explanatory variable and the modifying variable. The results are shown in panel III. Standard errors are clustered on the regional level. 95% confidence intervals in brackets. *** denotes 1% significance, ** denotes 5% significance, * denotes 10% significance.

Table C3: Conditional effect of net import exposure on construction employment shares per working-age population

Treatment of Interaction Term	OLS		Functional		IV	
I. Second-stage 2SLS Estimates	(1)	(2)	(3)	(4)	(5)	(6)
Δ NPW (EU)	-0.18	-0.09	-0.20	-0.09	-0.21	-0.03
	(-1.22)	(-0.75)	(-1.09)	(-0.64)	(-1.49)	(-0.27)
RLMF (Involuntary Emp → UE)	0.04		0.01		0.07	
	(1.02)		(0.15)		(1.46)	
RLMF (Involuntary Emp → UE) × Δ NPW (EU)	-0.05		0.00		-0.11	
	(-0.72)		(0.02)		(-1.58)	
RLMF (Involuntary UE → Temp. Job)		0.33***		0.54***		0.43***
		(2.86)		(2.84)		(3.88)
RLMF (Involuntary UE → Temp. Job) × Δ NPW (EU)		-0.19***		-0.39**		-0.30***
		(-2.77)		(-2.16)		(-4.07)
Observations	292	292	292	292	292	292
II. First-Stage Estimates						
Δ NPW (US)	0.02***	0.03***	0.03***	0.03***	0.02***	0.02***
	(6.89)	(7.61)	(7.85)	(7.87)	(7.04)	(7.14)
R^2	0.67	0.70	0.72	0.72	0.67	0.67
F-Statistic	47.41	57.90	61.69	61.89	49.52	51.04
III. First-Stage Estimates (Interaction Term)						
RLMF (Involuntary Emp → UE) × Δ NPW (US)					0.04***	
					(8.44)	
RLMF (Involuntary UE → Temp. Job) × Δ NPW (US)						0.05***
						(13.27)
R^2			0.74	0.77	0.83	0.93
F-Statistic			3.57	2.06	71.22	176.05

Notes: The dependent variable of the second stage of the 2SLS approach in panel I is the change in construction employment share per working-age population. Both modifying variables measuring regional labor market rigidity are standardized. All specifications instrument for endogenous bilateral net imports of EU countries using US net imports from China as an instrument. Panel II presents the estimation results for all specifications for this first-stage. Columns (1) and (2) report results for the estimation approach, where the interaction term is taken as exogenous. Columns (3) and (4) show the results for the identification strategy, which instruments for the interaction term exploiting a vector of second-order polynomials of the control variables and the conditioning variable. Due to the size of the vector and the non-economic nature of these estimates, the results are not shown in panel III. Columns (5) and (6) display the results of the approach, which instruments for the interaction term using the interaction of the instrument for the endogenous explanatory variable and the modifying variable. The results are shown in panel III. Standard errors are clustered on the regional level. 95% confidence intervals in brackets. *** denotes 1% significance, ** denotes 5% significance, * denotes 10% significance.

Table C4: Conditional effect of net import exposure on public services employment shares per working-age population

Treatment of Interaction Term	OLS		Functional		IV	
I. Second-stage 2SLS Estimates	(1)	(2)	(3)	(4)	(5)	(6)
Δ NPW (EU)	0.80**	0.58*	0.79***	0.27	0.80**	0.68*
	(1.99)	(1.73)	(2.83)	(0.86)	(2.22)	(1.90)
RLMF (Involuntary Emp → UE)	0.01		-0.23*		0.01	
	(0.16)		(-1.74)		(0.12)	
RLMF (Involuntary Emp → UE) × Δ NPW (EU)	-0.07		0.39		-0.07	
	(-0.52)		(1.61)		(-0.41)	
RLMF (Involuntary UE → Temp. Job)		-0.48**		-1.41***		-0.28
		(-2.02)		(-3.62)		(-1.22)
RLMF (Involuntary UE → Temp. Job) × Δ NPW (EU)		0.50***		1.37***		0.31**
		(3.47)		(4.14)		(2.55)
Observations	292	292	292	292	292	292
II. First-Stage Estimates						
Δ NPW (US)	0.02***	0.03***	0.02***	0.03***	0.02***	0.02***
	(6.58)	(7.34)	(6.93)	(7.02)	(6.83)	(6.72)
R^2	0.65	0.69	0.71	0.71	0.65	0.65
F-Statistic	43.32	53.86	48.00	49.31	46.68	45.21
III. First-Stage Estimates (Interaction Term)						
RLMF (Involuntary Emp → UE) × Δ NPW (US)					0.04***	
					(8.24)	
RLMF (Involuntary UE → Temp. Job) × Δ NPW (US)						0.05***
						(13.14)
R^2			0.74	0.77	0.83	0.93
F-Statistic			4.00	3.26	67.83	172.75

Notes: The dependent variable of the second stage of the 2SLS approach in panel I is the change in public services employment share per working-age population. Both modifying variables measuring regional labor market rigidity are standardized. All specifications instrument for endogenous bilateral net imports of EU countries using US net imports from China as an instrument. Panel II presents the estimation results for all specifications for this first-stage. Columns (1) and (2) report results for the estimation approach, where the interaction term is taken as exogenous. Columns (3) and (4) show the results for the identification strategy, which instruments for the interaction term exploiting a vector of second-order polynomials of the control variables and the conditioning variable. Due to the size of the vector and the non-economic nature of these estimates, the results are not shown in panel III. Columns (5) and (6) display the results of the approach, which instruments for the interaction term using the interaction of the instrument for the endogenous explanatory variable and the modifying variable. The results are shown in panel III. Standard errors are clustered on the regional level. 95% confidence intervals in brackets. *** denotes 1% significance, ** denotes 5% significance, * denotes 10% significance.

Table C5: Conditional effect of net import exposure on unemployment rate

Treatment of Interaction Term	OLS		Functional		IV	
I. Second-stage 2SLS Estimates	(1)	(2)	(3)	(4)	(5)	(6)
Δ NPW (EU)	-0.75	0.77**	-2.43	-2.88	-0.97	-1.20
	(-0.48)	(2.04)	(-1.32)	(-1.38)	(-0.66)	(-0.77)
RLMF (Involuntary Emp → UE)	-0.26		0.14		-0.08	
	(-0.50)		(0.18)		(-0.18)	
RLMF (Involuntary Emp → UE) × Δ NPW (EU)	0.80		0.08		0.47	
	(1.19)		(0.07)		(0.78)	
RLMF (Involuntary UE → Temp. Job)		-0.49*		-2.38		1.54*
		(-1.91)		(-1.04)		(1.87)
RLMF (Involuntary UE → Temp. Job) × Δ NPW (EU)		0.54***		3.06		-0.66
		(3.25)		(1.59)		(-1.24)
Observations	292	292	292	292	292	292
II. First-Stage Estimates						
Δ NPW (US)	0.02***	0.03***	0.02***	0.03***	0.02***	0.02***
	(6.72)	(7.61)	(7.16)	(6.80)	(7.00)	(6.94)
R^2	0.66	0.69	0.71	0.71	0.66	0.66
F-Statistic	45.15	57.99	51.22	46.28	48.99	48.21
III. First-Stage Estimates (Interaction Term)						
RLMF (Involuntary Emp → UE) × Δ NPW (US)					0.04***	
					(8.30)	
RLMF (Involuntary UE → Temp. Job) × Δ NPW (US)						0.05***
						(12.91)
R^2			0.75	0.74	0.82	0.93
F-Statistic			3.19	2.39	68.90	166.76

Notes: The dependent variable of the second stage of the 2SLS approach in panel I is the change in the unemployment rate. Both modifying variables measuring regional labor market rigidity are standardized. All specifications instrument for endogenous bilateral net imports of EU countries using US net imports from China as an instrument. Panel II presents the estimation results for all specifications for this first-stage. Columns (1) and (2) report results for the estimation approach, where the interaction term is taken as exogenous. Columns (3) and (4) show the results for the identification strategy, which instruments for the interaction term exploiting a vector of second-order polynomials of the control variables and the conditioning variable. Due to the size of the vector and the non-economic nature of these estimates, the results are not shown in panel III. Columns (5) and (6) display the results of the approach, which instruments for the interaction term using the interaction of the instrument for the endogenous explanatory variable and the modifying variable. The results are shown in panel III. Standard errors are clustered on the regional level. 95% confidence intervals in brackets. *** denotes 1% significance, ** denotes 5% significance, * denotes 10% significance.

Table C6: Conditional effect of net import exposure on labor force participation rate

Treatment of Interaction Term	OLS		Functional		IV	
I. Second-stage 2SLS Estimates	(1)	(2)	(3)	(4)	(5)	(6)
Δ NPW (EU)	-0.77	0.72*	-1.03	-0.76	-0.75	-0.03
	(-0.83)	(1.88)	(-1.27)	(-1.02)	(-0.89)	(-0.03)
RLMF (Involuntary Emp → UE)	0.31		0.37		0.29	
	(1.01)		(0.76)		(0.88)	
RLMF (Involuntary Emp → UE) × Δ NPW (EU)	-0.56		-0.69		-0.53	
	(-1.47)		(-0.90)		(-1.21)	
RLMF (Involuntary UE → Temp. Job)		-0.46*		-0.00		0.94*
		(-1.86)		(-0.00)		(1.75)
RLMF (Involuntary UE → Temp. Job) × Δ NPW (EU)		0.51***		0.10		-0.81**
		(3.17)		(0.08)		(-2.27)
Observations	292	292	292	292	292	292
II. First-Stage Estimates						
Δ NPW (US)	0.02***	0.03***	0.03***	0.03***	0.02***	0.02***
	(6.74)	(7.57)	(7.92)	(7.66)	(7.04)	(6.94)
R^2	0.65	0.69	0.70	0.71	0.66	0.65
F-Statistic	45.39	57.31	62.75	58.71	49.53	48.15
III. First-Stage Estimates (Interaction Term)						
RLMF (Involuntary Emp → UE) × Δ NPW (US)					0.04***	
					(8.31)	
RLMF (Involuntary UE → Temp. Job) × Δ NPW (US)						0.05***
						(13.00)
R^2			0.74	0.74	0.83	0.93
F-Statistic			3.23	2.07	68.98	168.93

Notes: The dependent variable of the second stage of the 2SLS approach in panel I is the change in labor force participation rate. Both modifying variables measuring regional labor market rigidity are standardized. All specifications instrument for endogenous bilateral net imports of EU countries using US net imports from China as an instrument. Panel II presents the estimation results for all specifications for this first-stage. Columns (1) and (2) report results for the estimation approach, where the interaction term is taken as exogenous. Columns (3) and (4) show the results for the identification strategy, which instruments for the interaction term exploiting a vector of second-order polynomials of the control variables and the conditioning variable. Due to the size of the vector and the non-economic nature of these estimates, the results are not shown in panel III. Columns (5) and (6) display the results of the approach, which instruments for the interaction term using the interaction of the instrument for the endogenous explanatory variable and the modifying variable. The results are shown in panel III. Standard errors are clustered on the regional level. 95% confidence intervals in brackets. *** denotes 1% significance, ** denotes 5% significance, * denotes 10% significance.

5.4 Robustness Results for Employment - Other Advanced Countries

Table D1: Conditional effect of import exposure on manufacturing employment shares per working-age population

Treatment of Interaction Term	OLS		Functional		IV	
I. Second-stage 2SLS Estimates	(1)	(2)	(3)	(4)	(5)	(6)
Δ IPW (EU)	-1.22**	-0.31	-1.52***	-1.34***	-1.46**	-0.21
	(-2.00)	(-1.14)	(-4.27)	(-4.01)	(-2.25)	(-0.62)
RLMF (Involuntary Emp → UE)	0.18**		0.26*		0.31**	
	(2.14)		(1.92)		(2.26)	
RLMF (Involuntary Emp → UE) × Δ IPW (EU)	-0.23		-0.35*		-0.42***	
	(-1.64)		(-1.66)		(-2.60)	
RLMF (Involuntary UE → Temp. Job)		0.64***		0.09		0.76***
		(2.65)		(0.24)		(2.70)
RLMF (Involuntary UE → Temp. Job) × Δ IPW (EU)		-0.52***		-0.13		-0.61***
		(-2.87)		(-0.53)		(-3.38)
Observations	292	292	292	292	292	292
II. First-Stage Estimates						
Δ IPW (OTH)	0.02***	0.03***	0.02***	0.02***	0.02***	0.02***
	(3.79)	(5.20)	(3.65)	(3.77)	(4.11)	(4.36)
R^2	0.67	0.74	0.74	0.74	0.67	0.68
F-Statistic	14.34	27.01	13.34	14.23	16.93	19.04
III. First-Stage Estimates (Interaction Term)						
RLMF (Involuntary Emp → UE) × Δ IPW (OTH)					0.06***	
					(6.93)	
RLMF (Involuntary UE → Temp. Job) × Δ IPW (OTH)						0.08***
						(12.09)
R^2			0.75	0.75	0.79	0.91
F-Statistic			3.63	4.01	48.02	146.12

Notes: The dependent variable of the second stage of the 2SLS approach in panel I is the change in manufacturing employment share per working-age population. Both modifying variables measuring regional labor market rigidity are standardized. All specifications instrument for endogenous bilateral imports of EU countries using imports of other advanced economies, i.e. Australia, Canada, Korea, Japan and New Zealand, from China as an instrument. Panel II presents the estimation results for all specifications for this first-stage. Columns (1) and (2) report results for the estimation approach, where the interaction term is taken as exogenous. Columns (3) and (4) show the results for the identification strategy, which instruments for the interaction term exploiting a vector of second-order polynomials of the control variables and the conditioning variable. Due to the size of the vector and the non-economic nature of these estimates, the results are not shown in panel III. Columns (5) and (6) display the results of the approach, which instruments for the interaction term using the interaction of the instrument for the endogenous explanatory variable and the modifying variable. The results are shown in panel III. Standard errors are clustered on the regional level. 95% confidence intervals in brackets. *** denotes 1% significance, ** denotes 5% significance, * denotes 10% significance.

Table D2: Conditional effect of import exposure on services employment shares per working-age population

Treatment of Interaction Term	OLS		Functional		IV	
I. Second-stage 2SLS Estimates	(1)	(2)	(3)	(4)	(5)	(6)
Δ IPW (EU)	0.13	-0.09	1.21**	0.42	0.30	-0.23
	(0.24)	(-0.21)	(2.39)	(0.97)	(0.64)	(-0.40)
RLMF (Involuntary Emp → UE)	-0.04		-0.87**		-0.18	
	(-0.27)		(-2.33)		(-0.99)	
RLMF (Involuntary Emp → UE) × Δ IPW (EU)	0.06		1.26**		0.26	
	(0.43)		(2.44)		(1.32)	
RLMF (Involuntary UE → Temp. Job)		-0.38		0.11		-0.65
		(-0.59)		(0.10)		(-1.06)
RLMF (Involuntary UE → Temp. Job) × Δ IPW (EU)		0.28		-0.10		0.49**
		(1.01)		(-0.15)		(2.15)
Observations	292	292	292	292	292	292
II. First-Stage Estimates						
Δ IPW (OTH)	0.03***	0.04***	0.03***	0.03***	0.03***	0.03***
	(5.20)	(5.95)	(4.53)	(4.70)	(5.40)	(5.42)
R^2	0.64	0.71	0.71	0.71	0.64	0.64
F-Statistic	27.01	35.42	20.52	22.09	29.13	29.37
III. First-Stage Estimates (Interaction Term)						
RLMF (Involuntary Emp → UE) × Δ IPW (OTH)					0.06***	
					(7.16)	
RLMF (Involuntary UE → Temp. Job) × Δ IPW (OTH)						0.08***
						(12.17)
R^2			0.75	0.74	0.80	0.90
F-Statistic			2.58	2.92	51.33	148.21

Notes: The dependent variable of the second stage of the 2SLS approach in panel I is the change in services employment share per working-age population. Both modifying variables measuring regional labor market rigidity are standardized. All specifications instrument for endogenous bilateral imports of EU countries using imports of other advanced economies, i.e. Australia, Canada, Korea, Japan and New Zealand, from China as an instrument. Panel II presents the estimation results for all specifications for this first-stage. Columns (1) and (2) report results for the estimation approach, where the interaction term is taken as exogenous. Columns (3) and (4) show the results for the identification strategy, which instruments for the interaction term exploiting a vector of second-order polynomials of the control variables and the conditioning variable. Due to the size of the vector and the non-economic nature of these estimates, the results are not shown in panel III. Columns (5) and (6) display the results of the approach, which instruments for the interaction term using the interaction of the instrument for the endogenous explanatory variable and the modifying variable. The results are shown in panel III. Standard errors are clustered on the regional level. 95% confidence intervals in brackets. *** denotes 1% significance, ** denotes 5% significance, * denotes 10% significance.

Table D3: Conditional effect of import exposure on construction employment shares per working-age population

Treatment of Interaction Term	OLS		Functional		IV	
I. Second-stage 2SLS Estimates	(1)	(2)	(3)	(4)	(5)	(6)
Δ IPW (EU)	-0.18	-0.09	-0.16	-0.12	-0.23	-0.02
	(-1.19)	(-0.84)	(-0.93)	(-0.84)	(-1.50)	(-0.15)
RLMF (Involuntary Emp → UE)	0.04		-0.03		0.08	
	(0.83)		(-0.34)		(1.38)	
RLMF (Involuntary Emp → UE) × Δ IPW (EU)	-0.03		0.07		-0.09	
	(-0.54)		(0.48)		(-1.45)	
RLMF (Involuntary UE → Temp. Job)		0.32***		0.50***		0.44***
		(2.68)		(2.72)		(3.96)
RLMF (Involuntary UE → Temp. Job) × Δ IPW (EU)		-0.15**		-0.30**		-0.26***
		(-2.48)		(-2.03)		(-4.32)
Observations	292	292	292	292	292	292
II. First-Stage Estimates						
Δ IPW (OTH)	0.03***	0.04***	0.03***	0.04***	0.03***	0.03***
	(5.41)	(6.02)	(5.62)	(5.87)	(5.46)	(5.69)
R^2	0.66	0.72	0.71	0.71	0.66	0.66
F-Statistic	29.31	36.19	31.59	34.49	29.84	32.41
III. First-Stage Estimates (Interaction Term)						
RLMF (Involuntary Emp → UE) × Δ IPW (OTH)					0.06***	
					(7.12)	
RLMF (Involuntary UE → Temp. Job) × Δ IPW (OTH)						0.08***
						(12.64)
R^2			0.74	0.77	0.79	0.91
F-Statistic			3.67	1.61	50.74	159.69

Notes: The dependent variable of the second stage of the 2SLS approach in panel I is the change in construction employment share per working-age population. Both modifying variables measuring regional labor market rigidity are standardized. All specifications instrument for endogenous bilateral imports of EU countries using imports of other advanced economies, i.e. Australia, Canada, Korea, Japan and New Zealand, from China as an instrument. Panel II presents the estimation results for all specifications for this first-stage. Columns (1) and (2) report results for the estimation approach, where the interaction term is taken as exogenous. Columns (3) and (4) show the results for the identification strategy, which instruments for the interaction term exploiting a vector of second-order polynomials of the control variables and the conditioning variable. Due to the size of the vector and the non-economic nature of these estimates, the results are not shown in panel III. Columns (5) and (6) display the results of the approach, which instruments for the interaction term using the interaction of the instrument for the endogenous explanatory variable and the modifying variable. The results are shown in panel III. Standard errors are clustered on the regional level. 95% confidence intervals in brackets. *** denotes 1% significance, ** denotes 5% significance, * denotes 10% significance.

Table D4: Conditional effect of import exposure on public services employment shares per working-age population

Treatment of Interaction Term	OLS		Functional		IV	
I. Second-stage 2SLS Estimates	(1)	(2)	(3)	(4)	(5)	(6)
Δ IPW (EU)	0.87**	0.52*	0.54**	0.38	0.87**	0.68*
	(2.05)	(1.72)	(2.10)	(1.42)	(2.28)	(1.93)
RLMF (Involuntary Emp → UE)	0.03		-0.16		0.02	
	(0.28)		(-1.12)		(0.21)	
RLMF (Involuntary Emp → UE) × Δ IPW (EU)	-0.06		0.19		-0.06	
	(-0.48)		(1.00)		(-0.37)	
RLMF (Involuntary UE → Temp. Job)		-0.58**		-1.37***		-0.27
		(-2.16)		(-3.61)		(-1.18)
RLMF (Involuntary UE → Temp. Job) × Δ IPW (EU)		0.53***		1.14***		0.30***
		(3.35)		(4.31)		(2.66)
Observations	292	292	292	292	292	292
II. First-Stage Estimates						
Δ IPW (OTH)	0.03***	0.04***	0.03***	0.03***	0.03***	0.03***
	(5.00)	(5.77)	(4.59)	(4.88)	(5.19)	(5.19)
R^2	0.64	0.71	0.70	0.70	0.64	0.64
F-Statistic	24.95	33.28	21.05	23.82	26.92	26.94
III. First-Stage Estimates (Interaction Term)						
RLMF (Involuntary Emp → UE) × Δ IPW (OTH)					0.06***	
					(6.96)	
RLMF (Involuntary UE → Temp. Job) × Δ IPW (OTH)						0.08***
						(12.17)
R^2			0.75	0.76	0.79	0.90
F-Statistic			4.23	3.65	48.40	148.10

Notes: The dependent variable of the second stage of the 2SLS approach in panel I is the change in public services employment share per working-age population. Both modifying variables measuring regional labor market rigidity are standardized. All specifications instrument for endogenous bilateral imports of EU countries using imports of other advanced economies, i.e. Australia, Canada, Korea, Japan and New Zealand, from China as an instrument. Panel II presents the estimation results for all specifications for this first-stage. Columns (1) and (2) report results for the estimation approach, where the interaction term is taken as exogenous. Columns (3) and (4) show the results for the identification strategy, which instruments for the interaction term exploiting a vector of second-order polynomials of the control variables and the conditioning variable. Due to the size of the vector and the non-economic nature of these estimates, the results are not shown in panel III. Columns (5) and (6) display the results of the approach, which instruments for the interaction term using the interaction of the instrument for the endogenous explanatory variable and the modifying variable. The results are shown in panel III. Standard errors are clustered on the regional level. 95% confidence intervals in brackets. *** denotes 1% significance, ** denotes 5% significance, * denotes 10% significance.

Table D5: Conditional effect of import exposure on unemployment rate

Treatment of Interaction Term	OLS		Functional		IV	
I. Second-stage 2SLS Estimates	(1)	(2)	(3)	(4)	(5)	(6)
Δ IPW (EU)	-0.76	-1.15	-3.89*	-3.49	-1.01	-1.11
	(-0.47)	(-0.86)	(-1.92)	(-1.58)	(-0.65)	(-0.73)
RLMF (Involuntary Emp → UE)	-0.31		0.49		-0.11	
	(-0.57)		(0.63)		(-0.22)	
RLMF (Involuntary Emp → UE) × Δ IPW (EU)	0.67		-0.37		0.39	
	(1.23)		(-0.38)		(0.75)	
RLMF (Involuntary UE → Temp. Job)		1.54		-2.78		1.62*
		(1.54)		(-1.19)		(1.95)
RLMF (Involuntary UE → Temp. Job) × Δ IPW (EU)		-0.63		2.72*		-0.69
		(-0.94)		(1.70)		(-1.40)
Observations	292	292	292	292	292	292
II. First-Stage Estimates						
Δ IPW (OTH)	0.03***	0.04***	0.03***	0.03***	0.03***	0.03***
	(5.17)	(5.93)	(4.81)	(4.78)	(5.34)	(5.37)
R^2	0.65	0.72	0.70	0.70	0.65	0.65
F-Statistic	26.70	35.14	23.12	22.88	28.49	28.84
III. First-Stage Estimates (Interaction Term)						
RLMF (Involuntary Emp → UE) × Δ IPW (OTH)					0.06***	
					(6.96)	
RLMF (Involuntary UE → Temp. Job) × Δ IPW (OTH)						0.08***
						(12.11)
R^2			0.75	0.73	0.79	0.90
F-Statistic			3.43	2.50	48.44	146.77

Notes: The dependent variable of the second stage of the 2SLS approach in panel I is the change in the unemployment rate. Both modifying variables measuring regional labor market rigidity are standardized. All specifications instrument for endogenous bilateral imports of EU countries using imports of other advanced economies, i.e. Australia, Canada, Korea, Japan and New Zealand, from China as an instrument. Panel II presents the estimation results for all specifications for this first-stage. Columns (1) and (2) report results for the estimation approach, where the interaction term is taken as exogenous. Columns (3) and (4) show the results for the identification strategy, which instruments for the interaction term exploiting a vector of second-order polynomials of the control variables and the conditioning variable. Due to the size of the vector and the non-economic nature of these estimates, the results are not shown in panel III. Columns (5) and (6) display the results of the approach, which instruments for the interaction term using the interaction of the instrument for the endogenous explanatory variable and the modifying variable. The results are shown in panel III. Standard errors are clustered on the regional level. 95% confidence intervals in brackets. *** denotes 1% significance, ** denotes 5% significance, * denotes 10% significance.

Table D6: Conditional effect of import exposure on labor force participation rate

Treatment of Interaction Term	OLS		Functional		IV	
I. Second-stage 2SLS Estimates	(1)	(2)	(3)	(4)	(5)	(6)
Δ IPW (EU)	-0.61	0.06	-0.86	-0.64	-0.60	0.18
	(-0.67)	(0.10)	(-1.22)	(-1.06)	(-0.72)	(0.25)
RLMF (Involuntary Emp → UE)	0.32		0.38		0.31	
	(1.01)		(0.76)		(0.84)	
RLMF (Involuntary Emp → UE) × Δ IPW (EU)	-0.43		-0.52		-0.41	
	(-1.33)		(-0.88)		(-1.11)	
RLMF (Involuntary UE → Temp. Job)		0.70		-0.19		0.94*
		(1.17)		(-0.15)		(1.74)
RLMF (Involuntary UE → Temp. Job) × Δ IPW (EU)		-0.49		0.19		-0.68**
		(-1.17)		(0.22)		(-2.16)
Observations	292	292	292	292	292	292
II. First-Stage Estimates						
Δ IPW (OTH)	0.03***	0.04***	0.03***	0.03***	0.03***	0.03***
	(5.27)	(5.98)	(5.79)	(5.85)	(5.47)	(5.46)
R^2	0.64	0.71	0.70	0.70	0.64	0.64
F-Statistic	27.77	35.71	33.49	34.22	29.88	29.80
III. First-Stage Estimates (Interaction Term)						
RLMF (Involuntary Emp → UE) × Δ IPW (OTH)					0.06***	
					(7.00)	
RLMF (Involuntary UE → Temp. Job) × Δ IPW (OTH)						0.08***
						(12.19)
R^2			0.75	0.73	0.79	0.90
F-Statistic			4.04	2.02	48.93	148.67

Notes: The dependent variable of the second stage of the 2SLS approach in panel I is the change in labor force participation rate. Both modifying variables measuring regional labor market rigidity are standardized. All specifications instrument for endogenous bilateral imports of EU countries using imports of other advanced economies, i.e. Australia, Canada, Korea, Japan and New Zealand, from China as an instrument. Panel II presents the estimation results for all specifications for this first-stage. Columns (1) and (2) report results for the estimation approach, where the interaction term is taken as exogenous. Columns (3) and (4) show the results for the identification strategy, which instruments for the interaction term exploiting a vector of second-order polynomials of the control variables and the conditioning variable. Due to the size of the vector and the non-economic nature of these estimates, the results are not shown in panel III. Columns (5) and (6) display the results of the approach, which instruments for the interaction term using the interaction of the instrument for the endogenous explanatory variable and the modifying variable. The results are shown in panel III. Standard errors are clustered on the regional level. 95% confidence intervals in brackets. *** denotes 1% significance, ** denotes 5% significance, * denotes 10% significance.