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Trade and Unemployment in Germany:
An Empirical Exploration and Some Theory

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Abstract

This paper investigates the link between unemployment and external trade in Germany, using data on unemployment, international trade and economic activity for the 16 German federal states (*Länder*). With panel data econometrics we show that international trade as measured by state-wise trade shares have a significant negative impact on state-wise unemployment rates. We discuss to what extent this reflects mercantilist tendencies embedded in the political economy of the Federal Republic. There is no clear evidence in favor of simple mercantilism. We suggest three alternative explanations, linked to the structural rigidities of the German labor market, government involvement in the education and training system and certain labor market policies which provide government-subsidized unemployment insurance benefitting (mainly) export industries.

JEL Keywords: F14, F15, O50; International trade, panel study

1 Introduction

The connection between external trade and unemployment is often addressed by politicians but seldom by economists. Among the latter, the idea of promoting exports in order to reduce unemployment counts as a relapse into the dark ages of mercantilism. Mainstream economics orthogonalizes external trade and unemployment: the real wage clears the labor market, the terms of trade equilibrate external trade. Our paper goes against this prevailing attitude and investigates the link between unemployment and external trade. The focus of our investigation is on the German *Länder* (federal states) and their performance in unemployment and external trade since German unification in 1990. Western states and Eastern states exhibited significant differences in these areas. Eastern states were hit by the collapse of Soviet bloc trade in the early 90s while Western states were hit by the collapse of world trade in the wake of the recent financial crisis. Using panel data econometrics we find that international trade measured by state-specific exports has a significant negative impact on state-specific unemployment. We test to what extent this reflects mercantilist tendencies embedded in the German political economy, where mercantilism is a government policy aiming for trade surpluses in order to maintain and promote domestic employment. We find no clear evidence in favor of simple mercantilism. Potential reasons for our observations are the existence of minimum wages implicit in the German welfare state, rigidities in the education system and the institutional details of the unemployment insurance system. Regarding the latter, we highlight in particular the workings of the so-called short labor system (*Kurzarbeit*), which can be viewed as a government-provided insurance scheme with benefits accruing mainly to export industries.

The remainder of our paper is organized as follows. In the following section 2 we present the data and discuss the methodology that we use to establish some of our series. We also present stylized facts of the empirical link between exports and unemployment in Germany. After that, in section 3, we investigate whether the observed stylized facts can be attributed to "mercantilism". Section 4 discusses the factors that might explain the observed link between external trade and unemployment.

2 Data sources and stylized facts

Our study is based on a set of annual data on unemployment, economic activity and external trade in Germany from the re-unification of the country in 1990 to the present. The data, their acronyms and their sources are summarized in Table 1. The special flavor of our study derives from the fact that our data are regionally disaggregated, i.e. they provide information about the German federal states (*Länder*). Since unification in 1990, Germany has been divided into 16 federal states, 5 states from socialist former East Germany, 10 states from former West Germany and one state - the city state of Berlin - in a hybrid position in so far as it is the combination of former West and East (i.e. socialist) Berlin. For each of these states our data set contains nominal and real GDP, merchandise exports and imports, as well as several unemployment indicators. The source of the data on GDP and on trade is the German federal statistical office, the source of all unemployment data is the German federal employment agency (*Arbeitsagentur*). Unemployment data are on the one hand official state-by-state unemployment rates, on the other hand several measures of short work, known as *Kurzarbeit*. Under the rules of short work firms can reduce their employees' hours by percentages ranging from 25 to 100 while keeping them on the payroll. The firms can thus lower their wage payments by the respective percentage while the government compensates employees for the shortfall in earnings. The so-called *Kurzarbeit Null* (short work zero) basically amounts to a temporary layoff where the government continues to pay employees' wages (though not in full). Data on short work is available grouped by the degree of the reduction in hours, namely 25, 50, 75 and 100 percent (the latter corresponding to *Kurzarbeit Null*). As short labor is officially not considered unemployment, these data are not included in the official unemployment rates. In order to correct for this, we use a hybrid measure of unemployment by adding short work, appropriately weighted by the respective degree of reduction in hours, to official unemployment and expressing the resulting numbers as percent of the labor force.

Table 1

Data sources and descriptions

	Description	Format	Source	Obs.
RG	Real GDP growth rate	% p.a.	Regional Accounts (2010)	304
EX	Export-to-GDP ratio	% of GDP	Federal Statistical Office (2010)	304
IM	Import-to-GDP ratio	% of GDP	Federal Statistical Office (2010)	304
ET	External trade-to-GDP ratio	% of GDP	EX + IM	304
TB	Trade balance-to-GDP ratio	% of GDP	EX – IM	304
U	Unemployment rate	% of labor force	Federal Employment Agency (2010)	304
SW	Short work rate	% of labor force	Federal Employment Agency (07/2010) and own computations;	272
AU	Adj. unemployment rate	% of labor force	Federal Employment Agency (07/2010 & 2010) and own computations;	272

Our first step is to investigate the data set by establishing stylized facts concerning unemployment, growth and exports among the German federal states. As these are embedded in a single legal and institutional framework, the data set lends itself to applying panel data econometrics. We begin by running a simple OLS regression of state-specific unemployment rates on state-specific export-to-GDP ratios using a pooled data set of all federal states and time periods:

(1) $$U_{it} = \beta_0 + \beta_1 EX_{it} + v_{it}$$

The index i = 1, …, 16 identifies the different federal states. The time index t = 1, 2, 3, …, T identifies the annual observations. The v_{it} are iid error terms. The results of the regression are found in the first column of Table 1. The regression exhibits a highly significant negative slope coefficient, seemingly indicating a strong improvement in unemployment resulting from an increase in exports. However, this is a classic example of heterogeneity bias. The negative coefficient largely reflects the differences between the old and the new federal states. The former have high unemployment rates and low export-to-GDP ratios during the sample period (resulting, respectively, from economic restructuring and from the collapse of trade within the former Soviet bloc); the latter have relatively lower unemployment rates and relatively higher export-to-GDP ratios. Thus the negative coefficient simply indicates that Western states have had lower unemployment rates and stronger exports than the Eastern states during the sample period.

Our next regression equation handles this heterogeneity bias by introduction fixed effects:

(2) $$U_{it} = \beta_2 EX_{it} + \mu_i + v_{it}$$

The coefficients μ_i , for i = 1, …, 16, reflect the state-specific fixed effects. The rest of the notation is as above. Column (2) in Table 2 shows the results of an LSDV regression of this equation. The results show that once heterogeneity among the 16 federal states is taken into account, the coefficient of exports on unemployment turns insignificant (though it remains negative). Tests of the error terms reveal the presence serial autocorrelation. This is due to strong autocorrelation in unemployment rates and further suggests the impact of omitted variables. The prime candidate for inclusion is the real growth rate, which should have a significantly negative impact on unemployment. In order to address these problems we add the lagged unemployment rate (to take into account the strong positive persistence in the unemployment rate) and the real growth rate on the right-hand side:

(3) $$U_{it} = \delta U_{it-1} + \beta_1 RG_{it-1} + \beta_2 EX_{it} + \mu_i + v_{it}$$

The expected sign of the real growth rate is negative. We use the lagged real growth rate for two reasons. First, the observed correlation in our data set between unemployment and the contemporaneous growth rate is weak, and second, using a lag we avoid endogeneity problems on the right-hand side. Column (3) in Table 2 shows the results of the within estimator applied to this equation. There is strong positive persistence in the unemployment rate, a significant negative impact of real growth on unemployment and, finally, a significant negative impact of exports on unemployment.

In order to check for robustness we introduce alternative estimation methods. For autoregressive panel data models ordinary LSDV estimation or within estimation give inconsistent results for finite T (see e.g. Nickell (1981)). The econometric literature offers several consistent estimators, using instruments for the lagged dependent as in Anderson (1982), Arellano (1991) and extensions like Blundell (1995). All these consistent estimators were mainly intended for panels with large N and (relatively) small T. In our panel the situation is reversed, as T is much larger than N. Kiviet (1995) came up with a correction for this inconsistency problem. Further results for correcting the bias were published in Kiviet (1998) and evaluated in Bun (2002).[1] Bruno (2005) and Bruno (2005b) show that this correction performs well for N < T and also in unbalanced panels. In order to check whether our results are susceptible to bias due to the presence of the lagged endogenous on the right-hand side, we compare the results from the within estimator to those obtained with the bias-corrected estimator proposed by Kiviet (1998) in column (4) and the Arellano-Bond estimator in column (5). All three methods yield roughly the same results.

[1] They show that also a simplified version of Kiviet (1998) correction term is sufficient.

Table 2

Basic regressions with unemployment rate as the dependent variable

	(1)		(2)		(3)		(4)		(5)	
Dependent	U		U		U		U		U	
Methodology	OLS		LSDV		Within		Kiviet		Arellano-Bond	
EX	-0.2207	***	-0.0357		-0.0978	***	-0.0973	***	-0.1020	***
U(-1)					0.7498	***	0.8052	***	0.7285	***
RG(-1)					-0.1309	***	-0.1210	***	-0.1415	***
cons	17.6662	***	13.6769	***	5.6254	***			6.0115	***
N	272		272		272		256		256	

Note: The Kiviet estimation procedure applied here gives no constant in column (4). It is adjusted to the fixed effects. The *N* differs due to differencing. Asterisks indicate p-values of the coefficients, with $p<0.05$ (*), $p<0.01$ (**) and $p<0.001$ (***).

So far our regressions have used the official unemployment rate as dependent variable. Now we take into account the impact of active unemployment policy, in particular of the short work scheme that is an important part of German labor market policy. We begin by setting up a regression equation structurally similar to the previous one, albeit with short work replacing unemployment:

(4) $$SW_{it} = \delta SW_{it-1} + \beta_1 RG_{it-1} + \beta_2 EX_{it} + \mu_i + v_{it}$$

The results – again for the three estimators used previously – are reported in Table 3. The results show significant differences from the regressions using the unemployment rate as endogenous variable. Persistence of short work – as indicated by the coefficient of the first-order lag – is much weaker, as is the negative impact of the real growth rate. The impact of the export-to-GDP ratio, on the other hand, is highly significant and much stronger in relative terms. This suggests a particular link between export fluctuations and the activation of short work compensation. This, in turn, suggests that better results can be obtained by combining the official unemployment rate with the short work rate into one single compound adjusted unemployment measure. As described above, we do this in our adjusted unemployment rate, AU. Our final step in this section is then to use this adjusted unemployment rate in a regression on growth and the exports-to-GDP ratio:

(5) $$AU_{it} = \delta AU_{it-1} + \beta_1 RG_{it-1} + \beta_2 EX_{it} + \mu_i + v_{it}$$

The results (cf. Table 3) are similar to the regression results for the simple unemployment rate although there are some differences in the details. The autoregressive component is now somewhat weaker, the negative impact of the export-to-GDP ratio slightly stronger in absolute terms. We treat this as our preferred equation with which we will continue to work in the following section.

Table 3

Regressions with short work rate and adjusted unemployment rate as the dependent variable

	(9)		(10)		(11)		(12)		(13)	
Dependent	SW		SW		AU		AU		AU	
Methodology	Kiviet		Arellano-Bond		Within		Kiviet		Arellano-Bond	
EX	-0.0467	***	-0.0467	***	-0.0972	***	-0.0965	***	-0.1008	***
SW(-1)	-0.0519		-0.1387	*						
AU(-1)					0.6529	***	0.7065	***	0.6217	***
RG(-1)	0.0341		0.0473	**	-0.1295	***	-0.1197	***	-0.1429	***
cons			1.8104	***	6.9942	***			7.5078	***
N	271		255		272		272		256	

3 Is there evidence of “mercantilism”?

The stylized facts established in the previous section suggest that export performance contributes to reducing unemployment in Germany. How can these results be interpreted? The first interpretation – on which we focus in this section – is that this reflects a sort of “mercantilism” embedded in the political economy of Germany. This position is succinctly expressed by Cesarotto (2010) who speaks of the “German mercantilist model”, stating that “…in the German case, the national mystique of a trade surplus may have had a role in disciplining the labour market and at the same time assuring profits." He suggests that "successful exports and depressed imports (due to restrained domestic consumption) lead to a trade surplus that becomes the icon of the success of the model and the morning star of social and economic policy, in particular labour market discipline." (ibid. p. 8) This eloquent statement provides a convenient anchoring point for the following

Hypothesis:

> German political economy is characterized by embedded mercantilism, i.e. a policy stance geared at ensuring low wages and trade surpluses. The observed negative link between exports and unemployment is evidence of this. In addition one should observe that (1) a rise in imports leads to a worsening of unemployment and (2) an improvement in the trade balance leads to an improvement in unemployment.

If imports and the trade balance are added to right-hand side of our unemployment regression then one should expect a *positive* coefficient for imports and a *negative* coefficient for the trade balance.

In Table 4 columns (11) to (14) we integrate state-wise import-to-GDP ratios into our preferred regression equation. In column (11) and (12) imports replace exports as regressor in addition to lagged unemployment and growth. In column (13) and (14) imports appear together with exports. In all four regressions imports appear with the wrong sign (suggesting that a rise in imports leads to a reduction in unemployment), although the coefficients are not always significant.

Table 4

Regressions with adjusted unemployment rate as the dependent variable - cont'd

	(11)	(12)	(13)	(14)
Dependent	AU	AU	AU	AU
Methodology	Kiviet	Arellano-Bond	Kiviet	Arellano-Bond
EX			-0.0665**	-0.0615**
IM	-0.0958***	-0.1092***	-0.0357	-0.0479*
AU(-1)	0.7132***	0.6402***	0.7132***	0.6326***
RG(-1)	-0.1084***	-0.1283***	-0.1170***	-0.1377***
cons				7.5566***
N	272	256	272	256

The results of this first regression contradict part (1) of the above hypothesis – although we have to be careful because these results may be spurious. Closer inspection of the data series reveals that imports and exports are highly multicollinear. Table 5 shows that their correlation approaches 0.9.[2] This high positive correlation of exports and imports is hardly surprising. German exports are strongly geared towards industrial products. Industrial producers depend heavily on intermediate products (produced inputs). Given the high degree of cross-border industrial integration within Europe and, indeed, among industrial countries worldwide, exports cannot be expanded unless imports are also permitted to expand. Including exports and imports on the right-hand side of a regression equation is thus the wrong approach, both statistically (multicollinearity) and economically (as they may reflect the same underlying economic factors).

[2] The correlations are computed as within correlations, i.e. after removal of state-wise averages. This is done by left-multiplying each series with the matrix $Q = I - P$, where I is the identity matrix and P is a matrix which computes state-specific averages as explained in Baltagi (2008), p. 14f.

Table 5

Within correlations

	IM	TT	TB
EX	0.8610	0.9666	0.3602
IM		0.9626	-0.1643
TT			0.1091

In order to fix this problem we use a simple linear transformation of exports and imports which preserves the information embodied in them while resulting in two new foreign trade indicators which are, for all practical purposes, orthogonal. These are total trade (TT), defined as the sum of exports and imports, and the trade balance (TB), defined as the difference of exports and imports. In matrix form the orthogonalizing transformation reflects the definitions of total trade and of the trade balance from exports and imports (all expressed as ratios to GDP):

(6)
$$\begin{pmatrix} TT \\ TB \end{pmatrix} = \begin{pmatrix} 1 & 1 \\ 1 & -1 \end{pmatrix} \cdot \begin{pmatrix} EX \\ IM \end{pmatrix}$$

No information is lost in moving from the right-hand side with exports and imports to the left-hand side with total trade and the trade balance. By inverting this matrix equation one can express exports and imports as linear transformations of total trade and the trade balance:

(7)
$$\begin{pmatrix} EX \\ IM \end{pmatrix} = \begin{pmatrix} \frac{1}{2} & \frac{1}{2} \\ \frac{1}{2} & -\frac{1}{2} \end{pmatrix} \cdot \begin{pmatrix} TT \\ TB \end{pmatrix}$$

From the point of view of economic theory it is not clear which one of the two pairs – (EX, IM) or (TT, TB) – is the "fundamental" one. We are thus free to use the statistically better behaved pair of data series – (TT, TB) – in our regression equation. The correlations reported in Table 5 show that the correlation coefficient between total trade and the trade balance is significantly different from zero but with a value of approximately 0.11 is small enough so that the two regressors are not multicollinear.

Adding the trade balance to our preferred regression equation has the further advantage that we can test part (2) of our above hypothesis on German mercantilism. Our regression equation now looks like this:

(8) $$AU_{it} = \alpha + \beta_1 AU_{it-1} + \beta_2 RG_{it-1} + \beta_3 TT_{it} + \beta_4 TB_{it} + \mu_i + v_{it}$$

The results are reported in Table 6 (columns (15) and (16)). The impact of total trade on unemployment is negative, with a coefficient approximately half of the coefficient of exports reported in the previous section. This is not surprising, given that exports and imports are strongly positively correlated and of similar size (i.e. total trade is approximately twice the size of exports and move roughly in parallel with it). The coefficient of the trade balance is negative but not significant. Thus part (2) of the hypothesis on mercantilism is not confirmed.

Table 6

Regression results with adjusted unemployment rate as the dependent variable with respect to export/import characteristic

	(15)		(16)	
Dependent	AU		AU	
Methodology	Kiviet		Arellano-Bond	
TT	-0.0511	***	-0.0547	***
TB	-0.0154		-0.0068	
AU(-1)	0.7132	***	0.6326	***
RG(-1)	-0.1170	***	-0.1377	***
cons			7.5566	***
N	272		256	

In a final step we can use these coefficients to derive a consistent test for the size of the implied coefficient of imports. Using the definitions $TT = EX + IM$ and $TB = EX - IM$ we have:

(9) $$\beta_3 TT_{it-1} + \beta_4 TB_{it-1} = (\beta_3 + \beta_4) EX_{it-1} + (\beta_3 - \beta_4) IM_{it-1} \equiv \beta_{EX} EX_{it-1} + \beta_{IM} IM_{it-1}$$

The definition of the implied coefficient $\beta_{IM} = \beta_3 - \beta_4$ is used in Table 7 for another test of part (1) of our hypothesis on mercantilism. Mercantilism would mean that the implied coefficient of imports is positive: $\beta_{IM} > 0$. The results show that the probability of a parameter value in the "mercantilist range" (i.e. a positive impact of imports on unemployment) is generally low but depends on the estimator used.[3] For the Kiviet estimator and the Arellano-Bond estimator mercantilism can be rejected at the 10 percent and 5 percent level, respectively. If we combine this with the result that the impact of the trade balance on unemployment is not significantly different from zero we can conclude that there is no convincing evidence in favor of mercantilism. We can thus reject the hypothesis formulated at the beginning of this section.

Table 7

Test of implied import coefficient

Equation	(17)	(18)
	Kiviet	Arellano-Bond
β_{IM}	-0.0357	-0.0479
Standard deviation	0.0244	0.0242
Probability $\beta_{IM} \geq 0$	0.0714	0.0238

[3] The probabilities in Table 7 are calculated under the assumption of asymptotic normality.

4 Exports and unemployment: Beyond mercantilism

Our results so far suggest (i) that German exports contribute significantly to reducing unemployment in the German federal states but (ii) there is no convincing evidence that this reflects the case of straightforward mercantilist policies in the sense that it is the trade balance which produces this unemployment-reducing effect. What then are the reasons for the observed stylized facts? In this section we discuss some possible answers to this question.

Our counterfactual starting point is classical foreign trade theory which typically assumes full employment. More precisely, classical foreign trade theory assumes a perfectly flexible labor market with (in particular) perfect intersectoral mobility of labor. This permits the real wage to clear the labor market and wipes out the correlation between external trade and employment. The key then to understanding why such a correlation exists in the data lies in removing this assumption and in identifying imperfections and rigidities in the labor market and in other parts of the economy. Imperfections and rigidities with bearing on our problem are not hard to identify in Germany. We will highlight the following three:

- Minimum wages
- Rigidities in the education system and generally in human capital formation
- Government policies aimed at correcting market failures and providing implicit subsidies to export-oriented industries

These three points can conveniently be linked to well-established theories of international trade: the first to Ricardian trade theories, the second to Heckscher-Ohlin type trade theories and the third to the new and "new new" trade theories developed e.g. by Krugman (1979) and Melitz (2003).

The first point provides a Ricardian explanation for the positive (i.e. improving) impact of exports on unemployment. Figure 1 illustrates the argument. One of Ricardo's key conclusions in presenting his theory of comparative advantage was that free trade would lead to a rise in real wages. The figure represents an expansion of exports (due, e.g. to a rise in world market demand) as a upward shift of the labor demand curve. With labor supply inelastic and fixed, the result is a rise in the real wage from w_0 to w_1. In the presence of the minimum wage above the initial market-clearing wage w_0 the result is not a wage increase but a reduction in unemployment from u_0 to u_1. Although Germany has no nation-wide minimum wage, minimum wage laws affect certain sec-

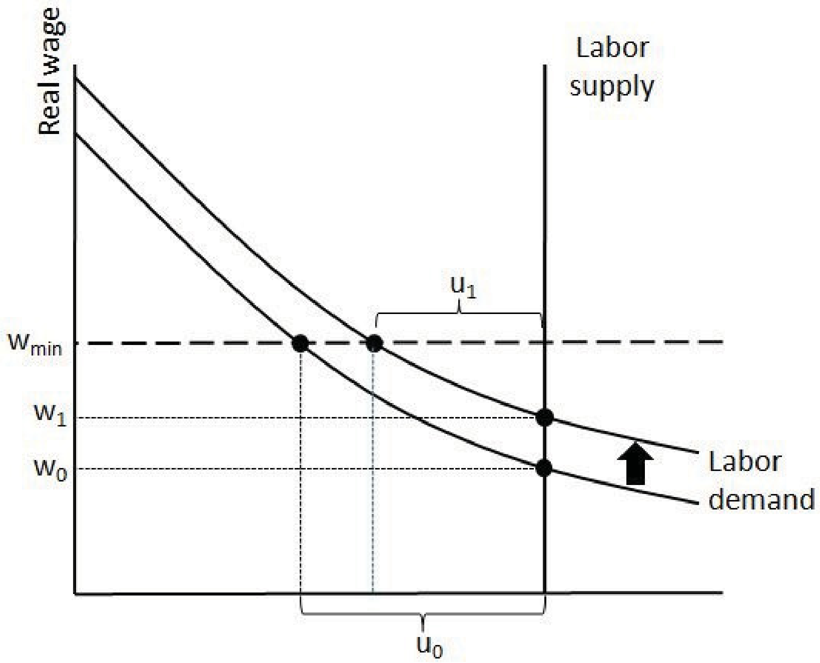

Figure 1 Exports and unemployment with minimum wages

tors (among them several service sectors). This is complemented by the rules of the welfare state which introduce a minimum income guaranteed by the government. Moreover, binding wage agreements with strong unions in particular in export-oriented industries keep real wages high and downwardly rigid. There is thus reason to believe that minimum wages provide one of the reasons for the observed improving impact of external trade on unemployment in Germany.

Our second point provides a Heckscher-Ohlin type explanation for the observed link between exports and unemployment. Its basic ingredients are rigidities in the education system and in human capital formation. This somewhat fuzzy description summarizes a multitude of very concrete government policies. The point of departure is the recognition that government-provided services furnish important factor inputs for export-oriented industries (as well as for other industries). Some of these are public goods, some are private goods. Higher education and vocational training have both a public and a private good component. In Germany (as generally in Europe) government is deeply involved in higher education and in vocational training. The supply of these services is not driven by pure profit motives. Public debate about funding for universities is dominated by the alleged "need to maintain Germany's competitiveness in world markets". This explains lavish funding for departments of engineering, sciences and, in general, for technical universities. It also explains a constant stream of the respective graduates arriving in the labor market and seeking employment in medium tech to high tech industries, which are the country's traditional export industries. A shortfall in exports hits this segment of the labor market first. Moreover, in the context of the vocational training system (the so-called dual training system) private firms cooperate with government-run vocational schools in providing education and on-the-job training for young apprentices. Export-oriented industries are among the most active participants in the system. Graduates of the dual training system thus arrive in the labor market with a qualification profile skewed towards employment in export-oriented industries. These examples may suffice to illustrate that the institutionalized system of education and training is to a large part shielded from market forces and skewed towards export-oriented industries. This contributes to pronounced structural inertia in the labor market and, in turn, to a quasi-institutionalized link between employment and external trade.

The third and final point mentioned above concerns government policies aimed at correcting market failures and providing implicit subsidies to export-oriented enterprises. Among such policies are government-controlled and -subsidized higher education and vocational training, as just discussed. Another one is the system of short labor (*Kurzarbeit*). In essence it amounts to a government-provided and subsidized insurance against temporary shortfalls in demand. For employees its advantage is that it prevents them from dropping to the status of unemployment with the entailed negative consequences such as e.g. becoming "outsiders" in the labor market. Its advantage for employers is the mirror image of that; it allows them to lay off workers while keeping them on the payroll as employees of, and thus connected to, the firm. For firms engaged in volatile export markets this reduces the risk of losing skilled employees to competitors. The government thus absorbs part of the risks associated with export volatility and with the uncertainties of world markets which helps firms to maintain their position relative to their competitors. This is obviously an advantage for firms but in the context of highly rigid labor markets it is also an advantage for the economy as a whole. In such labor markets, people who drop into unemployment have a high probability of staying there. This is the well-know problem of hysteresis in European labor markets: short-term fluctuations in the business cycle contribute to long-term unemployment. Preventing people from becoming unemployed is thus a contribution to reducing persistence in unemployment. The implicit insurance provided by the short labor scheme entails a "swap" in the term structure of unemployment: by financing short-term unemployment compensation in the guise of *Kurzarbeit*, government buys a reduction in the long-term official unemployment rate.

To sum up, we propose three non-exclusive factors contributing to the observed link between exports and unemployment:

- Exports raise wages which, in the presence of minimum wages, reduces unemployment;
- Structural rigidities in labor markets linked, in particular, to heavy government involvement in higher education and in vocational training contribute to reduced mobility between different segments of the labor markets;
- The government-sponsored short labor scheme ensures employees and employers against export volatility and thereby reduces persistence in unemployment.

Factors (1) and (2) are more or less familiar from the long-standing debate about the rigidities of European economies (*Eurosclerosis*). The novel aspect is the insurance aspect of the short labor scheme.

5 Summary and conclusion

In this paper we have investigated the link between exports and unemployment in Germany. Going through a number of different regression equations we have arrived at a preferred equation which demonstrates that exports (or, equivalently, total trade, i.e. the sum of exports and imports) have a significantly negative impact on unemployment rates. From a practical point of view most economists would probably feel that this link between exports and unemployment is due to the impact of exports on growth, export demand being an important driver of growth at least within a shorter horizon. One could call this the "mainstream model": causality runs from exports to growth and from growth to employment. This mainstream model rests on the (explicit or implicit) assumption of a flexible labor market. The structure of aggregate demand does not matter for employment, only its overall size. No labor market is perfectly flexible but the German labor market in particular has been known for its rigidities and its weak intersectional mobility. Structural change away from industry towards services has been slower in Germany than in other industrial countries. Finally, government-backed institutions such as "short work" mitigate the pressure towards structural change during slowdowns and crises and thus serve to maintain existing structures. In such an environment it can no longer be taken for granted that it is only GDP growth as a whole which is causal for unemployment. Rather, the structure of demand begins to matter for unemployment.

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