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Who wants wage moderation? Trade exposure, export-led growth, and the irrelevance of bargaining structure

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ABSTRACT

An extensive literature in comparative political economy has examined the determinants of wage militancy and moderation at the country level. So far, however, there has been no attempt to analyse the determinants of wage satisfaction and dissatisfaction at the individual level. Based on two waves of the International Social Survey Programme, this article seeks to fill this void. It examines to what extent trade exposure affects individual attitudes towards wages, and whether bargaining institutions facilitate the internalisation of competitiveness requirements, as suggested by the vast literature on neocorporatism. Surprisingly, no relationship is found between the structure of wage bargaining (more or less coordinated or centralised) and wage dissatisfaction at the individual level. Instead, wage dissatisfaction decreases strongly when workers are individually exposed to trade and countries rely heavily on export-led growth. The findings point to the need to rethink the determinants of wage moderation.

KEYWORDS Wage moderation; wage preferences; collective bargaining; trade exposure; export-led growth

The determinants of ‘wage moderation’, or its opposite, ‘wage militancy’ have been extensively researched by comparative political economists. A large literature has examined cross-country differences in wage bargaining structures, trying to discern those that are most (or least) conducive to wage restraint. Surprisingly, individual-level attitudes towards wages have been neglected so far. Yet, it seems plausible that wage moderation as an aggregate outcome is more likely to emerge when workers are individually satisfied with their wages and thus less likely to mobilise to increase them.¹

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In this article, we study the determinants of wage satisfaction and dissatisfaction at the individual level by analysing two waves of the International Social Survey Programme (ISSP 1999, 2009), supplemented by macro-level data from various sources. Our goal is to understand to what extent workers internalise two kinds of economic constraints: the microeconomic risk of job loss for workers exposed to international trade, and the macroeconomic requirement to keep wage growth in check if a country relies heavily on export-led growth. Furthermore, we aim to ascertain whether the internalisation of constraints is facilitated by more coordinated or centralised wage bargaining structures, as suggested by the vast literature on (neo-)corporatism.

We find that the workers' attitudes to wages are significantly and substantially shaped by the above-mentioned constraints. Wage dissatisfaction decreases with individual-level exposure to trade and with country-level reliance on export-led growth. Furthermore, and interestingly, the wage-moderating effect of export-led growth applies not just to workers who directly benefit from increased cost competitiveness but also to other workers as well. Surprisingly, we do not find any direct or moderating effect of wage bargaining structure. This implies either that corporatist institutions affect aggregate wages without modifying the wage preferences of workers, as suggested by a portion of the literature, or that the corporatist literature has exaggerated the importance of bargaining structure in producing wage moderation because it has failed to control for the type of growth model in its regressions.

The article is organised as follows. We first review the existing research on wage moderation and workers' preferences, and formulate hypotheses about how trade exposure, growth models, and wage bargaining institutions affect individual attitudes to wages. Then we present our setup and empirical tests. In the conclusion, we highlight the implications of our findings for the literature on wage bargaining and growth models.

Determinants of wage moderation

A rich literature in comparative political economy has examined the determinants of 'wage restraint' by focussing on wage bargaining institutions, sometimes in interaction with the central bank's behaviour. In this literature, wage moderation improves the trade-off between inflation and unemployment (see Flanagan *et al.* 1983; Tarantelli 1986). If nominal wages are set by multiple wage setters, and if none of them is sufficiently large to internalise the costs of wage militancy (Olson 1965), each will have incentives to push for higher wages. Yet, because the same reasoning applies to all actors, the ultimate outcome will be a tendency for nominal wages to increase everywhere. Whether this tendency translates into

higher inflation or higher unemployment will depend on the response of the central bank. If the central bank accommodates, there will be higher inflation. If the central bank does not accommodate, there will be higher unemployment (Hall and Franzese 1998; Iversen 1999). If instead wage bargaining is centralised or coordinated, unions will exercise self-restraint. Empirical research based on these theoretical premises has found that centralised or coordinated wage bargaining is associated with lower inflation and/or unemployment.² Research has also shown that real wage growth is lower under centralised or coordinated bargaining, controlling for productivity (e.g. Baccaro and Simoni 2010).

A general feature of the existing literature is its exclusive focus on macro characteristics. Such focus makes it difficult to understand the mechanisms through which wage moderation emerges (or fails to emerge) as an aggregate outcome. If bargaining coordination leads to wage moderation, does this happen because bargaining coordination leads individual workers to develop more moderate wage preferences, or because union leaders are able to suppress 'deviant' preferences? Alternatively, are the workers' wage preferences simply irrelevant for aggregate wage outcomes?

In response to these questions, the literature on neocorporatism has offered interesting, but largely untested conjectures. A portion of the literature has argued that corporatist institutions enable organisational leaders to effectively suppress or sideline 'militant' worker preferences (Pemberton 1988; Schmitter 1974; Streeck 1988, 1994). According to this literature, wage moderation does not emerge because the wage preferences of workers become more moderate under centralised bargaining structures, but because the preferences of interest group leaders prevail, enabling them to pursue policies that conflict with the preferences of a large portion or even the majority of the membership (Pizzorno 1978). Another stream of literature has argued instead that union leaders in centralised structures moderate workers' preferences through the circulation of information and persuasive argument (Baccaro 2003; Culpepper 2008).

In this article, our focus is on workers' individual attitudes towards wages. We start from the assumption that wage attitudes depend on the perceived costs of wage militancy, and that workers who are exposed to international trade are less likely to express wage dissatisfaction. In formulating this hypothesis, we build on a portion of the neocorporatist literature, which we combine with literature about the impact of exposure to trade.

The neocorporatist literature distinguishes between wage-formation in exposed and non-exposed sectors (Crouch 1988; Franzese 2001; Garrett and Way 1999). Unions in sectors exposed to international competition are directly affected by the consequences of wage militancy, since the resulting cost increase is likely to lead to reduced product and labour

demand and lower employment. Firms in exposed sectors are for the same reason more likely to resist unions' wage militancy. Instead, unions in non-exposed sectors face less stringent competitiveness constraints, and firms are more likely to accommodate higher costs by increasing prices. For public sector unions in particular, employment may be entirely disconnected from market conditions.³ For all these reasons, wage moderation is more likely to emerge in exposed sectors than in non-exposed ones (Crouch 1988; Franzese 2001; Garrett and Way 1999; Hancké 2013; Johnston and Regan 2016; see however Di Carlo 2020). The wage moderating effect of trade exposure is likely to apply to the individual level as well, as suggested by the literature on the effects of trade openness (e.g. Busemeyer and Garritzmann 2019; Mayda and Rodrik 2005; Walter 2017). According to this literature, individuals have a preference for policies that reduce labour market risks and the potential adverse economic consequences of trade.⁴ For workers exposed to international competition, excessive wage growth erodes firm competitiveness and increases labour market risk. We thus hypothesise that exposed workers are more likely to suppress attitudes of wage dissatisfaction.

Hypothesis 1: The more workers are exposed to international competition, the lower their wage dissatisfaction.

The egocentric effect of trade exposure does not exclude sociotropic considerations. Here we build on the recent literature on growth models (Baccaro and Pontusson 2016; Lavoie and Stockhammer 2013; Stockhammer 2015). This literature casts doubt on the notion that wage moderation is unconditionally conducive to higher growth. Especially for large economies, wages are an important determinant of aggregate demand, and wage moderation may lead to excessive savings and stagnation. However, in export-led economies wage moderation leads to real exchange rate depreciation (provided the exchange rate is not fully flexible). If the economy is sufficiently open and the sensitivity of exports to wage and price differences sufficiently large, any negative effect of wage moderation on domestic demand is more than compensated by the stimulation of exports (Bhaduri and Marglin 1990). In a recent analysis, Johnston (2021) finds that wage moderation is associated with higher growth and lower unemployment only for countries pursuing export-led growth, but not for countries relying on domestic demand.

In brief, the growth model literature suggests that wage moderation is a prerequisite for export-led growth (Baccaro and Pontusson 2016). Again, we transpose this insight to the individual level, hypothesising that in countries relying on export-led growth, workers internalise the need for wage moderation and that a generalised 'wage moderation consciousness' emerges.

Although in this article we are unable to test the precise mechanisms leading to such wage moderation consciousness, we postulate that national discourse shapes the process of internalisation. We draw on a recent contribution by Ferrara *et al.* (2021), which has shown that media reports about current account imbalances vary dramatically and systematically between countries with current account surpluses and deficits. In particular, these authors find that in Germany the media tend to highlight superior domestic competitiveness vis-à-vis trade partners when reporting on current account surpluses. Importantly, they also show that media frames on current account imbalances have a significant impact on individual economic policy preferences in an experimental setting. These findings suggest that in countries relying on export-led growth, public discourse is likely to highlight the need for international competitiveness (Ferrara *et al.* 2021; Meteling 2016). Political parties may also adopt this discourse in the expectation that a strong export sector contributes to economic growth, which should strengthen their electoral appeal (Lewis-Beck and Stegmaier 2019).

In turn, the elite-driven discourse about international competitiveness is likely to leave its imprint on individual level-attitudes (Ferrara *et al.* 2021; Howarth and Rommerskirchen 2013, 2017; Meteling 2016). Most workers are unlikely to have a full understanding of how changes in wages translate into macroeconomic outcomes such as inflation, levels of unemployment, or growth. In the absence of a full understanding of such complex economic interrelationships, workers may follow cues provided by political elites, transmitted via the media (e.g. Barnes and Hicks 2018; Ferrara *et al.* 2021; Kneafsey and Regan 2020; Lenz 2009; Zaller 1992). As a sizable literature on framing effects has documented, media reports about (economic) issues can shape individuals' understanding of and attitudes towards issues (Lecheler and De Vreese 2019). As a result, workers in countries strongly dependent on export-led growth may come to internalise the importance of wage moderation even when they are employed in sectors in which wage moderation is not crucial for firm competitiveness. This implies that a favourable attitude towards wage moderation should also be manifest among workers who are not directly affected by the beneficial consequences of wage moderation, such as non-exposed workers.

Hypothesis 2: Individual wage dissatisfaction declines with greater country dependence on export-led growth.

Hypothesis 3: Specifically, for workers not exposed to international competition, wage dissatisfaction declines with greater country dependence on export-led growth.

Finally, we explore the impact of bargaining structure. The corporatist literature reviewed above suggests that unions in more coordinated or

centralised bargaining structures (Golden *et al.* 1999; Soskice 1990) are more likely to internalise the negative externalities of wage militancy. If unions' preferences are reflective of the preferences of workers, these corporatist institutions should be associated with lower levels of individual wage dissatisfaction. Furthermore, if bargaining has spill-over effects for non-union workers as well, wage dissatisfaction may be lower not just for union members but for non-members as well. Additionally, a more coordinated or centralised bargaining structure may facilitate the internalisation of competitiveness concerns for workers exposed to trade (Crouch 1988; Franzese 2001; Frieden and Rogowski 1996; Garrett and Way 1999). Moreover, it may be hypothesised that workers may be less dissatisfied with low wage growth when wage bargaining is more coordinated or centralised. This leads us to formulate the following additional hypotheses:

Hypothesis 4: Wage dissatisfaction is lower in coordinated/centralized bargaining structures.

Hypothesis 4a: The wage dissatisfaction of union members is lower in coordinated/centralized bargaining structures.

Hypothesis 4b: The wage dissatisfaction of workers exposed to trade is lower in coordinated/centralized bargaining structures.

Hypothesis 4c: The wage dissatisfaction caused by low wage growth is lower in coordinated/centralized bargaining structures.

Data and models

Our data come from two waves of the ISSP Social Inequality module conducted in 1999 and 2009, which we complement with various country-level data. We focus on advanced OECD countries included in at least one ISSP wave. In total, our sample includes 19 countries with 31 country-year observations and 14,945 individuals.⁵

Dependent variable

In order to operationalise our dependent variable we use the following survey question from the ISSP:

Would you say that you earn: 1: Much less than [you] deserve; 2: Less than [you] deserve; 3: What [you] deserve; 4: More than [you] deserve; 5: Much more than [you] deserve?

We dichotomise responses to this item distinguishing between respondents who are dissatisfied with their wage (categories 1 and 2) from those who are satisfied with their wage (categories 3 to 5). Dichotomisation of

the dependent variable eases the presentation of the results. However, running multilevel ordered logistic regression models with the original coding of the dependent variable does not alter the findings (Table A.8 in the online appendices). We include only employed individuals in the sample.

We consider our measure an acceptable proxy of attitudes towards wage satisfaction and dissatisfaction. Research in economics has found that wage attitudes are largely shaped by whether individuals consider their wages as being fair (for a review: see Fehr *et al.* 2009). A perception of earning less than one deserves should thus be associated with preferences for higher wages to redress the perceived unfairness. Summary statistics show that 57 percent of respondents in our sample state that they earn less or much less than they deserve, which we interpret as wage dissatisfaction (see Table A.1 in the online appendices). Below, we explain how we operationalise our independent variables to take into account the fact that our dependent variable may be interpreted as relative to a reference group. In the online appendix A.1 we also explain how we cross-validated our measure against other measures of wage (dis-)satisfaction using the WageIndicator Survey (Tijdens *et al.* 2010).

Main independent variables

Constructing a measure of occupational trade exposure

One of our key independent variables is individual-level exposure to trade. The ISSP does not include information on the sector in which the worker is employed. Thus, we combine the individual-level data on occupations in the ISSP with individual-level data on occupation by sector of employment from the European Social Survey (ESS 2008), and with sector-by-country data on trade exposure from the OECD STAN database (OECD 2019).⁶ Using ESS data, we calculate the probability for each occupation (ISCO88, at the 4-digit level) of being located in a specific sector (NACE rev.1.1 at the highest level of aggregation: 15 sectors). Then we calculate the trade exposure of each sector defined as: (Exports + Imports)/Output. We use 5-year averages of sectoral trade exposure for the years preceding the fielding of the ISSP (1994–1998 and 2004–2008). In this way, we create a measure which attributes to each individual a probability distribution of being employed in certain sectors based on the person's occupation, and then weighs this probability distribution by the sectoral trade exposure.⁷ The formula we use is the following:

$$\text{Occupational trade exposure}(i, o) = \sum_{s=1}^n \pi(o, s) * (\text{sectoral trade exposure}(s))$$

where i indexes individuals, o occupations, s the n sectors, and π is the probability of being employed in a particular occupation and sector. The measure captures the trade risk of a particular occupation as opposed to the trade risk of the sector in which the individual is currently employed. We think it is preferable to the latter because it takes into account that individuals are able to move across different sectors while maintaining the same occupation.

Online appendices Table A.2 shows that our measure of occupational trade exposure produces systematic variation in trade exposure across occupational categories (Table A.2 displays summary statistics at the ISCO88 1-digit level). Exposure varies between zero for service workers and an average value of 0.33 for 'plant and machine operators and assemblers'. As a robustness check, we replicated the analysis using the 'offshorability index' developed by Blinder (2009). This index measures the potential for an occupation to be moved abroad based on its technological characteristics and was used, among others, by Walter (2017) to assess the impact of globalisation on individual preferences. Using the offshorability index as an alternative measure produces similar findings to the main analysis (see Table A.4 in the online appendices). However, the risk associated with trade exposure seems more general than the risk of offshoring. A worker may be affected by foreign trade competition whether or not the job is offshorable. Therefore, we consider our measure of occupational trade exposure as more suitable for the context of this study.

We use two different versions of our measure of occupational trade exposure: one continuous, the other discrete. As our first measure, we use a logarithmic transformation (to reduce the influence of outlying values) of the continuous occupational trade exposure measure illustrated above, and control for the worker being employed in the public sector using self-reported information from the ISSP survey. Our second measure combines trade exposure and public sector employment into a categorical variable, which distinguishes among sheltered public, sheltered private, and exposed workers. Due to the probabilistic construction of our measure of occupational trade exposure only 13 percent of respondents have zero trade exposure, but many occupations have values of exposure close to zero. For this reason, we code occupations with below-median exposure as sheltered and with above-median exposure as exposed (this median value of exposure is 0.0063). The large majority of public sector workers fall below this threshold. We code the remaining public sector workers with above-median occupational trade exposure as exposed workers. These workers are likely to be employed in state-owned enterprises, which are often organised similarly to private sector companies, or to work in public sector occupations which are in common with exposed sectors, and thus in principle subject to similar labour market risks.

Constructing a measure of export-led growth

Another key predictor in our analysis is the country-level reliance on export-led growth. A common approach to operationalising export-led growth is to calculate the contribution of net exports (i.e. the difference between exports and imports) to GDP growth (e.g. Baccaro and Pontusson 2016). However, this approach underestimates the actual growth contribution of exports because it subtracts the whole volume of imports from exports. In reality, imports are mostly for consumption and investment purposes, and only a portion of imports is absorbed by exports. To obviate this shortcoming we proceed as follows: In a first step, we calculate the import-adjusted volume of exports. This is the volume of exports minus the volume of imports used in the production of exports. Data on exports comes from the AMECO database (AMECO 2019); data on the import-content of exports comes from the OECD Input-Output Tables (OECD 2019). The import-adjusted contribution of exports to growth is then calculated as the annual change of import-adjusted exports weighted by the share of import-adjusted exports in GDP at $t-1$ (data on GDP from AMECO 2019). We then calculate the share of import-adjusted growth contribution of exports in total growth.⁸ See the online appendix A.2 for a detailed exposition of the way this measure is calculated.⁹ The final formula is the following:

$$\text{import - adjusted export - led growth} = \frac{P_t^e IE_t - P_{t-1}^e IE_{t-1}}{P_t Y_t - P_{t-1} Y_{t-1}}$$

Where P^e is the price of exports, P is the price of GDP, IE is import-adjusted exports, and Y is GDP. To avoid an excessive influence of year-to-year fluctuations, we calculate 5-year averages for the periods preceding data collection in the ISSP (i.e. 1994–1998 and 2004–2008). Table A.1 in the online appendices lists the shares of (import-adjusted) export-led growth by country. This is lowest in the US (with a value of 0.17) and below average in the Anglo-Saxon and Southern European countries. Switzerland has the highest contribution of exports to GDP growth (0.87), and export-led growth is above-average in the Continental European and Scandinavian countries (see Figure 1 below).

Wage bargaining structure and controls

We operationalise bargaining structure by including several measures of wage bargaining structure from the Visser (2019) database: coordination and centralisation of wage setting (*coord* and *level*), and centralisation of union organisation (*cent*).

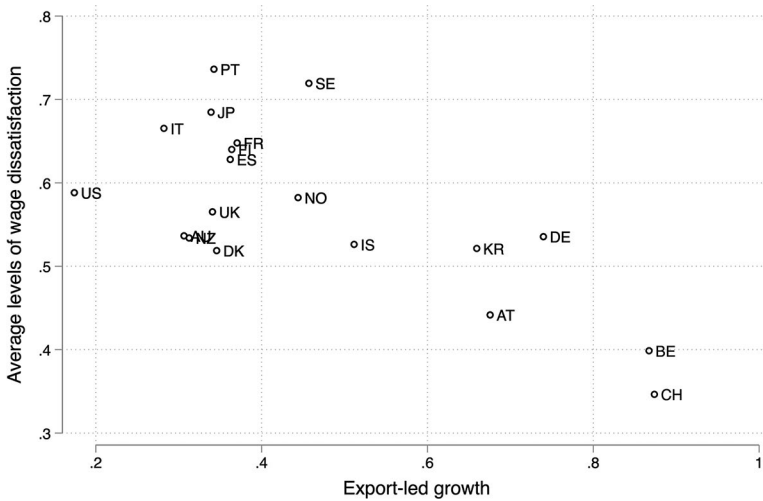


Figure 1. Export-led growth and country-average levels of wage dissatisfaction. Note: Survey weights used.

We also control for union membership status using individual data from the ISSP since some literature suggests that union members are more dissatisfied than non-members (Bryson *et al.* 2004; Hadziabdic 2020).

Additionally, we control for a range of confounding factors at the individual and at the country level. The coding of these variables is described in detail in online appendices Table A.3. At the individual level, we include variables related to the demographic and socio-economic situation of an individual to control for their potential association with both trade exposure and wage preferences: age, age-squared (to test for a non-linear impact of age), gender, part-time versus full-time work, individual income, and educational attainment.¹⁰ In robustness models, we include alternative versions of some individual-level control variables: Since the question about attitudes towards wages may be interpreted by the respondent as relative to a reference group, we calculated a relative education measure (indicating the respondent's over- or undereducation relative to other respondents in the same occupation, at the ISCO 1-digit level), and a measure of income difference relative to respondents with a) the same educational attainment, and b) the same occupation (at the ISCO 1-digit level). These additional models lead to the same findings as the main analysis, which makes us more confident about our dependent variable being a valid proxy of wage (dis-)satisfaction.

In order to be able to identify the effect of export-led growth on wage preferences, we need to hold constant a range of confounding factors at the country level. Bivariate correlations reveal a tight negative association between average real wages at the country level and wage dissatisfaction

($r = -0.63$; $p = 0.004$) meaning that wage dissatisfaction is lower where the average real wage is higher. We thus include average real wage levels, as well as their change in the years preceding the surveys, as control variables. Wage dissatisfaction might also be stronger if incomes are distributed more unequally, since income inequality violates fairness norms (Fehr *et al.* 2009). Thus, we control for inequality in market and disposable incomes. Furthermore, wage expectations can be associated with the country's economic situation. Wage dissatisfaction should be more widespread if the country experiences strong economic growth, if high inflation threatens the purchasing power of wages, and if national or education-specific unemployment is low, implying a more favourable labour market situation for workers. Eurozone membership could be expected to reduce wage demands because it eliminates the option of currency devaluation to compensate for adverse consequences of high wage settlements on competitiveness. The euro was in the process of introduction during the first ISSP wave in 1999 but the exchange rate parities had been fixed the year before.

Generous welfare state benefits loosen the link between workers' income and market conditions, and as such, they could lead to lower wage dissatisfaction. Furthermore, generous welfare states are correlated with trade exposure (Katzenstein 1985; Rodrik 1998) and thus their non-inclusion in the analysis could lead to omitted variable bias. We control for welfare state and unemployment benefit generosity by using the measures elaborated by Scruggs *et al.* (2017). Finally, the association between wage satisfaction and trade exposure may be confounded by the wage differential between exposed and sheltered occupations. Specifically, workers in exposed occupations may be more dissatisfied if the wage gap with workers in non-exposed occupations is large. We thus additionally control for wage differentials between manufacturing and services (AMECO 2019) and interact the wage differential variable with occupational trade exposure. We control for all these potential confounding variables in separate models.

Estimating equation and estimators used

We run multilevel logistic regression models to account for the nested structure of our data. Because individuals are nested in country-years, which are nested in countries, we include country and country-year random intercepts.¹¹ We include macro-level variables as country-average values over the two periods and as deviation from these values in the specific period of observation (Bell and Jones 2015; Fairbrother 2014). This specification has several advantages. Compared to standard random effects models it avoids the assumption that cross-sectional and

longitudinal relationships are the same. Including country-averages of the macro-level variables controls for possible correlation between time-invariant covariates and country random intercepts. At the same time, this specification is more flexible than the country fixed effects model specifications because it is not limited to longitudinal relationships only. By distinguishing country averages and period-specific deviations, we can thus distinguish between long-term effects of macro variables (captured by the variables in levels) and short-term effects (captured by changes). Finally, we include a year dummy to control for time effects that are common across countries.

Results

We begin by examining the individual predictors of wage dissatisfaction. We then move to the impact of export-led growth at the country level, including the cross-level interaction between export-led growth and occupational trade exposure. Finally, we analyse the effects of various dimensions of bargaining structure, including cross-level interactions with union membership and occupational trade vulnerability, respectively.

The multilevel logistic regression results in Table 1 provide robust support for the hypothesis that working in an occupation exposed to international trade is associated with lower wage dissatisfaction (hypothesis 1). This finding applies to both the continuous and the categorical operationalizations of occupational trade exposure (see Models 1 and 2). Average marginal effect estimates based on Model 1 suggest that compared to workers without any trade exposure, the probability of wage dissatisfaction for individuals at the 90th percentile of exposure is 7.47 percentage points lower.¹² The magnitude of this effect is comparable to an upward shift of individual income of approximately 1.5 income deciles. Average marginal effect estimates based on Model 2 suggest that compared to individuals in sheltered private sector occupations, the likelihood of individuals working in exposed occupations to express dissatisfaction with their wage decreases by 2.25 percentage points. Compared to sheltered public sector workers, the difference is 6.37 percentage points. Thus, it seems that working in the sheltered public sector is associated with a higher likelihood of experiencing wage dissatisfaction.

Several of the individual-level control variables in Table 1 are also significantly related to wage preferences. Being a trade union member is associated with a higher likelihood of being dissatisfied with one's wage. Age has a curvilinear relationship: Both labour market entrants and workers close to retirement age are more likely to be satisfied with their wages compared to middle-aged workers. Women are more

Table 1. Multilevel logistic random intercept regressions: determinants of wage dissatisfaction; maximum likelihood estimates.

	M1	M2	M3	M4
Dependent variable: wage dissatisfaction				
Occupational trade exposure (log)	-0.034*** (0.006)			
Public sector	0.050 (0.043)			
Occupational exposure: public sheltered (Reference group: exposed)		0.292*** (0.047)	0.292*** (0.047)	0.445*** (0.124)
Private sheltered		0.102* (0.045)	0.100* (0.045)	-0.078 (0.110)
Union member	0.200*** (0.043)	0.196*** (0.043)	0.196*** (0.042)	0.194*** (0.043)
Age	0.064*** (0.010)	0.064*** (0.010)	0.064*** (0.010)	0.064*** (0.010)
Age squared	-0.001*** (0.000)	-0.001*** (0.000)	-0.001*** (0.000)	-0.001*** (0.000)
Female	0.083* (0.039)	0.101** (0.039)	0.102** (0.039)	0.100* (0.039)
Individual income	-0.250*** (0.010)	-0.250*** (0.010)	-0.249*** (0.010)	-0.248*** (0.010)
Employed part-time	-0.624*** (0.053)	-0.619*** (0.053)	-0.617*** (0.053)	-0.613*** (0.053)
Education: upper secondary (Reference group: below upper sec.)	-0.192*** (0.053)	-0.182*** (0.053)	-0.191*** (0.053)	-0.188*** (0.053)
Above upper secondary	-0.078 (0.057)	-0.059 (0.057)	-0.070 (0.057)	-0.068 (0.057)
Tertiary	-0.103 (0.055)	-0.082 (0.054)	-0.093 (0.054)	-0.092 (0.054)
Year = 2009 (Reference: 1999)	0.223 (0.146)	0.223 (0.147)	0.297* (0.132)	0.292* (0.132)
Export-led growth (mean)			-1.348*** (0.359)	-1.390*** (0.369)
Export-led growth (delta)			-0.174 (0.646)	-0.174 (0.649)
Public sheltered* Export-led growth (mean)				-0.349 (0.259)
Private sheltered* Export-led growth (mean)				0.412 (0.232)
Constant	0.507* (0.236)	0.212 (0.234)	0.772** (0.267)	0.790** (0.270)
Random intercept variance (country)	0.033 (0.058)	0.032 (0.060)	0.007 (0.032)	0.006 (0.032)
Random intercept variance (country-year)	0.136* (0.062)	0.139* (0.063)	0.106* (0.042)	0.107* (0.043)
N	14,945	14,945	14,945	14,945
N countries	19	19	19	19
N country-years	31	31	31	31

Standard errors in parentheses.

*** $p < 0.001$.** $p < 0.01$.* $p < 0.05$.

dissatisfied with their wages than men. This finding is surprising because women have been found to be willing to accept lower wage offers than men (Säve-Söderbergh 2007; Bowles and Babcock 2013). Their wage dissatisfaction may be a reaction to discriminatory wage practices. In contrast, part-time work, which is more common among women, is associated with lower dissatisfaction. If working part-time is dropped from the model, being female becomes insignificant.¹³ Furthermore, wage dissatisfaction is lower for individuals with higher income. The effect of educational attainment is non-linear, with individuals below upper secondary education having the highest level of dissatisfaction and individuals with upper secondary education being most satisfied.

In the next step, we evaluate the impact of export-led growth (hypothesis 2), starting with a graphic representation of the bivariate relationship at the country level. [Figure 1](#) displays a clear negative association between export-led growth and wage dissatisfaction. The bivariate correlation coefficient is -0.71 ($p=0.001$). Dissatisfaction is highest in Portugal, a country with below-average export-led growth with more than 70 percent of workers being dissatisfied with their wages, and is lowest in Switzerland, a country with a strong export contribution to growth and less than 40 percent of workers being dissatisfied.

Models 3 and 4 in [Table 1](#) add our macro-level measure of export-led growth to the logistic regression models. The core finding is that a higher reliance on export-led growth is associated with more moderate wage preferences (Model 3). What matters is cross-national variation in export-led growth, which is highly statistically significant, while variation in export-led growth over time is also negatively signed but does not reach conventional levels of statistical significance. With observations from only two points in time, we are unable to judge whether the insignificance of changes in export-led growth represents a substantive finding or merely reflects the low number of time-varying observations.¹⁴ The effects of average levels of export-led growth are substantial in size. The simulated difference in the predicted probability of wage dissatisfaction between countries with a very low (the US) and a very high level of export-led growth (Switzerland) amounts up to 20.83 percentage points. It seems that the more exports contribute to GDP growth, the more satisfied individuals are with their wages, controlling for other individual determinants of wage (dis-)satisfaction.

In additional models, we tested for the influence of country outliers. We replicated Model 3 dropping one country at a time. The effect of export-led growth remains robust at least at the 99 percent level of significance and the simulated difference in the predicted probability of wage dissatisfaction between the countries with the lowest and the highest levels of export-led growth varies between 17.73 and 24.23. These results

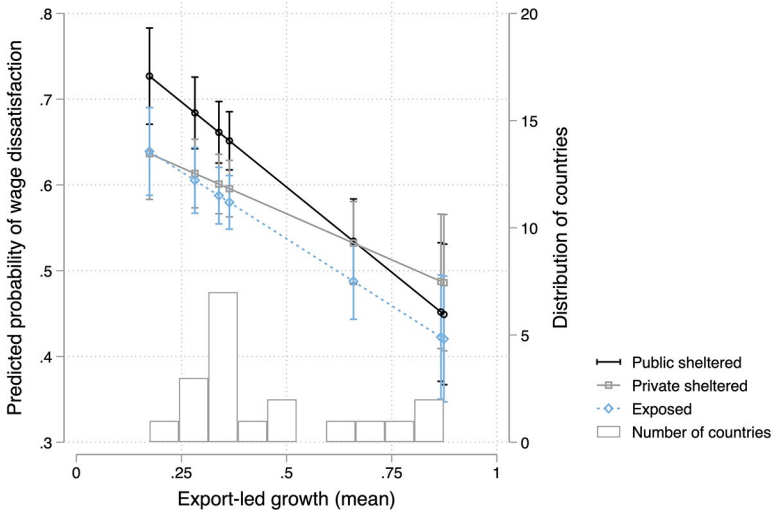


Figure 2. Predicted probabilities of wage dissatisfaction, by export-led growth and occupational trade exposure.

Note: Predicted probabilities and 95 percent confidence intervals based on Model 4 in Table 1. Predicted probabilities are shown for export-led growth at the following levels: minimum value, 10th, 25th, 50th, 75th, 90th percentile, and maximum value.

suggest that the negative effect of export-led growth on wage dissatisfaction is not driven by any particular country outlier.¹⁵

In order to evaluate the claim that competitiveness concerns are internalised also by individuals in sheltered sector occupations (hypothesis 3), we introduce a cross-level interaction between occupational trade exposure and export-led growth (Model 4). Wage dissatisfaction declines with greater export-led growth orientation not only for exposed workers but also for public sector and private non-exposed workers. In fact, the insignificance of the interaction terms suggests there is no difference in the impact of export-led growth for these three types of workers. Figure 2 plots predicted probabilities of wage dissatisfaction by export orientation and occupational exposure (based on Model 4 in Table 1). It shows that our hypothesis 3 is corroborated: wage preferences are more moderate in countries that rely more extensively on export-led growth also for workers not exposed to international competition.

Models 1 to 11 in Table 2 test whether the negative effect of export-led growth holds when controlling for various macro variables: real average wage levels, changes in real average wages, GDP growth, (education-specific) unemployment, inflation, eurozone membership, disposable and market income inequality, and welfare state and unemployment benefit generosity (the full results are reported in Table A.5 in the online appendices). Across model specifications, the effect of export-led growth is robust

Table 2. Multilevel logistic random intercept regressions: determinants of wage dissatisfaction; effects of macro-level covariates; maximum likelihood estimates.

	Export-led growth (mean)	Export-led growth (delta)	Macro-level control (mean)	Macro-level control (delta)	N countries	N country-years
M1 Real average wage levels	-1.073*** (0.309)	0.123 (0.685)	-0.000** (0.000)	-0.000 (0.000)	19	31
M2 Changes in real average wages	-1.334*** (0.362)	-0.155 (0.628)	0.312 (1.960)	2.588 (2.592)	19	31
M3 GDP growth	-1.589*** (0.384)	0.069 (0.588)	-0.068 (0.074)	0.243 (0.139)	19	31
M4 Unemployment rate	-1.228*** (0.337)	0.033 (0.617)	0.027 (0.022)	-0.071 (0.045)	19	31
M5 Inflation	-1.441*** (0.370)	-0.488 (0.649)	-0.041 (0.078)	0.158 (0.131)	19	31
M6 EMU membership	-1.470*** (0.359)	-0.219 (0.640)	0.170 (0.132)		19	31
M7 Education-specific unemployment rate	-1.201** (0.400)	-0.034 (0.694)	0.026 (0.016)	-0.032 (0.029)	16	26
M8 Disposable income inequality	-1.341*** (0.407)	-0.295 (0.673)	0.058 (0.094)	0.003 (0.018)	19	31
M9 Market income inequality	-1.187*** (0.353)	-0.426 (0.675)	0.077 (0.079)	0.025 (0.016)	19	31
M10 Welfare state generosity	-1.484*** (0.438)	-0.340 (0.668)	0.008 (0.012)	-0.062 (0.048)	17	29
M11 Unemployment benefit generosity	-1.283*** (0.386)	-0.335 (0.698)	-0.011 (0.028)	-0.079 (0.105)	18	30

Note: Regression models include the same individual-level variables as Table 1, Model 2. For full regression results, see Table A.5 in the online appendices. Standard errors in parentheses.

*** $p < 0.001$.

** $p < 0.01$.

* $p < 0.05$.

Table 3. Multilevel logistic random intercept regressions: determinants of wage dissatisfaction; effects of wage bargaining coordination; maximum likelihood estimates.

	M1	M2	M3	M4
Dependent variable: wage dissatisfaction				
Occupational exposure: public sheltered (Reference group: exposed)	0.292*** (0.047)	0.295*** (0.047)	0.069 (0.088)	0.291*** (0.047)
Private sheltered	0.102* (0.045)	0.102* (0.045)	0.045 (0.080)	0.104* (0.045)
Union member	0.198*** (0.043)	0.078 (0.079)	0.204*** (0.043)	0.197*** (0.043)
Age	0.064*** (0.010)	0.064*** (0.010)	0.064*** (0.010)	0.064*** (0.010)
Age squared	-0.001*** (0.000)	-0.001*** (0.000)	-0.001*** (0.000)	-0.001*** (0.000)
Female	0.101** (0.039)	0.100* (0.039)	0.099* (0.039)	0.101** (0.039)
Individual income	-0.250*** (0.010)	-0.249*** (0.010)	-0.249*** (0.010)	-0.250*** (0.010)
Employed part-time	-0.620*** (0.053)	-0.618*** (0.053)	-0.618*** (0.053)	-0.619*** (0.053)
Education: upper secondary (Reference group: below upper sec.)	-0.182*** (0.053)	-0.180*** (0.053)	-0.182*** (0.053)	-0.181*** (0.053)
Above upper secondary	-0.059 (0.057)	-0.056 (0.057)	-0.061 (0.057)	-0.058 (0.057)
Tertiary	-0.082 (0.054)	-0.080 (0.054)	-0.080 (0.054)	-0.082 (0.054)
Year = 2009 (Reference: 1999)	0.213 (0.143)	0.213 (0.143)	0.218 (0.141)	0.275 (0.158)
Wage bargaining coordination (mean)	-0.261 (0.277)	-0.357 (0.282)	-0.400 (0.283)	-1.174 (0.838)
Wage bargaining coordination (delta)	1.020 (0.884)	0.996 (0.887)	1.008 (0.878)	0.698 (0.951)
Union member* Bargaining coordination (mean)		0.253 (0.139)		
Public sheltered* Bargaining coordination (mean)			0.454** (0.152)	
Private sheltered* Bargaining coordination (mean)			0.117 (0.146)	
Changes in real average wages (mean)				-10.793 (11.213)
Changes in real average wages (delta)				2.538 (3.105)
Wage bargaining coordination (mean)* Changes in real average wages (mean)				18.197 (16.044)
Constant	0.355 (0.261)	0.385 (0.262)	0.410 (0.262)	0.851 (0.603)
Random intercept variance (country)	0.041 (0.062)	0.040 (0.062)	0.042 (0.061)	0.025 (0.063)
Random intercept variance (country-year)	0.119* (0.059)	0.119* (0.059)	0.117* (0.058)	0.122 (0.064)
N	14,945	14,945	14,945	14,945
N countries	19	19	19	19
N country-years	31	31	31	31

Standard errors in parentheses.

*** $p < 0.001$.** $p < 0.01$.* $p < 0.05$.

and strongly statistically significant. Compared to the strong and persistent effects of export-led growth, the remaining macro-level variables matter little in influencing wage preferences and the effect estimates are insignificant for most variables. The only significant effect appears for long-term wage levels, with higher average wage levels being associated with lower wage dissatisfaction. The results are furthermore robust when we include a measure of sectoral wage differentials and interact it with occupational trade exposure (Table A.10 and Figures A.2 and A.3 in the online appendices). Irrespective of wage differentials between the exposed and sheltered sectors, occupational trade exposure continues to be negatively associated with wage dissatisfaction.

Finally, we assess the influence of wage bargaining structure (hypotheses 4 to 4c). The models in Table 3 keep the individual-level predictors from the previous models and add the macro-level measure of wage bargaining coordination (Model 1), its interaction with union membership (Model 2), with occupational trade exposure (Model 3), and with country-level wage change (Model 4). Results for the additional indicators of wage bargaining structures, wage bargaining centralisation, and union centralisation, are included in the online appendices (Table A.6). We do not find support for hypotheses 4 to 4c. Contrary to hypothesis 4, the effect estimates of wage bargaining coordination are statistically insignificant. Contrary to hypothesis 4a, there is no evidence that the wage dissatisfaction of union members is lower in countries with more coordinated wage bargaining. In fact, the interaction between bargaining coordination and union membership is positively signed, although insignificant. Contrary to hypothesis 4b, the wage dissatisfaction of exposed workers (the reference category) is not significantly lower in countries with more coordinated wage bargaining. Post-estimation Wald tests show that differences in wage dissatisfaction of exposed workers are statistically insignificant across levels of bargaining coordination. Model 3 in Table 3 even suggests that public sector workers are *more* dissatisfied in countries with higher bargaining coordination. Contrary to hypothesis 4c, there is no evidence that the wage dissatisfaction caused by low wage growth at the country level is lower at higher levels of bargaining coordination. Again, Wald tests show no significant effects. In a similar vein, we do not find support for hypotheses 4 to 4c by using the alternative indicators of wage bargaining structures (Table A.6 in the online appendices).¹⁶

In light of our findings for export-led growth and non-findings for wage bargaining structures, export-led growth seems to be the decisive country-level factor shaping individual attitudes towards wages. In additional models, we include both sets of variables simultaneously to further evaluate their relative importance.¹⁷ Table A.7 in the online appendices

reinforces the above findings. Holding wage bargaining structures constant, the effect estimates of export-led growth remain significant and hardly change in size. In contrast, bargaining coordination, bargaining centralisation, and union centralisation are not significantly related to wage dissatisfaction.

Concluding discussion

This article has focussed on the determinants of individual attitudes of wage satisfaction and dissatisfaction. In so doing, it has contributed to two literatures: the literature on the institutional determinants of wage moderation, by exploring the so far neglected dimension of individual preferences, and the new literature on growth models, by investigating their relationship with workers' wage preferences.

Our main intent was to assess the extent to which workers internalise the systemic constraint of competitiveness, both at the individual and at the country level. For this reason, rather than only considering the impact of bargaining structure as in the previous macro-level literature, we also examined the impact of occupational exposure to trade and country reliance on export-led growth.

Our results indicate that workers employed in occupations exposed to international trade are less likely to express wage dissatisfaction. In other words, wage satisfaction is enhanced by a heightened risk of job loss.

Wage preferences are also influenced by sociotropic concerns about the drivers of growth in a country. If a country relies heavily on export-led growth, workers are less likely to express wage dissatisfaction, even when they do not benefit directly from the competitiveness-enhancing effects of wage moderation. We interpret this finding as a generalised 'wage moderation consciousness' being associated with export-led growth. Workers seem to internalise the systemic importance of wage restraint for the country's growth. Thus, export-led growth seems to create its own supporting attitudes, which boost its political viability and facilitate its reproduction as a growth regime.

This finding does not exclude the possibility of growth model change. In fact, the recent literature on growth models has argued that change is the result of the erosion of industrial relations institutions and of shifts in the balance of power between labour and capital, not of attitudinal shifts of workers or voters (Baccaro and Pontusson 2016). Structural forces, rather than attitudes, are the most important drivers of growth model change.

Surprisingly, wage bargaining institutions do not affect wage (dis-)satisfaction according to our analysis. One would expect, based on the previous literature, that wage preferences would be more moderate when

wage bargaining is coordinated or union structure centralised. However, we do not find any evidence either of a direct effect of wage bargaining structure on wage preferences or of a moderating effect on the attitudes of union members or workers exposed to trade competition.

There are two possible explanations for this null finding: First, the effect of bargaining institutions may have been exaggerated by the previous literature because previous research did not control for export-led growth, which seems to be the decisive country-level factor and is positively correlated with wage coordination. Second, bargaining institutions may affect wage moderation without modifying worker preferences, as suggested by the early literature on corporatism, which argued that corporatist institutions allow union leaders to ignore or suppress the preferences of workers (Schmitter 1974). Obviously, the absence of a *general* cross-country effect of wage bargaining does not exclude possible *localised* effects in specific sectors or regions or countries.

Our findings invite further research in several directions: First, we should explore through which mechanisms reliance on export-led growth moderates workers' wage expectations. One hypothesis is that the effect is linked to the dominant discourse diffused by the media, in line with recent research (Ferrara *et al.* 2021). This would explain why export-led growth has broad support even though only a minority of individuals directly benefit from it. Second, future research should return to the macro analyses of the determinants of wage moderation, and test whether the effect of bargaining institutions on wage moderation at the country level holds when the average wage preferences of workers are controlled for. If bargaining institutions remain a significant predictor controlling for average wage preferences of workers, this would indicate that bargaining institutions affect wage moderation without inducing a change in individual preferences, for example by moderating the bargaining policies of unions. Finally, future research should examine whether there are patterns to workers' wage (dis-)satisfaction, e.g. whether it is broadly distributed in some countries vs. polarised in others, and whether such patterns are related to different growth models.

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Notes

1. In this article, we use ‘wage moderation’, ‘wage restraint’, ‘wage satisfaction’, and their opposites, ‘wage militancy’, and ‘wage dissatisfaction’, interchangeably. We also use ‘wage preferences’ and ‘wage attitudes’ interchangeably.
2. See, in a very long list: Hall and Franzese 1998; Iversen 1999; Kenworthy 2002; Mares 2006. The literature has also discussed at length which type of bargaining structure is ‘optimal’, i.e. associated with lowest inflation and/or unemployment. Calmfors and Driffil (1988) argued that both decentralised and centralised bargaining structures have good macroeconomic performances, while Soskice (1990) argued that decentralised bargaining is inefficient and found a monotonic relationship between bargaining coordination and macroeconomic outcomes.
3. The extent to which public sector unions may accept wage moderation has been found to vary across countries, depending on the existence of the above-mentioned corporatist institutions, the role of fiscal federalism, and the government’s fiscal situation (Di Carlo 2020; Ibsen 2016; Johnston and Regan 2016).
4. The literature on the effects of globalisation on individual-level preferences has studied preferences towards issues such as free trade (Mayda and Rodrik 2005) or social policies (Busemeyer and Garritzmann 2019; Walter 2017). To the best of our knowledge, to date no study has examined how globalisation affects individual preferences towards wages.
5. The countries are Australia, Austria, Belgium (Flanders only), Denmark, Finland, France, Germany, Iceland, Italy, Japan, Korea, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, the United Kingdom, and the United States.
6. We use the 2008 wave of the ESS as the wave closest to the ISSP 2009 wave. For the calculations we include only those twelve countries that are also included in both ISSP waves in 1999 and 2009 (Austria, Belgium, Switzerland, Germany, Denmark, Spain, Finland, France, Norway, Portugal, Sweden, and the United Kingdom).
7. See Mayda and Rodrik (2005) for a similar but less precise approach. Mayda and Rodrik match each occupational category to a specific sector based on information from secondary data. They then assign values of sectoral trade exposure to the corresponding occupations to construct a measure of trade exposure at the occupational level. However, by assigning each occupation to a specific sector, Mayda and Rodrik are unable to consider the probability distribution of occupations across sectors, which likely leads to measurement error.
8. The measure of GDP growth we use is based on current PPP, i.e. expresses cross-country values in a common currency.
9. As a robustness check, we also use the absolute growth contribution of exports (without dividing for total growth). This alternative model leads to very similar findings (Table A.9 in the online appendices). Moreover, results do not change if we divide the absolute growth contribution of import-adjusted exports by a measure of GDP growth based on national currency as opposed to PPP.
10. In additional models, we also controlled for whether a respondent has supervisory responsibilities since this might also affect their wage preferences. These additional models do not alter our main findings. Because the variable on supervisory responsibilities is not available for all countries, we do not include it in the final analysis.

11. The results hold if we add the lower level components of our cross-level interaction terms, occupational trade exposure and union membership, as random slopes (cf. Heisig and Schaeffer 2019), and if we include random intercepts only at the country-year level (Table A.12 in the online appendices).

12. This and the following references to effect sizes are based on average marginal effect estimates of the multilevel logistic regression results.

13. Vice versa, if being female is dropped from the model, part-time work remains significantly negatively related to wage dissatisfaction.

14. If levels and changes in export-led growth are interacted, changes in export-led growth, and their interaction with levels of export-led growth are insignificant, while levels of export-led growth remain clearly significant (Table A.11 in the online appendices).

15. When using the operationalisation of export-led growth based on GDP growth measured in national currency as opposed to PPP, Japan becomes a country outlier with exceptionally high levels of export-led growth. The effect of export-led growth holds in these alternative models, but becomes stronger when Japan is excluded (Table A.9 in the online appendices).

16. The interaction between wage growth and union centralisation is statistically significant in Table A.6, Model 8. However, this result is driven by Austria with its exceptionally high level of union centralisation. If Austria is dropped from the models, the interaction becomes insignificant.

17. However, wage bargaining coordination and export dependence are positively correlated ($r=0.53$, $p=0.02$) and this makes it difficult to disentangle their respective effects on wage (dis-)satisfaction. We also tested the interaction between export-led growth and bargaining coordination and found that it is not statistically significant (Table A.7, Model 4, see online appendices).

Disclosure statement

No potential conflict of interest was reported by the authors.

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