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IZA DP No. 14224

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ISSN: 2365-9793

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ABSTRACT

Trade Shocks, Fertility, and Marital Behavior*

Using longitudinal data from the German Socio-Economic Panel, we analyze the effects of exposure to trade on the fertility and marital behavior of German workers. We find that individuals working in sectors that were more affected by import competition from Eastern Europe and suffered worse labor market outcomes were less likely to have children. In contrast, workers in sectors that benefited from increased exports had better employment prospects and higher fertility. These effects are driven by low-educated and married men, and reflect changes in the likelihood of having any child (extensive margin). While among workers exposed to import competition there is evidence of some fertility postponement, we find a significant reduction of completed fertility. There is instead little evidence of any significant effect on marital behavior.

JEL Classification: F14, F16, J13

Keywords: international trade, labor market outcomes, fertility, marriage

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* This project has received funding from the European Research Council (ERC) under the European Union's Horizon 2020 research and innovation programme (grant agreement n. 694262), project DisCont - Discontinuities in Household and Family Formation. Lorenzo Rotunno acknowledges funding received from the French National Research Agency Grants ANR-17-EURE-0020. We are grateful to participants at the Population Days in Milan and the Alpine Population Conference in La Thuile for comments and suggestions.

1 Introduction

Over recent decades, major concerns about the growing inequality in labor market outcomes (employment opportunities and earnings) have arisen within advanced economies (Autor, 2014). Many studies document how trade with China and other emerging economies have contributed to the rise in earnings inequality in the Western world (see Autor et al. (2016) for a review of the evidence). The decline in marriage and fertility rates in many developed countries has also fostered a voluminous research debate and increasing policy attention (Stevenson and Wolfers, 2007; Kohler et al., 2002). Several studies have analyzed the possible relationship between labor demand shocks and fertility choices. Wilson (1996) and Wilson et al. (1986) highlight the role played by job losses, and in particular by the secular decline of manufacturing in reshaping family structure. More recently, Autor et al. (2019) document how the negative impacts of labor market shocks induced by increasing import competition from China have affected the marriage-market value of men, and in turn marriage and fertility rates in the US. In a different setting, Keller and Utar (2018) find that Danish female workers exposed to fierce Chinese competition in the apparel sector increase fertility, and they marry more than other workers in the same sector. In spite of this recent work, we still know relatively little about how these relationships hold in other developed countries exposed to different population dynamics and different trade-induced labor market shifts. The main goal of this paper is to study how the labor market shocks driven by trade with Eastern Europe and China have affected fertility and marital behaviors in Germany, a country which was until recently in a "lowest-low" fertility setting (Kohler et al., 2002; Billari and Kohler, 2004; Haub, 2012; Anderson and Kohler, 2015).

Greater exposure to international competition can have differential labor market impacts across genders. In general, men are expected to be more affected than women because they are employed in more tradable sectors. This hypothesis is supported by the evidence showing that men suffered larger negative labor market consequences of rising import competition compared to women (Autor et al., 2019). These gender-specific income and labor market effects of trade exposure can in turn alter fertility and marital outcomes (Ananat et al., 2013; Kearney and Wilson, 2017; Schaller, 2016; Shenhav, 2020; Watson and McLanahan, 2011). For instance, consistent with the prediction of neoclassical economic theory, Schaller (2016) shows that improvements in

men's labor market conditions are associated with increases in fertility, whereas improvements in women's labor market conditions have an opposite negative fertility effect (see also Autor et al. (2019); and Gaddis and Pieters (2017)). In their study on Denmark, Keller and Utar (2018) find that increased exposure to competition from Chinese products in the textile sector has deteriorated the labour market outcomes of female workers (relative to men), and raised marriage and fertility rates, thus further corroborating the predictions of the Becker and Lewis (1973) theory. Besides their effects on fertility, neoclassical marriage models predict that as the earning differential between men and women goes down, marriage rates may become less prevalent (Becker and Lewis, 1973; Bertrand et al., 2015, 2016).

Germany provides an interesting case study, since trade flows with Eastern Europe and, to a lesser extent, China have increased dramatically in the 2000s, and previous research has shown that the effects on the labor market outcomes have been different from those observed in the US (Dauth et al., 2014, 2017). Furthermore, over the period under consideration (1994-2018), Germany had one of the lowest total fertility rates in Europe, dipping as low as 1.2, but had stabilized around 1.35 by the late 2000s (Haub, 2012).

In this paper, we investigate how labor demand shocks stemming from rising exposure to trade competition can influence family choices in Germany. We use longitudinal data at the individual level from the German Socio-Economic Panel (SOEP), which allows us to investigate the labor market dynamics underlying the relationship between trade integration and family choices. We focus on variation in exposure to trade between Germany and Eastern Europe, which is quantitatively more important than trade with China. To identify trade effects, we rely on previous works by, e.g., Autor et al. (2019) and Dauth et al. (2014, 2017), who, respectively, use trade flows with other high-income countries as instruments for the trade flows to the US and Germany.

Consistent with previous evidence for Germany (Dauth et al., 2014; Huber and Winkler, 2019), we find that individuals working in sectors that were more exposed to import competition earn less, work less, and are more likely to become unemployed. Greater export opportunities yield instead positive effects on labor market outcomes. On net, the positive effects of export exposure more than offset the negative ones of import competition. The labor market impacts are mostly driven by the rising trade relationship between Germany and Eastern Europe. Consistent with

previous studies, we show that workers in Germany were less exposed to imports from China and thus the effects of imports from China are less pronounced, although qualitatively similar. The import and export effects on labor market outcomes are concentrated among low-educated individuals. This evidence accords well with the prediction of theoretical frameworks where different types of low-skill labor cannot easily move across sectors, and hence are affected by industry-specific import competition and rising export opportunities. In the analysis by gender, we find that the labor market effects are also specific to men, whereas the effects on women are less precisely estimated and quantitatively less important. These patterns are consistent with the evidence for the US from Autor et al. (2019).

Our findings point to significant effects of trade exposure on fertility. Consistent with the evidence on labor market outcomes, the impact varies with exposure to import competition or export opportunities, and with the education level of the individual. While we detect non-significant effects on marital behavior (i.e., marriage, divorce, and cohabitation), exposure to imports with Eastern Europe decreased fertility among low-educated individuals (-31% relative to the average fertility rate in the sample). The effects are concentrated among married individuals (-33%) and among men (-28%). Our findings suggest that exposure to imports led to a 35% reduction on the extensive margin (i.e., the probability of having a child) with respect to the mean outcome. While there is evidence of a fertility postponement, we show that exposure to import competition had a larger and significant negative effect on completed fertility of low-skilled individuals. In contrast, workers employed in sectors that benefited from increased exports towards these markets experienced better labor market outcomes, and were more likely to have children. In particular, our estimates reveal that the average change in exposure to exports during our sample period led to a 23% increase relative to the mean likelihood of having a child among low-educated Germans. The beneficial effects of exports on fertility were again concentrated among married individuals and driven by the increase in the likelihood of having any child (i.e., the extensive margin). The impacts of export exposure on completed fertility were smaller, but still positive and economically meaningful.

Overall, among low-educated workers exposure to trade had a negative effect on fertility, since the negative impact of imports appears to be marginally larger than that of exports (-31% effect of variation in imports exposure against +23% effect of variation in exports).

These findings are robust to a battery of sensitivity checks. We show that sorting across occupation is unlikely to drive our results and that our findings are fairly stable when excluding the years of the Great Recession. We then conduct a falsification test using lagged data for all our outcomes of interest. Reassuringly, we find no evidence of significant effects of current trade exposure, thereby supporting a causal interpretation of our main results. Furthermore, we show that the results are not driven by a single industrial sector, mitigating the concern that sector-specific shocks may confound our estimates.

Our paper speaks to a growing literature on the impact of labor demand shocks on life-course choices (Autor et al., 2019; Keller and Utar, 2018; Black et al., 2013; Ananat et al., 2013; Currie and Schwandt, 2014; Kearney and Wilson, 2017; Schaller, 2016; Lindo, 2010). In particular, our work is closely related to two studies on the labor market effects of exposure to trade using German data, i.e., Dauth et al. (2014) and Huber and Winkler (2019). Dauth et al. (2014) find that the unprecedented rise in trade between Germany and the "East" (Eastern Europe and China) between 1988 and 2008 caused substantial job losses in import-competing industries, whereas regions specialized in export-oriented industries had even stronger employment gains. The authors find that most of these effects are driven by the trade with Eastern European countries. Moreover, using individual-level data, they show that trade overall had a stabilizing effect on employment relationship. Huber and Winkler (2019) examine the role of risk sharing between partners in mitigating the distributional effects of international trade. Their findings suggest that risk sharing substantially reduced the inequality-increasing effect of trade. While our identification strategy is closely related to the one adopted in these previous studies, Keller and Utar (2018) is, to the best of our knowledge, the only study that employs longitudinal data at the individual level to analyze how trade liberalization affected fertility and family choices. They use micro data on Danish firms and workers, and find that worse labor market opportunities due to Chinese import competition within the textile sector led to higher parental leave taking, higher fertility, more marriages and fewer divorces. This pro-family shift is driven by women in their late thirties, and the authors highlight the role of the biological clock in explaining the findings.[1]

[1]Our work relates to two other papers that investigate the relationship between trade and fertility choices at a more aggregate level. Bignon and Garcia-Penalosa (2018) find that fertility increased in French regions more exposed to protectionism in the agricultural sector during the 19th century. While the direction of their results is consistent with ours, their mechanism is different and based on the quantity-quality trade-off (Galor and Weil, 2000): trade protection in the agricultural sector weakened incentives to invest in education (quality), and hence led to have more

Our analysis and results complement these recent papers, by providing evidence from a low-fertility setting where the labor market effects of trade shocks have been shown to be very different compared to those observed in the US or in other advanced economies. Overall, we find that exposure to trade had a negative (albeit small) effect on fertility, as the negative impact of import competition more than offsets the positive contribution of greater export opportunities. Our results on the import effects are different from those obtained by Keller and Utar (2018) in Denmark, who, however, exploit specific policy changes within the textile sector. The different findings might also be related to differences in the presence of family-oriented policies, parental leaves and subsidies for childcare between Germany and Denmark during the period under investigation (Seeleib-Kaiser and Toivonen, 2011; Ziefle and Gangl, 2014; Apps and Rees, 2004). We also find no evidence of significant effects on marriage behavior. This result contrasts with Autor et al. (2019), who find negative effects of trade exposure on marriage rates, but is consistent with what found by Kearney and Wilson (2017). We instead find a decreasing effect on cohabitation. These differences are likely to be explained by social norms prevalent in a context like Germany characterized by relatively low marriage rates (Adler, 1997).

Our results inform the public debate on fertility rates in "lowest-low -fertility" settings such as Germany during the period under investigation (Kohler et al., 2002). The effects of negative labour demand shocks on fertility behavior should not be neglected. Policies tackling the demographic deficit by extending parental leave or increasing child allowances may mitigate the adverse demographic impact of labor demand shocks.

The remainder of this paper is structured as follows. Section 2 provides the theoretical and empirical background and the main hypotheses of this study. Section 3 describes the empirical strategy. We present the data in Section 4. In Section 5, we report our main results, and provide a set of robustness checks. Concluding remarks are in Section 6.

children (quantity). Do et al. (2016) show that countries with a comparative advantage in female-intensive sectors (and hence a higher female-to-male wage ratio, which raises the opportunity costs of having children) exhibit lower fertility rates.

2 Theoretical Framework

Labor demand shifts (e.g., due to exposure to trade shocks) can influence fertility choices through changes in income and in the opportunity costs of having children. Neoclassical models of fertility suggest that since children are not easily substitutable, changes in income or economic opportunities will mostly result in income effects on fertility decisions. The prediction is that as family income rises, fertility should increase (see Becker (1960); and Doepke (2015) for a recent review). However, the trade-off in parents' preferences over quantity and quality of children (as proxied by investments in each child at a given price) may weaken the relationship between income and fertility. Furthermore, previous studies show that improved economic opportunities may have different effects by gender. Given the monetary and time costs associated with fertility, labor market improvements may also lead to a fertility decline as the opportunity cost of having children increases. Women may be more responsive than men to changes in these opportunity costs because of the traditional division of chores within the household. As this brief discussion suggests, negative labor demand shocks may have a negative or a positive impact on fertility, depending on the strength of income and substitution effects.

The impact on fertility of greater exposure to international trade, going through labour demand, is thus also uncertain and is ultimately an empirical question. Furthermore, the fertility elasticity with respect to demand shock may be very different in low-fertility settings (Kohler et al., 2002), where the desired fertility is likely to be below the realized fertility.

In a similar vein, it is not clear how trade integration should alter marriage decisions. Worse economic opportunities for men may lower their value on the marriage market, and hence can have a negative impact on marriage rates (Autor et al., 2019). At the same time, declined opportunities for women could result in lower opportunity costs of family life and induce women specialization in household activities within more traditional societies. However, recent research suggests that in more modern societies family formation may be less sensitive to economic conditions, since the share of women specializing in domestic activities is decreasing and more responsive to social norms (Kearney and Wilson, 2017). Again, the effects of trade on marriage may be very different in a country like Germany, where the importance of marriage has been declining over the last decades, particularly in East Germany (Klärner, 2015).

The effects of trade-induced labor market shocks on fertility choices and marital status can differ substantially across gender and education. Men are expected to be more affected than women because they are employed in more tradable sectors. This hypothesis is supported by the evidence showing that men suffered larger negative consequences of labor demand shocks (rising import competition and automation) compared to women (Autor et al., 2019; Kearney and Wilson, 2017; Anelli et al., 2019). These changes in the relative market opportunities of men and women may have implications for fertility decisions (Ananat et al., 2013; Kearney and Wilson, 2017; Schaller, 2016; Shenhav, 2020). For instance, consistent with the prediction of neoclassical economic theory, Schaller (2016) shows that improvements in men's labor market conditions are associated with increases in fertility, whereas improvements in women's labor market conditions have an opposite negative fertility effect (see also Autor et al. (2019); and Gaddis and Pieters (2017)). As for marriage, neoclassical marriage models predict that as the earning differential between men and women goes down, marriage rates may become less prevalent (Becker and Lewis, 1973; Bertrand et al., 2015, 2016). In their study on Denmark, Keller and Utar (2018) find that increased exposure to competition from Chinese products in the textile sector has deteriorated the labour market outcomes of female workers (relative to men), and raised marriage and fertility rates, thus corroborating further the predictions of the Becker and Lewis (1973) theory. What the literature suggests is that the labor market consequences of trade exposure should be greater for men (Autor et al., 2019). Assuming that children are normal goods, fertility should move with the income effects, and the likelihood of being in a stable relationship (marriage or cohabitation) may go down. However, marriage patterns have been shown to be importantly shaped by context and social norms (Kearney and Wilson, 2017; Bertrand et al., 2016).

Furthermore, the labor market effects of exposure to international trade are likely to vary with the skill level of workers, as suggested by both factor proportions (Heckscher-Ohlin and specific factors) and firm-level theories of trade (Adao et al., 2020; Kim and Vogel, 2020; Helpman, 2017; Wood, 2018). If low-skilled workers are more 'specific' to an industry than high-skilled workers (e.g., because of less general knowledge or human capital that could be used in different sectors), they should be more affected by industry-specific trade shocks. We thus expect significant heterogeneity by education in the impacts of trade on demographic outcomes through the labor market, with the low-skilled workers being more affected by trade shocks than the high-skilled

ones.

3 Empirical Strategy

Our estimation strategy follows Autor et al. (2014) as well as Dauth et al. (2014) and Autor et al. (2019). Akin to Huber and Winkler (2019), we examine the effect of exposure to trade with China and Eastern Europe exploiting the longitudinal nature of the data. Specifically, we estimate the following equation:

$$Y_{ijst} = \beta_1 IM_{jt-1} + \beta_2 EX_{jt-1} + \alpha X_{ijst} + \gamma_i + \delta_{st} + \theta_k + \epsilon_{ijst} \tag{1}$$

where Y_{ijst} denotes the individual outcome of interest (labor market outcomes: earnings, hours worked, unemployment; and family choices: fertility behavior, marriage, divorce, and cohabitation) for individual i, working in a NACE 2-digit industry j, and residing in federal state s at the year of interview t. For the two continuous labor market outcomes (labour income and hours worked), the variable takes the value at year t relative to the one in the base year – i.e., the first year of observation for each individual.[2]

Our two main explanatory variables, IM_{jt-1} and EX_{jt-1}, measure trade exposure to the "East" (i.e., China and Eastern Europe) at the industry level. They equal the value of imports (IM) and exports (EX) normalized by the total wage bill in the industry in the first year the individual enters the sample. The trade values are one-year lagged in the family outcomes regressions, in order to account for the additional time individuals may need to adjust their life-course choices in response to trade-induced income shocks – this is clearly necessary for fertility outcomes such as birth of a child at year t whose pregnancy started in $t-1$. The trade variables are instead contemporaneous (i.e., at time t) when labor market indicators are used as the dependent variables, since these measure the outcome during the year – e.g., earnings during the year.

For both imports (IM) and exports (EX), we sum the value of "direct" trade flows (i.e., those in the (manufacturing) industry j) to that of "indirect" trade flows through input-output linkages

[2] As highlighted by Huber and Winkler (2019), this approach is an alternative to the standard practice of taking logs and permits to keep in the estimation sample individuals whose reported labor income or hours worked is zero in year t.

to downstream buyers and upstream sellers.[3] Adding indirect exposure through input-output linkages allows us to include individuals employed in service industries, whose exposure is only indirect through their sales to and purchases from manufacturing industries, because we do not have data on services trade flows in our sample period. Direct and indirect trade flows in the industry are divided by total compensation of employees to normalize by industry size. The denominator is kept fixed at the base year (i.e., the first year the individual is observed in the sample) to rule out any composition effects (i.e., changes in the relative factor demand at the industry level), which could clearly be influenced by trade exposure.

The coefficients of interest are β_1 and β_2, which capture, respectively, the effects of import and export exposure. We focus on Eastern Europe and China as key trading partners because, as already found in previous works by Dauth et al. (2014), Autor et al. (2019) and Huber and Winkler (2019), the rapid increase in trade with those countries (especially with Eastern Europe) has led to important changes in German labor demand in the past decades, which might have implications for family choices.

In our analysis, we will also estimate Equation (1) by education level (college degree or higher vs. high school diploma at most) and by gender, as the discussion of the possible theoretical mechanisms points to the importance of these two dimensions of heterogeneity.

The term X_{ijst} collects a set of control variables, including age and age squared, household size, and in the regressions on the full sample, dummies for the individual's education. All our estimates include individual fixed effects in the γ_i term, which absorbs the influence of any unobserved time-invariant individual heterogeneity. The individual fixed effects net out important confounding factors that could bias our estimates. For example, individuals might sort themselves into industries of different levels of trade exposure on the basis of some pre-determined characteristics, which can at the same time affect their family choices. Workers' dummies control for such an influence in our regression analysis. Because of these fixed effects, the identifying variation for our coefficients of interest comes from changes in industry import and export exposure over time within the same industry (if the individual does not switch industry of em-

[3]Each type of indirect exposure (downstream and upstream in the supply chain) is a weighted sum of trade flows in all other (manufacturing) industries, with weights equal to the share of industry j's output used as inputs in a purchasing industry – downstream exposure – and of industry j's input bought from a selling industry – upstream exposure (Acemoglu et al., 2016).

ployment) and between industry (if the individual changes industry).

Furthermore, we add controls for time-specific shocks at the state level, δ_{st}, to account for the fact that regions specialized in different industries may be subject to different time-varying shocks. In Model (1), we also include 1-digit industry fixed effects, θ_k, thereby exploiting only variation in trade exposure among individuals working in the same 1-digit industry. Finally, ϵ_{ijst} represents an idiosyncratic error term. Throughout the analysis, we cluster standard errors at the 2-digit industry-year (jt) level. A linear estimator is employed for all regressions, even if the outcome variable is binary in most models. This choice accommodates the large dimensionality of the fixed effects used in the specifications.

Industry-level, time-varying demand and productivity shocks may be correlated both with trade exposure and individual outcomes. Thus, even though our specification accounts for time-invariant unobserved heterogeneity through the individual fixed effects, our model may still suffer from endogeneity bias. To alleviate this concern, we adopt the instrumental variable (IV) approach proposed by David et al. (2013) and Autor et al. (2014). In particular, we follow closely Dauth et al. (2014) and Huber and Winkler (2019), who adapt this IV strategy to the German context. We instrument trade flows with Germany with the trade with a group of other countries (i.e., Australia, Canada, Japan, Norway, New Zealand, Sweden, Singapore, and the United Kingdom). For import exposure, the objective is to isolate supply-driven changes in exports from China and Eastern Europe. The instrument is thus the (direct and indirect) exports of China and Eastern Europe to the group of other countries, normalized by the industry wage bill in the base period.[4] Therefore, the underlying identification assumption is that demand shocks in the group of other developed countries are largely uncorrelated with demand shocks in Germany – the β_1 coefficient would rely on variation in the supply-side component of exports from the "East". For export exposure, we aim to net out the German supply part from the total variation in German exports to the East. Exports from the group of other developed countries to China and Eastern Europe are thus a valid instruments under the assumption that supply influences in those origin countries are orthogonal to the German supply.

[4]In computing indirect trade flows, we always use the national input-output matrix for Germany.

4 Data

In our empirical analysis, we employ data from two main sources: the German Socio-Economic Panel (SOEP) and the United Nations Commodity Trade Statistics Database (Comtrade).

4.1 SOEP data

We use data from the SOEP, a representative longitudinal dataset which surveys households and individuals in Germany since 1984. The SOEP consists of several subsamples and is constructed to ensure the representativeness of the entire population in Germany. A detailed description of the survey can be found in Wagner et al. (2007) and Goebel et al. (2019). A unique feature of this data source lies in its wide range of information at the individual and household level, including, for instance, socio-demographic characteristics, labor market outcomes, and health-related measures.

Of particular importance for our study is the fact that the SOEP data collect information on household structure, marital status, and fertility histories. We use this information to create our main demographic outcomes of interest, namely, a dummy for having a child in a given year, and indicators for the marital status of the individual: being married, divorced or a cohabiting individuals at time t. Furthermore, our dataset contains information on individuals' labor market behavior, such as their income and employment. Given that we expect trade exposure to affect labor market outcomes, these variables permit us to investigate the potential mechanisms through which trade exposure affects fertility and marital behavior. We use three main labour market indicators: earnings, hours worked and employment status. In order to consider also transitions in and out of employment – which might be affected by trade shocks –, labour earnings equal the sum of wages and unemployment benefits, deflated by the Consumer Price Index (Huber and Winkler, 2019).[5] Both annual labor earnings and hours worked refer to the year before the time of the survey, whereas the third variable, an unemployment dummy, is measured at the time of the survey.[6] Finally, the SOEP provides precise information on the sector in which the worker is

[5]We sum individual and household-level unemployment benefits. The latter are divided by household size. Data on the German CPI are drawn from the World Development Indicators database.

[6]We purposefully consider unemployment status rather than transitions to and from unemployment only (e.g., to identify transitions into unemployment, we should use an indicator for the first year of an unemployment spell), in order to identify how exposure to trade can affect also the persistency of unemployment.

employed based on the NACE 2-digit classification. In our sample, we have data for 56 industrial sectors. Figures A.1 and A.2 in the Appendix show, respectively, the average yearly value of total (direct and indirect) imports from and exports to Eastern Europe and China by sector. There is large heterogeneity, with the manufacturing sectors being clearly more exposed than services. For unemployed individuals, we assign the industry of their previous employment, as in Huber and Winkler (2019) and Dauth et al. (2014).[7]

Our working sample is constructed as follows. We consider the survey years 1994-2018 – after Germany's reunification and up to the latest available year of data. We keep only individuals aged 17-45 during the years in which outcomes were measured, because this is the age interval mostly relevant to fertility (at least for women).[8] Given our focus on labor market channels, we apply additional data restrictions as in Huber and Winkler (2019). We drop the self-employed, retired, civil servants and students at the time of the survey, as well as outliers in the labor market variables, defined as the person-year observations where earnings or hours worked are more than 50 times their respective values in the base year. After these restrictions, we obtain a final longitudinal sample that contains around 100,000 person-year observations resulting from 18,000 individuals – the exact size of the sample depending on the outcome variable used in the regression model. Table A.1 in the Appendix displays the descriptive statistics on the main variables used in the regressions. Approximately, 4% of individuals in the sample report a birth in a given year (5.2% marital fertility and 2.3% nonmarital fertility). The proportion of married and divorced people is 56% and 6%, respectively. Approximately, 26% of individuals are cohabiting. About 25% of individuals have a college degree, which identifies the high-skilled workers in our heterogeneity analysis by education. As for the labor market variables, in a given year an individual reports on average a real income twice as large as the one in the year she entered the sample. A similar average proportion is observed for the number of hours worked. The average probability of being unemployed in a given year is 6%.

[7]This imputation implies that an individual is missing from our sample if she enters the SOEP panel as unemployed and as long as she remains so.

[8]In a sensitivity analysis, we show that our estimates are qualitatively similar when we consider individuals aged 17 to 40 or 17 to 50 at the time of the interview.

4.2 Trade and other data

Data on international trade flows are drawn from the Comtrade database. These include detailed information on commodity trade from more than 170 countries. Using the correspondence between the SITC rev.3 product codes and NACE codes provided by the UN Statistics Division, we harmonize industry and product classification to match these data with the NACE 2-digit industry information available in the SOEP data. Trade flows for non-service industries are converted in current euros and then combined with the German input-output table for the year 1995 in order to compute indirect trade flows for each industry (see Section 3).[9]

Consistent with the literature on the labor market consequences of trade in Germany (e.g., Dauth et al. (2014, 2017)), we consider two sets of trading partners: Eastern Europe and China. Figure 1 plots the evolution of total German exports to and imports from these two groups of countries over the entire period under investigation. Germany's trade with these trading partners has increased substantially starting from the early 2000s. The role of imports and exports with Eastern Europe has been consistently more important than that of trade with China. As shown by Dauth et al. (2014), this difference in quantitative importance is also reflected in its labor market effects – trade with Eastern Europe has been found to have a more robust impact than trade with China. We thus follow this existing evidence and focus on imports to and exports from Eastern Europe in our baseline regression analysis, and discuss the effects (indeed less important) of trade with China.

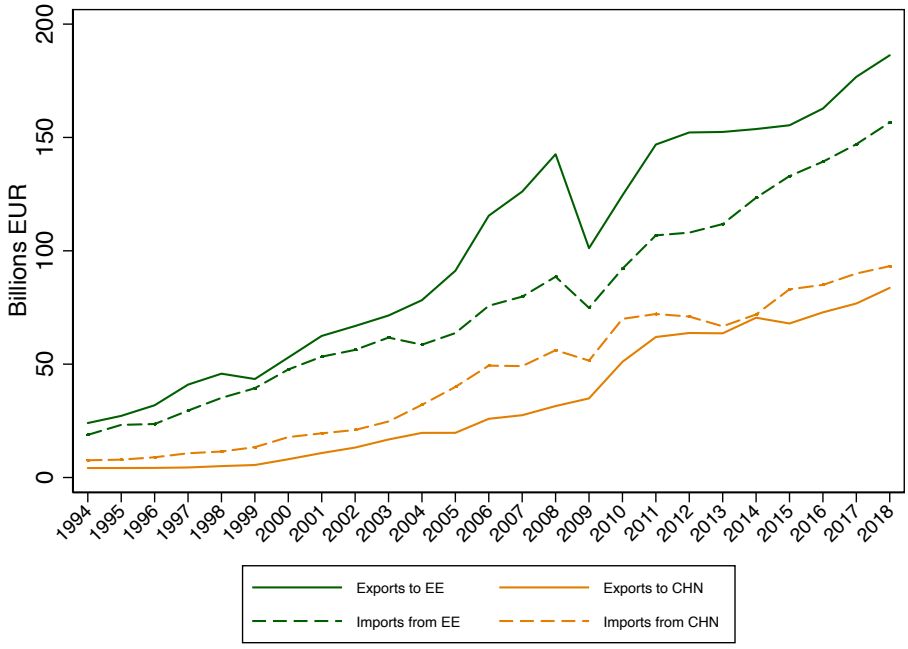
In the export and import variables used in the empirical analysis (see Equation (1)), industry-level trade flows are normalized by the industry wage bill in the base period. Data on total compensation of employees by industry are sourced from the Eurostat.[10,11]

[9] We source the national input-output table for Germany from the World Input-Output Table database. We choose the earliest available year of data, i.e., 1995.

[10] The industry classification used in the wage bill data is NACE rev. 2. We convert it to NACE rev. 1 (the classification used in SOEP and in Comtrade), and allocate NACE rev. 2 industries that span multiple NACE rev. 1 industries using trade shares.

[11] To make sure that our results are not influenced by outliers, we drop the top 1% of the trade regressors. These are implausibly large values that occur mainly in the last year of the sample (i.e., 2018). Adding these outliers only scales down the point estimates without altering much their statistical significance and the associated magnitudes.

Figure 1: Trade between Germany and Eastern Europe and China



Notes - Trade values are in billions of current euros. The trade variables equal the sum of the direct and indirect (through input-output linkages) components.

5 Results

In this section, we present our main results. First, we analyze the effects of trade exposure on labor market outcomes, including wages, worked hours and employment. We then estimate the effects of trade on demographic outcomes, such as fertility, marriage, divorce and cohabitation. Finally, we provide a set of robustness checks.

5.1 Effects of Trade Exposure on Labor Market Behavior

We first re-examine the impact of trade exposure on the labor market outcomes of German workers in our sample period (1994 - 2018 – Huber and Winkler (2019) perform a similar analysis for the years up to 2008). As described in Section 3, in each regression we include a set of individual-level controls, worker fixed effects, time-specific shocks at the state level, and 1-digit industry fixed effects.

Table 1 reports the 2SLS estimates of the effects of trade exposure on income (see Panel A),

Table 1: Effects of Trade Exposure on Labor Market Outcomes, by Education and Gender - 2SLS Estimates

	(1) Pooled	(2) Low-educated	(3) High-educated	(4) Males	(5) Females
Panel A: Income					
Import exposure	-0.412**	-0.549***	-0.188	-0.603**	-0.099
(Eastern Europe)	(0.204)	(0.201)	(0.367)	(0.241)	(0.309)
Export exposure	0.443***	0.521***	0.309	0.564***	0.179
(Eastern Europe)	(0.159)	(0.151)	(0.299)	(0.188)	(0.224)
Observations	82,271	61,576	20,515	45,031	37,240
Mean of dep. var.	2.210	2.154	2.374	2.163	2.267
Std. dev. of dep. var.	3.597	3.451	3.978	3.641	3.541
First stage F-statistic Import	67.07	77.42	37.92	49.97	106.8
First stage F-statistic Export	107	110	54.86	76.62	134.4
Panel B: Hours Worked					
Import exposure	-0.278**	-0.139	-0.048	-0.294*	-0.032
(Eastern Europe)	(0.135)	(0.117)	(0.316)	(0.153)	(0.249)
Export exposure	0.206**	0.116	0.048	0.214**	0.084
(Eastern Europe)	(0.095)	(0.083)	(0.208)	(0.106)	(0.173)
Observations	99,001	72,072	26,549	51,500	47,501
Mean of dep. var.	1.909	1.772	2.258	1.719	2.115
Std. dev. of dep. var.	2.980	2.599	3.768	2.663	3.277
First stage F-statistic Import	63.06	69.27	41.63	47.94	106
First stage F-statistic Export	102.8	107.3	58.69	73.41	129.9
Panel C: Unemployment					
Import exposure	0.038**	0.046**	0.008	0.028	0.064**
(Eastern Europe)	(0.016)	(0.020)	(0.016)	(0.019)	(0.026)
Export exposure	-0.030***	-0.036***	-0.008	-0.029**	-0.035**
(Eastern Europe)	(0.010)	(0.014)	(0.012)	(0.013)	(0.017)
Observations	143,610	107,488	35,563	73,263	70,347
Mean of dep. var.	0.0489	0.0579	0.0224	0.0514	0.0463
Std. dev. of dep. var.	0.216	0.234	0.148	0.221	0.210
First stage F-statistic Import	63.76	68.75	44.19	51.52	114.6
First stage F-statistic Export	80.80	85.10	55.24	66.75	107.4

Notes - Standard errors are reported in parentheses and are clustered at the 2-digit industry and year level. All models include individual, year $\times$ federal state, and 1-digit industry fixed effects. Further controls include age and its quadratic term, indicators for education, and household size. * Significant at 10%; ** significant at 5%; *** significant at 1%.

hours worked (see Panel B), and unemployment (see Panel C) for the full sample as well as separated by education group and by gender. As mentioned in Section 2 and in light of the previous evidence, we expect low-skilled workers to be more affected by trade exposure.

We find that individuals working in sectors that are more exposed to imports with Eastern Europe are more likely to report less income, lower hours worked and a higher probability of being unemployed. We instead find an opposite pattern in sectors that benefited from more export opportunities – higher income, more hours worked and a lower likelihood of being unemployed.

To gauge the quantitative relevance of our estimated effects, we follow Huber and Winkler (2019), and use our point estimates to simulate the average change in real income and hours worked that would arise if individuals where exposed to the mean variation in the trade exposure variables between 1994 and 2018.[12] The estimates using the pooled sample in column 1 of Panel A imply that rising import exposure to Eastern Europe is responsible for a loss of 88 euros per year, whereas rising export exposure adds 113 euros per year. The net positive income effect of trade exposure on German workers is in line with the results of Huber and Winkler (2019) obtained on different demographics group (e.g., they include individuals up to 65 years of age) and period (1994 - 2008, whereas we extend to sample up to 2018). The effects on hours worked reported in Panel B are quantitatively less important than those on income, and on net they are equal to zero – variation in imports accounts for 4 hours less, which are added back by increasing exports. Being exposed to more imports from Eastern Europe also raises the likelihood of being unemployed in a given year by an amount equivalent to 18% of the average unemployment probability (see Panel C). As already seen for the number of hours worked, this negative effect is offset by the positive one of greater export opportunities. These results suggesting that trade exposure has affected mostly the income and job stability of German workers accord well with the evidence on the wage premium by exporting firms (Egger et al., 2013), and on job stabilizing effect of exposure to trade in Germany (Dauth et al., 2014).

The labor market effects are most visible for low-educated workers (i.e., those without a college degree). For these individuals, import competition leads to a simulated loss of 103 euros per year, whereas export exposure increases income by 118 euros per year (see column (2) of

[12]We take the average of simulated changes across individuals. Individual variation comes from the income and hours worked in the base period.

Panel A). The effects are instead smaller and statistically indistinguishable from zero among the high-skilled workers (see column 3). The effect on hours worked (i.e, the intensive margin) is smaller and less precisely estimated, whereas the effect on unemployment rates of low-skilled workers (i.e., the extensive margin) is similar to the one obtained in the full sample.

In columns 4 and 5 of Table 1, we explore the heterogeneity of trade exposure by gender (see also Table A.2). Overall, we find that men experienced the largest effects on income and hours worked – they drive the effects obtained in the full sample. Among men, rising import competition in our sample accounts for 156 euros less per year. These losses are more than compensated by the gains due to rising export opportunities: 175 euros per year. Considering unemployment, we find instead that the effects are more pronounced for women. The weaker overall impact of trade shocks on labor market outcomes of women relative to those of men might be related to the lower level of exposure of women to trade. Female workers comprise only 24% (25%) of the employed population in the sectors that were most exposed (i.e., upper quartile) to imports (exports).[13]

We focused on trade flows with Eastern Europe, since previous research documented that the impact on the German labor market of trade exposure with Eastern Europe was significantly larger than the opening to trade with China (Dauth et al., 2014, 2017). In the Appendix, we present the main results analyzing the effects of opening of trade with China, as well as investigate the overall effects of trade with both Eastern Europe and China (see, respectively, Tables A.23 and A.26 in the Appendix). The results tend in the same direction, but the implied effects become smaller and less precisely estimated than the ones of trade with Eastern Europe. For instance, we detect that the average increase in import exposure from China (0.06) is responsible for an annual loss in real income of 11 euros, which is much less relevant than the annual gain of 83 euros due to exposure to exports. These effects are concentrated among low-skilled individuals and among men. In general, we find that the effects on the export side are more important than the ones on the import side when we look at trade with China.

In sum, these results confirm the previous evidence by Dauth et al. (2014) and Huber and Winkler (2019), who show that the gains from trade were unevenly distributed among work-

[13]The first stage F-statistics reported at the bottom of each Panel of Table 1 show that our instruments are well above conventional thresholds for strong instruments. We report the corresponding OLS estimates in Table A.20 in the Appendix.

ers, producing winners and losers, since workers – low-skilled workers and men in particular – employed in import competing industries suffered from lower wages, fewer hours worked, and a higher risk of unemployment, whereas those employed in export-oriented industries experienced better labor market outcomes. Consistent with the existing literature, we also find that the beneficial effects of export exposure more than offset the negative ones of import competition.

5.2 Effects on Fertility and Marital Behavior

Table 2 displays the 2SLS estimates of the effects of trade exposure on fertility outcomes by education group and by gender. Consistent with what observed for the labor market outcomes (see Table 1), we find heterogeneous impacts between import and export exposure with Eastern Europe.[14]

Analyzing the effects of imports and exports from Eastern Europe, we find that individuals working in import competing sectors were less likely to have children, whereas workers in export intensive sectors were more likely to have children. While these effects are not precisely estimated in the full sample, coefficients become larger and statistically significant among the low-educated workers (see column 2). Specifically, we find that exposure to imports led to a 32% lower likelihood of having a new child in a given year (relative to the average likelihood of having children in the sample), while workers in export-oriented sector were 23% more likely to report a new child. The negative effect of import penetration is larger when focusing on marital fertility (-42%, see Panel B), whereas the exposure to exports increased the likelihood of a new child by 28%. We instead detect no evidence of effects on nonmarital fertility, a result consistent with the study by Autor et al. (2019) in the US (see Panel C). When we split the sample by gender in column (4) and (5), there is no significant difference in fertility outcomes between males and females (see also Table A.3 in the Appendix). These effects are consistent with the Becker's model where children are "normal goods", and confirm the evidence from previous studies analyzing the effects of income shocks on fertility (Lindo, 2010; Dettling and Kearney, 2014; Lovenheim and Mumford, 2013; Black et al., 2013).

Interestingly, as shown in Table 3, these results are driven by the effects on the likelihood of having any child (i.e., extensive margin, see Panel A), while the effects are less precisely estimated

[14]The corresponding OLS estimates are presented in Table A.21 in the Appendix.

Table 2: Effects of Trade Exposure on Fertility, by Education and Gender - 2SLS Estimates

	(1) Pooled	(2) Low-educated	(3) High-educated	(4) Males	(5) Females
Panel A: Overall Fertility					
Import exposure	-0.023	-0.049**	0.037	-0.024	-0.003
(Eastern Europe)	(0.023)	(0.023)	(0.064)	(0.031)	(0.030)
Export exposure	0.015	0.030*	-0.013	0.013	0.011
(Eastern Europe)	(0.017)	(0.016)	(0.043)	(0.023)	(0.021)
Observations	104,531	77,474	26,695	53,691	50,840
Mean of dep. var.	0.0394	0.0358	0.0502	0.0496	0.0287
Std. dev. of dep. var.	0.195	0.186	0.218	0.217	0.167
First stage F-statistic Import	62.12	67.18	40.17	46.96	111
First stage F-statistic Export	103.6	106.4	58.35	73.16	141.3
Panel B: Marital Fertility					
Import exposure	-0.044	-0.071**	0.038	-0.031	-0.040
(Eastern Europe)	(0.037)	(0.036)	(0.100)	(0.049)	(0.051)
Export exposure	0.028	0.047*	-0.030	0.019	0.039
(Eastern Europe)	(0.026)	(0.027)	(0.068)	(0.035)	(0.034)
Observations	57,889	40,917	16,874	30,870	27,016
Mean of dep. var.	0.0510	0.0459	0.0631	0.0676	0.0320
Std. dev. of dep. var.	0.220	0.209	0.243	0.251	0.176
First stage F-statistic Import	71.19	80.60	38.67	50.84	105
First stage F-statistic Export	104.8	109.9	52.51	72.20	124.5
Panel C: Nonmarital Fertility					
Import exposure	-0.0125	-0.029	0.058	-0.034	0.019
(Eastern Europe)	(0.022)	(0.022)	(0.068)	(0.029)	(0.030)
Export exposure	0.0137	0.018	-0.003	0.027	-0.004
(Eastern Europe)	(0.016)	(0.016)	(0.046)	(0.021)	(0.023)
Observations	44,706	35,074	9,327	21,904	22,802

Notes - Standard errors are reported in parentheses and are clustered at the 2-digit industry and year level. All models include individual, year × federal state, and 1-digit industry fixed effects. Further controls include age and its quadratic term, indicators for education, and household size. * Significant at 10%; ** significant at 5%; *** significant at 1%.

when we consider the likelihood of having more than one child (i.e., intensive margin, see Panel B). Specifically, when focusing on the likelihood of having the first child, we find that the average increase in imports would reduce fertility by approximately 33% in the overall population, and approximately 60% among the less skilled workers. Again, this result is driven by the decline in marital fertility (-51%). In contrast, exposure to exports led to an increase in the likelihood of having a first child. The average increase in exposure to exports led to a 31% increase in fertility, again an effect larger among low-skilled workers (+48%). We report the analysis by gender in Tables A.4 and A.5 in the Appendix.

Table 3: Effects of Trade Exposure on First Child vs. Higher-order Children, by Education - 2SLS Estimates

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Pooled	Low-educated	High-educated	Pooled	Low-educated	High-educated	Pooled	Low-educated	High-educated
	Overall fertility			Marital fertility			Nonmarital fertility		
Panel A: First Child									
Import exposure	-0.043**	-0.064***	0.006	-0.107**	-0.147***	-0.050	7.52e-05	-0.016	0.088
(Eastern Europe)	(0.021)	(0.021)	(0.048)	(0.043)	(0.049)	(0.089)	(0.019)	(0.019)	(0.058)
Export exposure	0.032**	0.044***	0.006	0.072**	0.105***	0.018	0.00521	0.008	-0.025
(Eastern Europe)	(0.015)	(0.015)	(0.033)	(0.032)	(0.036)	(0.067)	(0.013)	(0.014)	(0.036)
Observations	62,567	47,199	15,036	21,587	15,305	6,189	39,608	30,900	8,409
Mean of dep. var.	0.0282	0.0247	0.0394	0.0445	0.0376	0.0619	0.0170	0.0161	0.0203
Std. dev. of dep. var.	0.166	0.155	0.195	0.206	0.190	0.241	0.129	0.126	0.141
First stage F-statistic Import	57.98	51.52	46.20	57.21	42.15	47.78	46.51	42.46	24.75
First stage F-statistic Export	95.11	77.43	62.79	77.52	59.70	47.96	72.71	62.91	39.61
Panel B: Second or more									
Import exposure	-0.053	-0.073	0.068	-0.058	-0.080*	0.053	-0.189	-0.240	-0.136
(Eastern Europe)	(0.047)	(0.047)	(0.138)	(0.048)	(0.046)	(0.153)	(0.145)	(0.182)	(0.365)
Export exposure	0.025	0.038	-0.049	0.029	0.044	-0.049	0.132	0.171	0.083
(Eastern Europe)	(0.034)	(0.036)	(0.094)	(0.035)	(0.036)	(0.105)	(0.112)	(0.139)	(0.252)
Observations	41,336	29,835	11,434	35,733	25,231	10,436	4,914	4,018	820
Mean of dep. var.	0.0514	0.0484	0.0580	0.0497	0.0460	0.0573	0.0501	0.0495	0.0488
Std. dev. of dep. var.	0.221	0.215	0.234	0.217	0.210	0.232	0.218	0.217	0.216
First stage F-statistic Import	53.04	81.83	14.97	63.38	88.22	21.29	6.987	12.27	3.445
First stage F-statistic Export	78.16	103.5	24.94	88.66	105.9	31.53	11.68	14.13	10.92

Notes - Standard errors are reported in parentheses and are clustered at the 2-digit industry and year level. All models include individual, year $\times$ federal state, and 1-digit industry fixed effects. Further controls include age and its quadratic term, indicators for education, and household size. * Significant at 10%; ** significant at 5%; *** significant at 1%.

Table 4 shows that these results hold –albeit less precisely estimated– when focusing on the completed fertility by restricting the sample to individuals born before 1974, i.e., individuals at least 45 years old before the end of our study period.[15] Among the low-educated, we find that

[15]In our sample, 95% of men who had a child did so before the age of 44. Among women, 95% of those who had a child were younger than 42 years old.

the average increase in imports throughout the period analyzed reduced fertility by 47% among workers in exposed sectors, whereas exposure to exports led to a 45% increase in fertility. Again, effects are larger and more precisely estimated when focusing on marital fertility (see column 5) and on the extensive margin (see Panel A). Overall, the effects on completed fertility are similar by gender (see Tables A.6 and A.7 in the Appendix).

Table 4: Effects of Trade Exposure on First Child vs. Higher-order Children, by Education – Individuals born before 1974 - 2SLS Estimates

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Pooled	Low-educated	High-educated	Pooled	Low-educated	High-educated	Pooled	Low-educated	High-educated
	Overall fertility			Marital fertility			Nonmarital fertility		
Panel A: First Child									
Import exposure	-0.030	-0.040**	0.013	-0.026	-0.052*	0.014	-0.0262	-0.024	0.050
(Eastern Europe)	(0.018)	(0.017)	(0.056)	(0.027)	(0.028)	(0.081)	(0.020)	(0.016)	(0.057)
Export exposure	0.024*	0.027**	0.009	0.025	0.041**	-0.006	0.0233	0.010	0.007
(Eastern Europe)	(0.012)	(0.011)	(0.035)	(0.018)	(0.019)	(0.050)	(0.015)	(0.010)	(0.039)
Observations	41,386	29,343	11,946	21,311	15,058	6,202	19,326	13,684	5,547
Mean of dep. var.	0.0187	0.0165	0.0243	0.0230	0.0194	0.0318	0.0121	0.0114	0.0137
Std. dev. of dep. var.	0.135	0.127	0.154	0.150	0.138	0.175	0.109	0.106	0.116
First stage F-statistic Import	81.21	64.48	64.10	68.49	53.25	36.36	69.25	51.07	72.87
First stage F-statistic Export	97.49	74.78	64.92	73.62	59.67	47.78	85.36	54.41	69.92
Panel B: Second or more									
Import exposure	-0.029	-0.052	0.051	-0.030	-0.057*	0.057	-0.0891	-0.116	-0.207
(Eastern Europe)	(0.028)	(0.032)	(0.056)	(0.028)	(0.034)	(0.052)	(0.095)	(0.095)	(0.248)
Export exposure	0.014	0.031	-0.037	0.012	0.031	-0.045	0.0857	0.103	0.150
(Eastern Europe)	(0.019)	(0.022)	(0.039)	(0.019)	(0.024)	(0.037)	(0.066)	(0.065)	(0.155)
Observations	46,579	32,530	14,001	40,186	27,573	12,566	5,811	4,461	1,264
Mean of dep. var.	0.0248	0.0231	0.0281	0.0251	0.0233	0.0283	0.0179	0.0170	0.0214
Std. dev. of dep. var.	0.156	0.150	0.165	0.156	0.151	0.166	0.133	0.129	0.145
First stage F-statistic Import	70.02	83.31	34.33	74.29	87.20	35.75	14.93	12.88	66.66
First stage F-statistic Export	97.38	94.72	53.34	99.29	92.92	54.59	22.49	17.72	59.07

Notes - Standard errors are reported in parentheses and are clustered at the 2-digit industry and year level. All models include individual, year × federal state, and 1-digit industry fixed effects. Further controls include age and its quadratic term, indicators for education, and household size. * Significant at 10%; ** significant at 5%; *** significant at 1%.

Instead, we find no evidence of significant effects on marriage and divorce behavior on the pooled sample and among the low-skilled workers. For these groups exposure to trade with Eastern Europe did not significantly affect marriage and divorce behavior (see, respectively, Panels A and B of Table 5). However, interestingly, we find that import exposure led to a reduction in cohabitations (-7%), while export exposure led to an increase of similar size (+6.4%). The lack of significant effects on marriage, but significant effects on cohabitation is consistent with recent findings highlighting the role of social norms and context in shaping family formation (see Adler

Table 5: Effects of Trade Exposure on Marital Behavior, by Education and Gender - 2SLS Estimates

	(1) Pooled	(2) Low-educated	(3) High-educated	(4) Males	(5) Females
Panel A: Marriage					
Import exposure	0.034	0.028	0.116***	0.016	0.047
(Eastern Europe)	(0.027)	(0.034)	(0.042)	(0.033)	(0.042)
Export exposure	-0.028	-0.026	-0.068**	-0.019	-0.037
(Eastern Europe)	(0.020)	(0.025)	(0.029)	(0.024)	(0.031)
Observations	105,402	78,162	26,865	54,787	50,615
Mean of dep. var.	0.563	0.537	0.640	0.581	0.542
Std. dev. of dep. var.	0.496	0.499	0.480	0.493	0.498
First stage F-statistic Import	62.51	67.62	40.45	47.55	109.8
First stage F-statistic Export	103.9	106.7	58.67	73.74	140.1
Panel B: Divorce					
Import exposure	-0.013	-0.012	-0.025*	-0.012	-0.010
(Eastern Europe)	(0.012)	(0.016)	(0.015)	(0.014)	(0.023)
Export exposure	0.006	0.007	0.012	0.006	0.007
(Eastern Europe)	(0.009)	(0.012)	(0.012)	(0.011)	(0.018)
Observations	105,916	78,649	26,889	55,197	50,719
Mean of dep. var.	0.0631	0.0704	0.0423	0.0400	0.0883
Std. dev. of dep. var.	0.243	0.256	0.201	0.196	0.284
First stage F-statistic Import	61.94	66.75	40.32	47.84	105.1
First stage F-statistic Export	103.2	105.4	58.60	74.36	134.1
Panel C: Cohabitation					
Import exposure	-0.077**	-0.057	-0.145***	-0.101**	-0.061
(Eastern Europe)	(0.034)	(0.042)	(0.052)	(0.041)	(0.062)
Export exposure	0.062**	0.048	0.088**	0.075**	0.046
(Eastern Europe)	(0.025)	(0.031)	(0.036)	(0.030)	(0.044)
Observations	104,598	77,657	26,570	54,417	50,181
Mean of dep. var.	0.264	0.269	0.246	0.234	0.295
Std. dev. of dep. var.	0.441	0.443	0.431	0.424	0.456
First stage F-statistic Import	61.79	67.18	39.38	47.04	109.1
First stage F-statistic Export	103.2	106.3	57.30	73.23	140.6

Notes - Standard errors are reported in parentheses and are clustered at the 2-digit industry and year level. All models include individual, year $\times$ federal state, and 1-digit industry fixed effects. Further controls include age and its quadratic term, indicators for education, and household size. * Significant at 10%; ** significant at 5%; *** significant at 1%.

(1997) and Kearney and Wilson (2017)). There is instead evidence of an increase in marriage rates among the high-skilled male workers in sectors that were exposed to import penetration (see Tables 5 and A.8 in the Appendix). This result suggests that marriage may be used as an insurance mechanism by the more skilled males exposed to the economic uncertainty triggered by imports penetration (Shore, 2010; Huber and Winkler, 2019).[16]

Taken together, our evidence shows that low-skilled married workers who were more exposed to import faced worse labor market outcomes and were less likely to have children. Moreover, in line with what observed for the labor market outcomes, we find that the effects are driven by trade exposure with Eastern Europe. This evidence is consistent with strong income effects in fertility choices: the decision to have children correlates with the direction of trade-induced income changes.

Consistent with what shown on the labor market outcomes, we find qualitatively similar effects of exposure to trade with China. However, the magnitude of the effect is smaller given the lower exposure to trade with China in Germany. In particular, the average increase in exposure to imports with China throughout the period led to a 7% reduction in marital fertility among the low-skilled workers, while the average increase in exports with China led to a 14% increase in marital fertility. Overall, the patterns of the effects on marital behavior of exposure to trade with China are also qualitatively similar (see Tables A.23-A.28 in the Appendix).

5.3 Robustness Checks

In what follows, we conduct a number of sensitivity checks. To address the concerns about potential sorting between occupations, we add to our baseline regression in Equation (1) the ISCO two-digit occupational fixed effects. As shown in Tables A.14 to A.16 in the Appendix, our results for labor market and family outcomes are similar to the benchmark specifications (see Tables 1, 2, 5). This suggests that sorting between occupations is not likely to drive our main results. An additional source of concern is the sensitivity of our findings with respect to the Great Recession.[17] To dispel this concern, in Tables A.17 to A.19 in the Appendix, we report our main results when we exclude the entire 2009-2018 period from the sample.The estimated

[16]The corresponding OLS estimates are presented in Table A.22 in the Appendix.

[17]In contrast to other European countries, Germany recorded a very mild recession as measured by unemployment and GDP changes.

coefficients on the trade variables remain fairly stable relative to the benchmark specification. However, given the reduction in the sample size, the point estimates become sometimes less precisely estimated. Moreover, we show that our results remain overall stable when excluding one sector at a time (see Figures A.3 and A.4 in the Appendix), thereby mitigating the concerns about the influence of single sectors (see Goldsmith-Pinkham et al. (2020) for a related discussion relevant to Bartik-style instruments). In Tables A.9 and A.10 in the Appendix, we also include results on fertility behavior obtained using two different age restrictions: individuals aged 17-40 and 17-50 years old. The results are overall very similar to those obtained using our baseline sample of individuals aged 18-45 (see Table 2).

As a further check, we conduct a falsification test using lagged data for all our labor market and demographic outcomes of interest. In practice, we estimate the impact of trade exposure on lagged outcomes (i.e., lagged by 10 years). Reassuringly, we find no evidence of significant effects of trade exposure (see Tables A.11, A.12 and A.13 in the Appendix). Overall, this placebo test lends support to a causal interpretation of the effect of trade on labor market and demographic behavior.

6 Conclusion

In this paper, we investigated the effects of trade exposure on the labor markets, and fertility and marital behavior exploiting longitudinal data and within-worker variation in exposure to trade. Previous studies have not examined the impacts of trade on fertility in a low-fertility setting, such as Germany.

To identify the effects of trade flows, we followed the strategy adopted by Autor et al. (2014) and Autor et al. (2019). We first confirm the results of previous studies finding heterogeneous effects of import and export on the German labor market. Our main contribution is to explore the effects of trade on fertility and marital behavior. We show that individuals working in sectors that were exposed to the competition of Eastern Europe were less likely to have children. These effects are largely driven by the low-educated workers. We show a significant reduction in the

likelihood of having any child (extensive margin), and while there is evidence of some fertility postponement, we show that exposure to imports negatively affected completed fertility. At the same time, we find no evidence of significant changes in marriage and divorce patterns. Opposite to the effects of import competition, we find that individuals working in sectors that benefited from exporting to Eastern Europe exhibit better labor market outcomes and were more likely to have children. These findings are consistent with neoclassical fertility models that highlight the role of income effects: workers that experience negative labor market outcomes because of import competition reduce fertility, whereas workers that improve their labor market stance thanks to greater export opportunities increase fertility.

Germany's low natality rate has been a major source of concern for politicians for decades. The effects of negative labor demand shocks due for instance to import competition on fertility behavior should not be neglected. Policies tackling the demographic deficit by extending parental leave or increasing child allowances may mitigate the adverse demographic consequences of labor demand shocks. Our analysis omits the possible influence of domestic policies on the impact of labor market shifts on family choices. Future research might thus investigate the role of family-oriented policies in mediating the effects of labor market shocks on demographic behavior and life-course choices.

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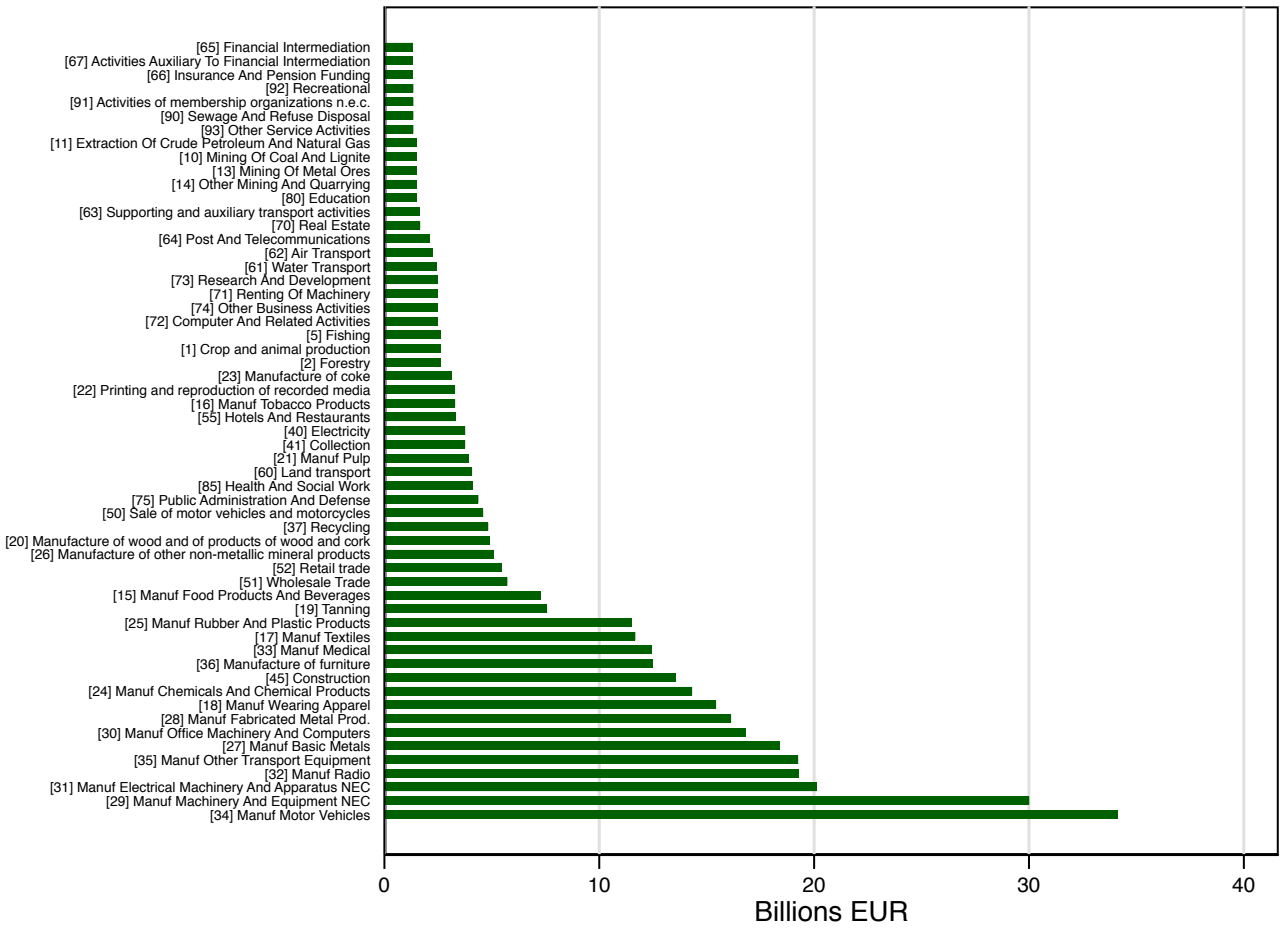
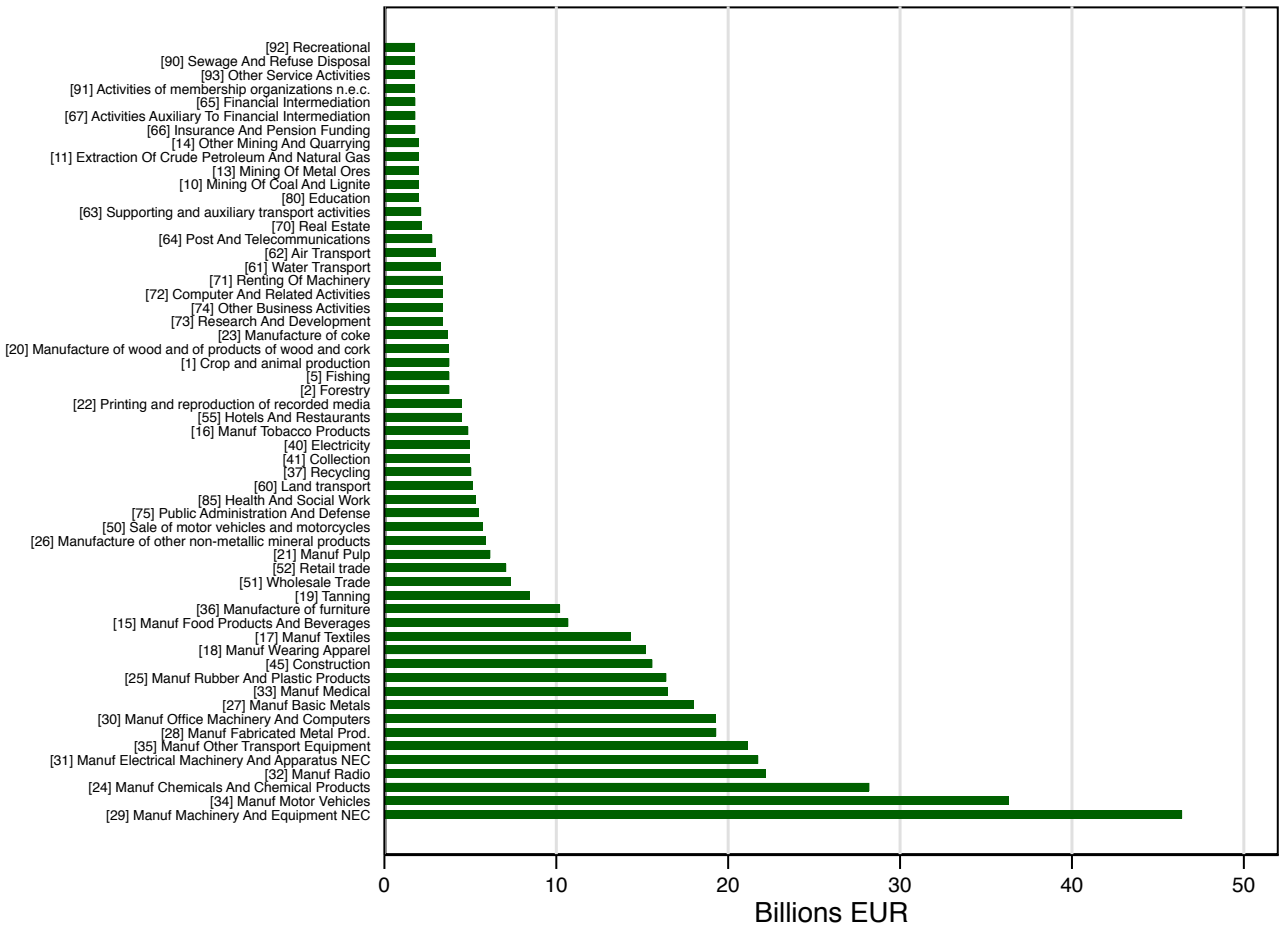
Appendix A: Supplemental Figures and Tables

Figure A.1: Average Yearly Total (Direct and Indirect) Imports from the East, by Sector



Notes - Trade values are in billions of current euros. The trade variables equal the sum of the direct and indirect (through input-output linkages) components.

Figure A.2: Average Yearly Total (Direct and Indirect) Exports to the East, by Sector



Notes - Trade values are in billions of current euros. The trade variables equal the sum of the direct and indirect (through input-output linkages) components.

Figure A.3: Coefficients on Import Exposure to Eastern Europe for the Main Outcomes – Dropping one Sector at a Time

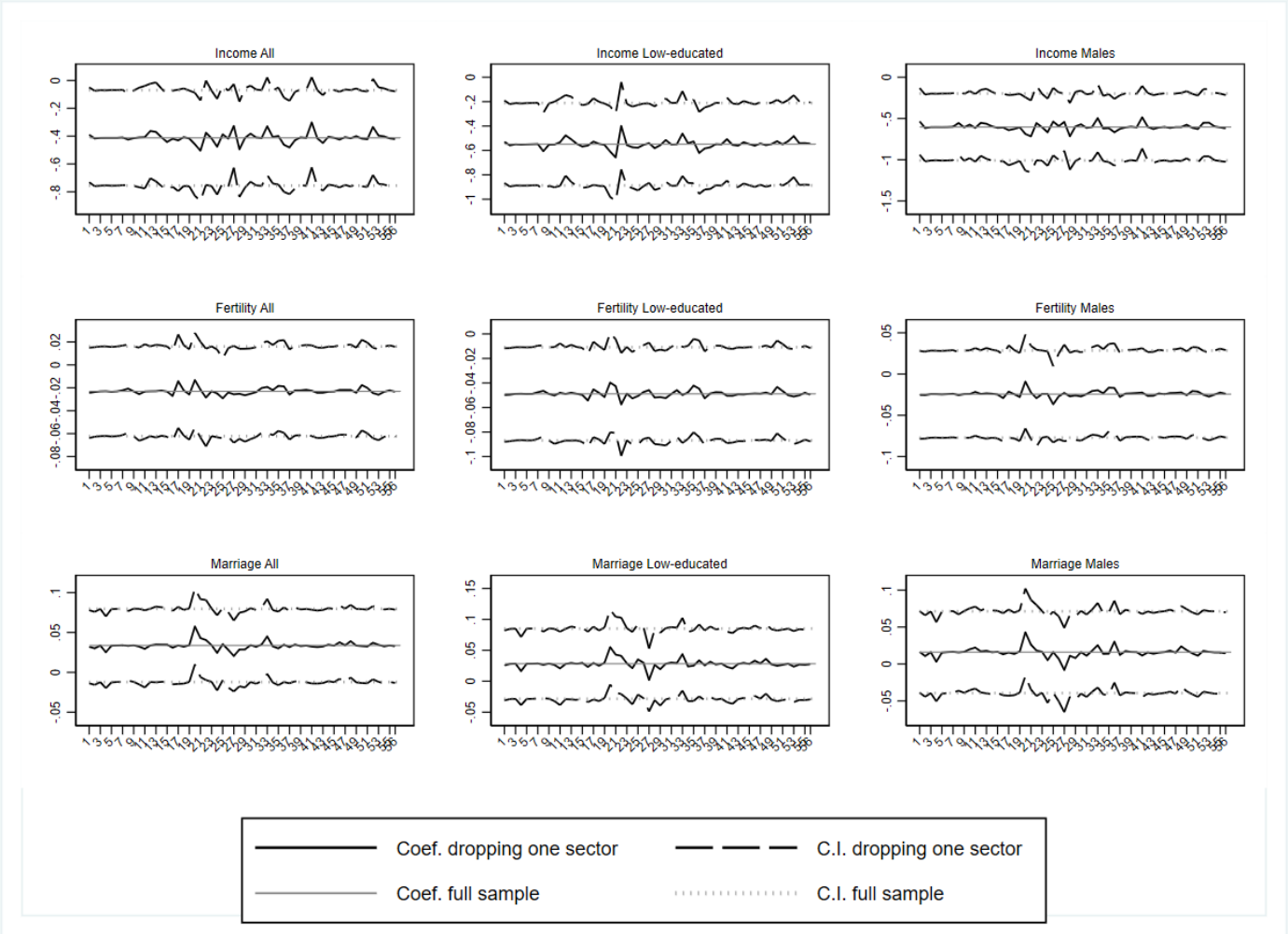


Figure A.4: Coefficients on Export Exposure to Eastern Europe for the Main Outcomes – Dropping one Sector at a Time

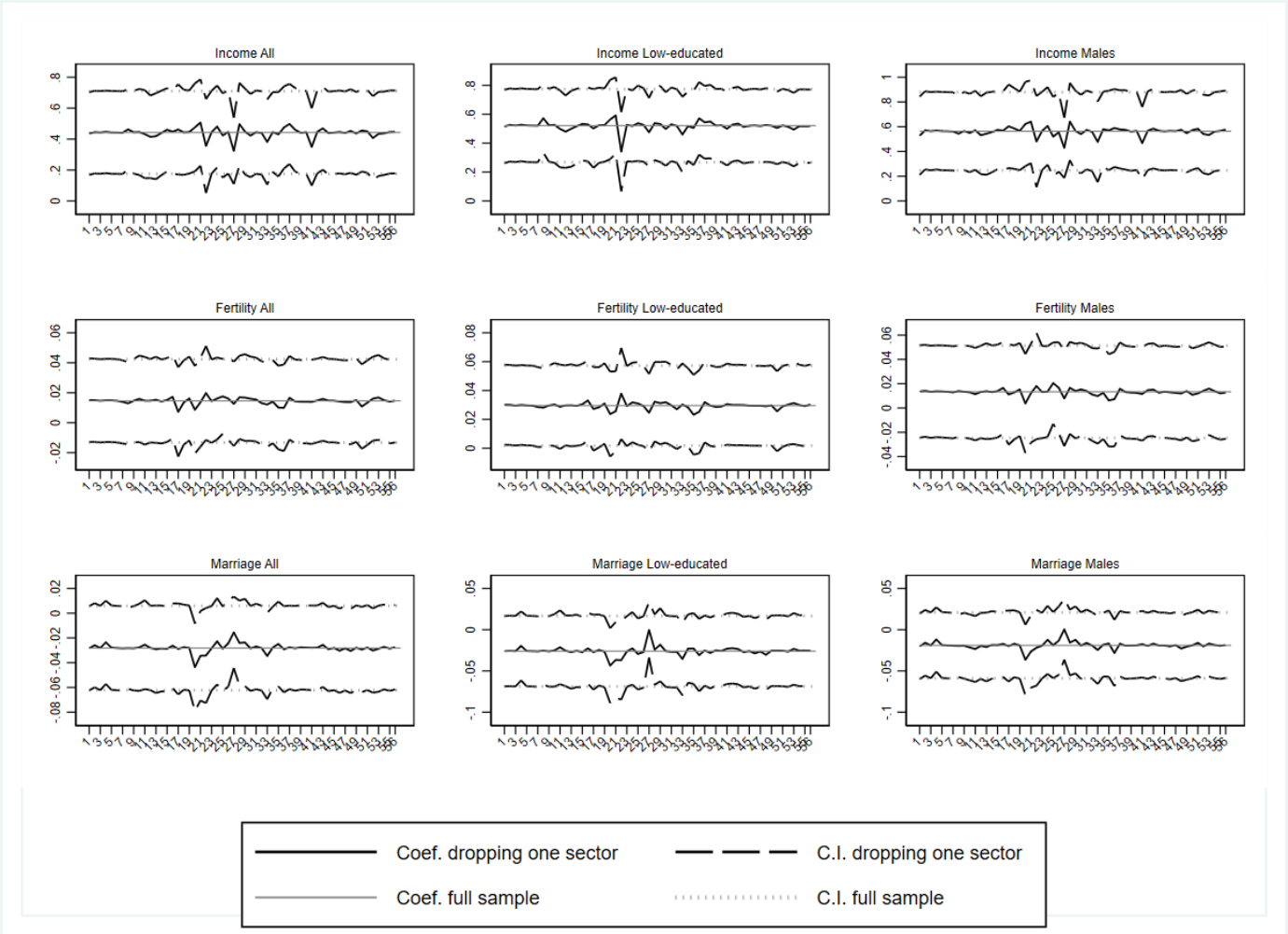


Table A.1: Descriptive Statistics

	Mean	Std. dev.	Min	Max
Panel A: Outcome variables				
Fertility	0.039	0.195	0	1
Marital fertility	0.052	0.221	0	1
Nonmarital fertility	0.023	0.151	0	1
Maried	0.563	0.496	0	1
Divorced	0.063	0.243	0	1
Cohabiting	0.264	0.441	0	1
Income	2.211	3.607	0	49.682
Hours worked	1.912	3.005	0.005	49.962
Unemployment	0.060	0.237	0	1
Panel B: Covariates				
Age	34.889	7.078	17	45
Female	0.479	0.500	0	1
College or more	0.255	0.436	0	1
Household size	3.154	1.331	1	14
Import exposure (Eastern Europe)	0.213	0.348	0.003	2.770
Export exposure (Eastern Europe)	0.293	0.454	0.004	3.536
Import exposure (Eastern Europe) -IV	0.094	0.174	0.001	8.914
Export exposure (Eastern Europe) - IV	0.089	0.168	0.001	10.330
Import exposure (China)	0.088	0.150	0.001	1.511
Export exposure (China)	0.094	0.175	0.001	1.426
Import exposure (China) - IV	0.387	0.907	0.004	38.261
Export exposure (China) - IV	0.261	0.500	0.003	26.743
Import exposure (East)	0.302	0.490	0.004	4.490
Export exposure (East)	0.390	0.625	0.005	5.143
Import exposure (East) - IV	0.482	1.048	0.005	47.175
Export exposure (East) - IV	0.350	0.654	0.004	34.757

Notes - Data are drawn from the SOEP (v35) for individuals aged 17-45 years (survey years: 1994-2018). All the samples contain individuals for whom information on all observables and the respective outcome variable are not missing.

Table A.2: Effects of Trade Exposure on Labor Market Outcomes, by Education and Gender - 2SLS Estimates

	(1)	(2)	(3)	(4)	(5)	(6)
	Pooled		Low-educated		High-educated	
	Males	Females	Males	Females	Males	Females
Panel A: Income						
Import exposure	-0.603**	-0.099	-0.539**	-0.505	-0.596	0.023
(Eastern Europe)	(0.241)	(0.309)	(0.229)	(0.376)	(0.459)	(0.433)
Export exposure	0.564***	0.179	0.506***	0.429	0.607	0.069
(Eastern Europe)	(0.188)	(0.224)	(0.174)	(0.274)	(0.378)	(0.310)
Observations	45,031	37,240	33,489	28,087	11,444	9,052
Mean of dep. var.	2.163	2.267	2.079	2.244	2.405	2.332
Std. dev. of dep. var.	3.641	3.541	3.433	3.471	4.168	3.721
Panel B: Hours Worked						
Import exposure	-0.294*	-0.032	-0.202**	0.273	0.183	-0.776**
(Eastern Europe)	(0.153)	(0.249)	(0.099)	(0.300)	(0.385)	(0.321)
Export exposure	0.214**	0.084	0.154**	-0.121	-0.099	0.485**
(Eastern Europe)	(0.106)	(0.173)	(0.072)	(0.208)	(0.256)	(0.224)
Observations	51,500	47,501	36,926	35,146	14,377	12,153
Mean of dep. var.	1.719	2.115	1.539	2.018	2.164	2.370
Std. dev. of dep. var.	2.663	3.277	2.093	3.021	3.685	3.864
Panel C: Unemployment						
Import exposure	0.028	0.064**	0.043*	0.065*	-0.018	0.053
(Eastern Europe)	(0.019)	(0.026)	(0.025)	(0.034)	(0.020)	(0.033)
Export exposure	-0.029**	-0.035**	-0.040**	-0.037*	0.006	-0.021
(Eastern Europe)	(0.013)	(0.017)	(0.017)	(0.021)	(0.015)	(0.025)
Observations	73,263	70,347	54,219	53,269	18,787	16,768
Mean of dep. var.	0.0514	0.0463	0.0636	0.0521	0.0168	0.0286
Std. dev. of dep. var.	0.221	0.210	0.244	0.222	0.129	0.167

Notes - Standard errors are reported in parentheses and are clustered at the 2-digit industry and year level. All models include individual, year $\times$ federal state, and 1-digit industry fixed effects. Further controls include age and its quadratic term, indicators for education, and household size. * Significant at 10%; ** significant at 5%; *** significant at 1%.

Table A.3: Effects of Trade Exposure on Fertility, by Education and Gender - 2SLS Estimates

	(1)	(2)	(3)	(4)	(5)	(6)
	Pooled		Low-educated		High-educated	
	Males	Females	Males	Females	Males	Females
Panel A: Overall Fertility						
Import exposure	-0.024	-0.003	-0.054*	-0.016	0.045	0.041
(Eastern Europe)	(0.031)	(0.030)	(0.030)	(0.030)	(0.087)	(0.076)
Export exposure	0.013	0.011	0.030	0.018	-0.017	-0.012
(Eastern Europe)	(0.023)	(0.021)	(0.023)	(0.020)	(0.059)	(0.054)
Observations	53,691	50,840	39,236	38,238	14,281	12,396
Mean of dep. var.	0.0496	0.0287	0.0443	0.0270	0.0644	0.0337
Std. dev. of dep. var.	0.217	0.167	0.206	0.162	0.246	0.181
Panel B: Marital Fertility						
Import exposure	-0.031	-0.040	-0.060	-0.055	0.080	-0.001
(Eastern Europe)	(0.049)	(0.051)	(0.046)	(0.051)	(0.140)	(0.110)
Export exposure	0.019	0.039	0.041	0.043	-0.060	0.010
(Eastern Europe)	(0.035)	(0.034)	(0.035)	(0.034)	(0.095)	(0.075)
Observations	30,870	27,016	21,188	19,723	9,612	7,225
Mean of dep. var.	0.0676	0.0320	0.0614	0.0293	0.0811	0.0393
Std. dev. of dep. var.	0.251	0.176	0.240	0.169	0.273	0.194
Panel C: Nonmarital Fertility						
Import exposure	-0.034	0.019	-0.052*	0.013	0.005	0.076
(Eastern Europe)	(0.029)	(0.030)	(0.031)	(0.030)	(0.095)	(0.077)
Export exposure	0.027	-0.004	0.033	-0.006	0.032	-0.014
(Eastern Europe)	(0.021)	(0.023)	(0.022)	(0.020)	(0.064)	(0.062)
Observations	21,904	22,802	17,363	17,711	4,380	4,907
Mean of dep. var.	0.0229	0.0219	0.0217	0.0216	0.0276	0.0232
Std. dev. of dep. var.	0.150	0.146	0.146	0.145	0.164	0.151

Notes - Standard errors are reported in parentheses and are clustered at the 2-digit industry and year level. All models include individual, year $\times$ federal state, and 1-digit industry fixed effects. Further controls include age and its quadratic term, indicators for education, and household size. * Significant at 10%; ** significant at 5%; *** significant at 1%.

Table A.4: Effects of Trade Exposure on First Child vs. Higher-order Children, by Education - Males - 2SLS Estimates

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Pooled	Low-educated	High-educated	Pooled	Low-educated	High-educated	Pooled	Low-educated	High-educated
	Overall fertility			Marital fertility			Out-of-wedlock fertility		
Panel A: First Child									
Import exposure	-0.049*	-0.069**	-0.005	-0.107	-0.136	-0.054	-0.00192	-0.017	0.100
(Eastern Europe)	(0.028)	(0.030)	(0.061)	(0.071)	(0.084)	(0.114)	(0.025)	(0.026)	(0.078)
Export exposure	0.035*	0.047**	0.011	0.077	0.103	0.023	0.00390	0.007	-0.034
(Eastern Europe)	(0.021)	(0.022)	(0.042)	(0.056)	(0.065)	(0.088)	(0.016)	(0.019)	(0.045)
Observations	32,297	24,426	7,705	11,224	7,786	3,361	20,389	16,149	4,074
Mean of dep. var.	0.0310	0.0264	0.0462	0.0549	0.0457	0.0762	0.0168	0.0159	0.0206
Std. dev. of dep. var.	0.173	0.160	0.210	0.228	0.209	0.265	0.129	0.125	0.142
First stage F-statistic Import	33.94	28.07	26.99	20.97	14.95	21.68	31.75	27.29	14.09
First stage F-statistic Export	55.31	40.31	43.25	30.38	23.69	25.54	47.83	37.73	24.11
Panel B: Second or more									
Import exposure	0.007	-0.038	0.208	-0.011	-0.055	0.172	-0.284	-0.412	-0.883
(Eastern Europe)	(0.055)	(0.057)	(0.167)	(0.058)	(0.055)	(0.186)	(0.273)	(0.360)	(1.029)
Export exposure	-0.018	0.009	-0.151	-0.006	0.026	-0.140	0.141	0.208	0.903
(Eastern Europe)	(0.040)	(0.043)	(0.115)	(0.042)	(0.043)	(0.127)	(0.200)	(0.261)	(0.757)
Observations	21,109	14,612	6,426	19,357	13,202	6,079	1,381	1,085	174
Mean of dep. var.	0.0751	0.0713	0.0819	0.0721	0.0677	0.0795	0.0862	0.0839	0.103
Std. dev. of dep. var.	0.264	0.257	0.274	0.259	0.251	0.270	0.281	0.277	0.305
First stage F-statistic Import	54.59	87.81	12.61	60.91	81.52	17.73	7.295	10.84	2.527
First stage F-statistic Export	74.31	96.94	21.06	80.67	93.04	26.16	12.69	10.21	9.526

Notes - Standard errors are reported in parentheses and are clustered at the 2-digit industry and year level. All models include individual, year $\times$ federal state, and 1-digit industry fixed effects. Further controls include age and its quadratic term, indicators for education, and household size. * Significant at 10%; ** significant at 5%; *** significant at 1%.

Table A.5: Effects of Trade Exposure on First Child vs. Higher-order Children, by Education - Females - 2SLS Estimates

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Pooled	Low-educated	High-educated	Pooled	Low-educated	High-educated	Pooled	Low-educated	High-educated
	Overall fertility			Marital fertility			Out-of-wedlock fertility		
Panel A: First Child									
Import exposure	-0.023	-0.054*	0.078	-0.065	-0.127**	0.058	-0.00855	-0.019	0.059
(Eastern Europe)	(0.030)	(0.030)	(0.081)	(0.059)	(0.059)	(0.167)	(0.029)	(0.027)	(0.075)
Export exposure	0.022	0.042**	-0.034	0.045	0.082**	-0.013	0.0184	0.019	0.006
(Eastern Europe)	(0.021)	(0.020)	(0.058)	(0.037)	(0.038)	(0.107)	(0.023)	(0.019)	(0.063)
Observations	30,270	22,773	7,315	10,341	7,482	2,784	19,219	14,751	4,285
Mean of dep. var.	0.0253	0.0229	0.0324	0.0334	0.0291	0.0445	0.0172	0.0164	0.0203
Std. dev. of dep. var.	0.157	0.150	0.177	0.180	0.168	0.206	0.130	0.127	0.141
First stage F-statistic Import	118.2	100.2	71.44	87.86	69.14	47.87	69.09	65.37	36.81
First stage F-statistic Export	135.4	124.8	52.24	103.9	75.36	65.12	84.65	86.58	42.92
Panel B: Second or more									
Import exposure	-0.107*	-0.034	-0.432**	-0.143**	-0.056	-0.465**	0.108	0.123	1.837
(Eastern Europe)	(0.064)	(0.060)	(0.195)	(0.068)	(0.061)	(0.200)	(0.136)	(0.153)	(1.595)
Export exposure	0.079*	0.022	0.311**	0.111**	0.044	0.337**	-0.0983	-0.107	-1.035
(Eastern Europe)	(0.047)	(0.045)	(0.132)	(0.049)	(0.046)	(0.139)	(0.103)	(0.117)	(0.993)
Observations	20,225	15,213	4,948	16,370	12,014	4,291	3,452	2,842	501
Mean of dep. var.	0.0267	0.0262	0.0269	0.0233	0.0221	0.0259	0.0339	0.0341	0.0279
Std. dev. of dep. var.	0.161	0.160	0.162	0.151	0.147	0.159	0.181	0.182	0.165
First stage F-statistic Import	36.38	27.48	17.62	53.16	45.11	16.26	4.678	4.004	4.052
First stage F-statistic Export	38.21	30.01	28.68	59.14	60.06	25.69	9.096	7.850	11.80

Notes - Standard errors are reported in parentheses and are clustered at the 2-digit industry and year level. All models include individual, year $\times$ federal state, and 1-digit industry fixed effects. Further controls include age and its quadratic term, indicators for education, and household size. * Significant at 10%; ** significant at 5%; *** significant at 1%.

Table A.6: Effects of Trade Exposure on First Child vs. Higher-order Children, by Education - Males born before 1974 - 2SLS Estimates

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Pooled	Low-educated	High-educated	Pooled	Low-educated	High-educated	Pooled	Low-educated	High-educated
	Overall fertility			Marital fertility			Out-of-wedlock fertility		
Panel A: First Child									
Import exposure	-0.041	-0.057*	-0.013	-0.047	-0.057	-0.017	-0.0264	-0.028	0.083
(Eastern Europe)	(0.029)	(0.034)	(0.077)	(0.047)	(0.062)	(0.079)	(0.033)	(0.030)	(0.105)
Export exposure	0.028	0.037	0.014	0.036	0.042	0.016	0.0191	0.011	-0.024
(Eastern Europe)	(0.020)	(0.023)	(0.050)	(0.033)	(0.044)	(0.056)	(0.021)	(0.018)	(0.067)
Observations	21,723	15,353	6,291	11,491	7,932	3,479	9,830	7,072	2,655
Mean of dep. var.	0.0235	0.0208	0.0305	0.0295	0.0251	0.0400	0.0150	0.0146	0.0166
Std. dev. of dep. var.	0.152	0.143	0.172	0.169	0.156	0.196	0.121	0.120	0.128
First stage F-statistic Import	40.13	29.12	31.52	19.12	12.58	14.63	46.06	33.18	43.61
First stage F-statistic Export	50.51	35.35	38.49	24.20	17.43	21.52	51.87	32.14	57.31
Panel B: Second or more									
Import exposure	-0.025	-0.055	0.055	-0.037	-0.074*	0.039	-0.0761	-0.165	-0.615
(Eastern Europe)	(0.034)	(0.042)	(0.066)	(0.035)	(0.044)	(0.061)	(0.141)	(0.227)	(0.553)
Export exposure	0.009	0.029	-0.047	0.014	0.042	-0.043	0.0663	0.117	0.436
(Eastern Europe)	(0.024)	(0.030)	(0.048)	(0.024)	(0.031)	(0.044)	(0.098)	(0.163)	(0.392)
Observations	23,158	15,271	7,838	21,358	13,944	7,369	1,499	1,072	317
Mean of dep. var.	0.0395	0.0379	0.0417	0.0383	0.0366	0.0407	0.0374	0.0354	0.0442
Std. dev. of dep. var.	0.195	0.191	0.200	0.192	0.188	0.198	0.190	0.185	0.206
First stage F-statistic Import	71.35	87.65	36.32	72.85	85.90	37.04	13.64	8.368	44.02
First stage F-statistic Export	88.99	83.65	47.52	87.51	78.42	48.64	18.67	10.16	84.86

Notes - Standard errors are reported in parentheses and are clustered at the 2-digit industry and year level. All models include individual, year $\times$ federal state, and 1-digit industry fixed effects. Further controls include age and its quadratic term, indicators for education, and household size. * Significant at 10%; ** significant at 5%; *** significant at 1%.

Table A.7: Effects of Trade Exposure on First Child vs. Higher-order Children, by Education - Females born before 1974 - 2SLS Estimates

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Pooled	Low-educated	High-educated	Pooled	Low-educated	High-educated	Pooled	Low-educated	High-educated
	Overall fertility			Marital fertility			Out-of-wedlock fertility		
Panel A: First Child									
Import exposure	-0.018	-0.033**	0.037	-0.023	-0.045**	0.055	-0.0357	-0.018	0.017
(Eastern Europe)	(0.022)	(0.016)	(0.084)	(0.036)	(0.022)	(0.162)	(0.027)	(0.017)	(0.066)
Export exposure	0.020	0.023**	0.018	0.024	0.039***	-0.019	0.0391	0.013	0.055
(Eastern Europe)	(0.016)	(0.011)	(0.055)	(0.021)	(0.014)	(0.075)	(0.027)	(0.012)	(0.065)
Observations	19,658	13,980	5,618	9,803	7,094	2,651	9,479	6,586	2,818
Mean of dep. var.	0.0134	0.0118	0.0174	0.0154	0.0130	0.0219	0.00907	0.00805	0.0114
Std. dev. of dep. var.	0.115	0.108	0.131	0.123	0.113	0.146	0.0948	0.0894	0.106
First stage F-statistic Import	118.8	93.25	70.12	126.8	106.3	39.17	55.96	36.71	59.03
First stage F-statistic Export	118.8	95.81	65.51	92.80	69.64	42.91	72.48	48.36	47.86
Panel B: Second or more									
Import exposure	0.000	-0.008	0.076	-0.000	-0.007	0.067	0.0329	0.010	-0.002
(Eastern Europe)	(0.022)	(0.021)	(0.101)	(0.023)	(0.023)	(0.111)	(0.091)	(0.094)	(0.170)
Export exposure	0.014	0.014	-0.013	0.013	0.009	-0.007	0.00796	0.023	-0.001
(Eastern Europe)	(0.016)	(0.016)	(0.052)	(0.016)	(0.016)	(0.060)	(0.046)	(0.050)	(0.070)
Observations	23,416	17,249	6,117	18,818	13,616	5,143	4,249	3,315	827
Mean of dep. var.	0.0103	0.00991	0.0110	0.0100	0.00955	0.0107	0.00965	0.00965	0.0109
Std. dev. of dep. var.	0.101	0.0991	0.104	0.0997	0.0972	0.103	0.0978	0.0978	0.104
First stage F-statistic Import	50.43	44.18	11.96	72.23	67.87	9.887	6.994	6.380	4.131
First stage F-statistic Export	51.25	42.60	32.82	76.12	68.32	25.32	11.48	10.33	29.08

Notes - Standard errors are reported in parentheses and are clustered at the 2-digit industry and year level. All models include individual, year $\times$ federal state, and 1-digit industry fixed effects. Further controls include age and its quadratic term, indicators for education, and household size. * Significant at 10%; ** significant at 5%; *** significant at 1%.

Table A.8: Effects of Trade Exposure on Marital Behavior, by Education and Gender - 2SLS Estimates

	(1)	(2)	(3)	(4)	(5)	(6)
	Pooled		Low-educated		High-educated	
	Males	Females	Males	Females	Males	Females
Panel A: Marriage						
Import exposure	0.016	0.047	0.003	0.066	0.132***	0.002
(Eastern Europe)	(0.033)	(0.042)	(0.040)	(0.054)	(0.051)	(0.062)
Export exposure	-0.019	-0.037	-0.011	-0.045	-0.078**	-0.010
(Eastern Europe)	(0.024)	(0.031)	(0.029)	(0.040)	(0.036)	(0.042)
Observations	54,787	50,615	40,136	38,026	14,461	12,385
Mean of dep. var.	0.581	0.542	0.547	0.527	0.680	0.593
Std. dev. of dep. var.	0.493	0.498	0.498	0.499	0.466	0.491
Panel B: Divorce						
Import exposure	-0.012	-0.010	-0.017	0.003	-0.031*	-0.015
(Eastern Europe)	(0.014)	(0.023)	(0.020)	(0.029)	(0.017)	(0.031)
Export exposure	0.006	0.007	0.009	-0.001	0.014	0.010
(Eastern Europe)	(0.011)	(0.018)	(0.016)	(0.023)	(0.013)	(0.027)
Observations	55,197	50,719	40,509	38,140	14,498	12,373
Mean of dep. var.	0.0400	0.0883	0.0441	0.0983	0.0288	0.0582
Std. dev. of dep. var.	0.196	0.284	0.205	0.298	0.167	0.234
Panel C: Cohabitation						
Import exposure	-0.101**	-0.061	-0.066	-0.079	-0.186***	0.041
(Eastern Europe)	(0.041)	(0.062)	(0.051)	(0.078)	(0.067)	(0.071)
Export exposure	0.075**	0.046	0.045	0.067	0.127***	-0.059
(Eastern Europe)	(0.030)	(0.044)	(0.037)	(0.054)	(0.046)	(0.050)
Observations	54,417	50,181	39,915	37,742	14,313	12,238
Mean of dep. var.	0.234	0.295	0.239	0.300	0.218	0.279
Std. dev. of dep. var.	0.424	0.456	0.427	0.458	0.413	0.449

Notes - Standard errors are reported in parentheses and are clustered at the 2-digit industry and year level. All models include individual, year $\times$ federal state, and 1-digit industry fixed effects. Further controls include age and its quadratic term, indicators for education, and household size. * Significant at 10%; ** significant at 5%; *** significant at 1%.

Table A.9: Effects of Trade Exposure on Fertility, by Education and Gender - 2SLS Estimates - Individuals aged 18-40

	(1) Pooled	(2) Low-educated	(3) High-educated	(4) Males	(5) Females
Panel A: Overall Fertility					
Import exposure	-0.031	-0.060**	0.029	-0.040	0.013
(Eastern Europe)	(0.031)	(0.030)	(0.089)	(0.040)	(0.045)
Export exposure	0.023	0.036*	0.009	0.026	0.001
(Eastern Europe)	(0.022)	(0.022)	(0.061)	(0.029)	(0.031)
Observations	75,103	57,127	17,616	39,356	35,747
Mean of dep. var.	0.0510	0.0457	0.0686	0.0615	0.0394
Std. dev. of dep. var.	0.220	0.209	0.253	0.240	0.195
First stage F-statistic Import	60.61	64.48	31.35	44.84	103.8
First stage F-statistic Export	98.13	103.4	47.46	66.73	137.9
Panel B: Marital Fertility					
Import exposure	-0.074	-0.107*	0.040	-0.071	-0.015
(Eastern Europe)	(0.059)	(0.055)	(0.172)	(0.074)	(0.094)
Export exposure	0.053	0.071*	-0.009	0.052	0.017
(Eastern Europe)	(0.043)	(0.042)	(0.117)	(0.055)	(0.064)
Observations	35,863	26,005	9,750	19,544	16,312
Mean of dep. var.	0.0752	0.0669	0.0973	0.0960	0.0504
Std. dev. of dep. var.	0.264	0.250	0.296	0.295	0.219
First stage F-statistic Import	69.99	72.85	29.45	51.86	68.02
First stage F-statistic Export	93.40	91.48	45.94	65.35	71.81
Panel C: Out-of-wedlock Fertility					
Import exposure	-0.00833	-0.023	0.066	-0.029	0.028
(Eastern Europe)	(0.026)	(0.027)	(0.089)	(0.032)	(0.041)
Export exposure	0.0120	0.014	0.001	0.025	-0.007
(Eastern Europe)	(0.019)	(0.019)	(0.059)	(0.023)	(0.030)
Observations	37,556	29,860	7,395	19,001	18,555
Mean of dep. var.	0.0255	0.0247	0.0291	0.0248	0.0263
Std. dev. of dep. var.	0.158	0.155	0.168	0.155	0.160
First stage F-statistic Import	40.49	40.86	16.44	28.04	64.77
First stage F-statistic Export	67.37	64.83	31.01	42.92	99.85

Notes - Standard errors are reported in parentheses and are clustered at the 2-digit industry and year level. All models include individual, year $\times$ federal state, and 1-digit industry fixed effects. Further controls include age and its quadratic term, indicators for education, and household size. * Significant at 10%; ** significant at 5%; *** significant at 1%.

Table A.10: Effects of Trade Exposure on Fertility, by Education and Gender - 2SLS Estimates - Individuals aged 18-50

	(1) Pooled	(2) Low-educated	(3) High-educated	(4) Males	(5) Females
Panel A: Overall Fertility					
Import exposure	-0.017	-0.035*	0.021	-0.018	0.003
(Eastern Europe)	(0.018)	(0.018)	(0.049)	(0.025)	(0.022)
Export exposure	0.011	0.022*	-0.005	0.010	0.008
(Eastern Europe)	(0.013)	(0.013)	(0.033)	(0.018)	(0.015)
Observations	133,612	97,553	35,677	67,739	65,873
Mean of dep. var.	0.0315	0.0291	0.0382	0.0404	0.0223
Std. dev. of dep. var.	0.175	0.168	0.192	0.197	0.148
First stage F-statistic Import	66.27	71.38	46.68	51.61	118.1
First stage F-statistic Export	107.6	109.3	67.46	83.28	130.6
Panel B: Marital Fertility					
Import exposure	-0.033	-0.051*	0.003	-0.025	-0.026
(Eastern Europe)	(0.026)	(0.027)	(0.068)	(0.036)	(0.033)
Export exposure	0.021	0.033*	-0.003	0.014	0.029
(Eastern Europe)	(0.019)	(0.020)	(0.045)	(0.026)	(0.022)
Observations	79,385	55,483	23,794	42,072	37,313
Mean of dep. var.	0.0381	0.0348	0.0455	0.0511	0.0234
Std. dev. of dep. var.	0.191	0.183	0.208	0.220	0.151
First stage F-statistic Import	76.26	85.34	47.68	55.80	159.2
First stage F-statistic Export	112.3	113.5	65.79	81.57	139.4
Panel C: Out-of-wedlock Fertility					
Import exposure	-0.0110	-0.020	0.036	-0.030	0.018
(Eastern Europe)	(0.019)	(0.019)	(0.057)	(0.026)	(0.024)
Export exposure	0.0130	0.014	0.007	0.023	-0.001
(Eastern Europe)	(0.014)	(0.014)	(0.040)	(0.018)	(0.019)
Observations	52,050	40,386	11,356	24,652	27,398
Mean of dep. var.	0.0195	0.0191	0.0212	0.0209	0.0183
Std. dev. of dep. var.	0.138	0.137	0.144	0.143	0.134
First stage F-statistic Import	45.59	43.46	30.06	33.11	58.87
First stage F-statistic Export	74.49	67.81	49.25	51.22	79.23

Notes - Standard errors are reported in parentheses and are clustered at the 2-digit industry and year level. All models include individual, year $\times$ federal state, and 1-digit industry fixed effects. Further controls include age and its quadratic term, indicators for education, and household size. * Significant at 10%; ** significant at 5%; *** significant at 1%.

Table A.11: Effects of Trade Exposure on Labor Market Outcomes - Falsification Test - 2SLS Estimates

	(1) Pooled	(2) Low-educated	(3) High-educated	(4) Males	(5) Females
Panel A: Income					
Import exposure	0.847	0.727	1.769	0.179	1.196
(Eastern Europe)	(0.536)	(0.612)	(1.605)	(0.671)	(1.121)
Export exposure	-0.443	-0.308	-0.997	-0.139	-0.322
(Eastern Europe)	(0.347)	(0.408)	(0.943)	(0.441)	(0.727)
Observations	14,937	10,908	4,001	8,046	6,883
Mean of dep. var.	3.051	2.775	3.786	3.288	2.765
Std. dev. of dep. var.	4.657	4.307	5.407	4.947	4.256
Panel B: Hours Worked					
Import exposure	0.613	1.118***	-1.276	-0.369	2.150**
(Eastern Europe)	(0.639)	(0.397)	(2.183)	(0.842)	(1.078)
Export exposure	-0.294	-0.675**	1.008	0.271	-1.084
(Eastern Europe)	(0.402)	(0.263)	(1.255)	(0.530)	(0.685)
Observations	16,385	11,440	4,907	8,861	7,519
Mean of dep. var.	1.999	1.754	2.549	1.952	2.055
Std. dev. of dep. var.	2.948	2.499	3.709	2.773	3.142
Panel C: Unemployment					
Import exposure	0.005	0.023	-0.031	0.011	0.015
(Eastern Europe)	(0.047)	(0.057)	(0.094)	(0.058)	(0.097)
Export exposure	-0.005	-0.008	0.003	-0.008	-0.022
(Eastern Europe)	(0.030)	(0.037)	(0.059)	(0.036)	(0.067)
Observations	20,127	13,606	6,471	10,921	9,201
Mean of dep. var.	0.0518	0.0639	0.0268	0.0555	0.0471
Std. dev. of dep. var.	0.222	0.245	0.161	0.229	0.212

Notes - Standard errors are reported in parentheses and are clustered at the 2-digit industry and year level. All models include individual, year $\times$ federal state, and 1-digit industry fixed effects. Further controls include age and its quadratic term, indicators for education, and household size. * Significant at 10%; ** significant at 5%; *** significant at 1%.

Table A.12: Effects of Trade Exposure on Fertility - Falsification Test - 2SLS Estimates

	(1) Pooled	(2) Low-educated	(3) High-educated	(4) Males	(5) Females
Panel A: Overall Fertility					
Import exposure	0.022	0.025	0.163	0.005	-0.001
(Eastern Europe)	(0.061)	(0.078)	(0.108)	(0.088)	(0.116)
Export exposure	-0.004	-0.008	-0.092	0.001	0.014
(Eastern Europe)	(0.042)	(0.056)	(0.069)	(0.062)	(0.082)
Observations	21,454	14,866	6,526	10,895	10,555
Mean of dep. var.	0.0311	0.0253	0.0438	0.0401	0.0219
Std. dev. of dep. var.	0.174	0.157	0.205	0.196	0.146
Panel B: Marital Fertility					
Import exposure	0.076	0.091	0.203	0.031	0.081
(Eastern Europe)	(0.108)	(0.122)	(0.231)	(0.161)	(0.126)
Export exposure	-0.034	-0.053	-0.085	-0.009	-0.046
(Eastern Europe)	(0.077)	(0.091)	(0.146)	(0.115)	(0.080)
Observations	12,805	8,856	3,918	6,494	6,306
Mean of dep. var.	0.0379	0.0300	0.0549	0.0531	0.0220
Std. dev. of dep. var.	0.191	0.171	0.228	0.224	0.147
Panel C: Nonmarital Fertility					
Import exposure	-0.0444	-0.073	-0.045	-0.0202	-0.148
(Eastern Europe)	(0.081)	(0.108)	(0.136)	(0.085)	(0.232)
Export exposure	0.0380	0.060	0.031	0.0214	0.124
(Eastern Europe)	(0.055)	(0.077)	(0.079)	(0.055)	(0.170)
Observations	8,317	5,785	2,467	4,262	4,042
Mean of dep. var.	0.0182	0.0150	0.0247	0.0190	0.0173
Std. dev. of dep. var.	0.134	0.122	0.155	0.137	0.130

Notes - Standard errors are reported in parentheses and are clustered at the 2-digit industry and year level. All models include individual, year $\times$ federal state, and 1-digit industry fixed effects. Further controls include age and its quadratic term, indicators for education, and household size. * Significant at 10%; ** significant at 5%; *** significant at 1%.

Table A.13: Effects of Trade Exposure on Marital Behavior - Falsification Test - 2SLS Estimates

	(1) Pooled	(2) Low-educated	(3) High-educated	(4) Males	(5) Females
Panel A: Marriage					
Import exposure	0.108	0.183**	-0.046	0.121	0.082
(Eastern Europe)	(0.069)	(0.083)	(0.116)	(0.082)	(0.139)
Export exposure	-0.081*	-0.137**	0.030	-0.098*	-0.067
(Eastern Europe)	(0.046)	(0.057)	(0.071)	(0.055)	(0.097)
Observations	20,091	13,796	6,257	10,140	9,947
Mean of dep. var.	0.432	0.461	0.368	0.378	0.486
Std. dev. of dep. var.	0.495	0.498	0.482	0.485	0.500
Panel B: Divorce					
Import exposure	-0.052**	-0.062**	0.029	-0.010	-0.178*
(Eastern Europe)	(0.026)	(0.030)	(0.040)	(0.019)	(0.099)
Export exposure	0.039**	0.048**	-0.015	0.012	0.128*
(Eastern Europe)	(0.020)	(0.022)	(0.027)	(0.013)	(0.075)
Observations	20,597	14,219	6,339	10,451	10,142
Mean of dep. var.	0.0302	0.0368	0.0156	0.0195	0.0413
Std. dev. of dep. var.	0.171	0.188	0.124	0.138	0.199
Panel C: Cohabitation					
Import exposure	0.075	0.083	-0.066	0.036	-0.003
(Eastern Europe)	(0.086)	(0.101)	(0.179)	(0.104)	(0.159)
Export exposure	-0.046	-0.055	0.047	-0.020	0.000
(Eastern Europe)	(0.056)	(0.069)	(0.115)	(0.068)	(0.107)
Observations	20,524	14,160	6,325	10,407	10,113
Mean of dep. var.	0.323	0.304	0.366	0.310	0.337
Std. dev. of dep. var.	0.468	0.460	0.482	0.463	0.473

Notes - Standard errors are reported in parentheses and are clustered at the 2-digit industry and year level. All models include individual, year $\times$ federal state, and 1-digit industry fixed effects. Further controls include age and its quadratic term, indicators for education, and household size. * Significant at 10%; ** significant at 5%; *** significant at 1%.

Table A.14: Effects of Trade Exposure on Labor Market Outcomes - Adding Controls for ISCO 2-digit FE - 2SLS Estimates

	(1) Pooled	(2) Low-educated	(3) High-educated	(4) Males	(5) Females
Panel A: Income					
Import exposure	-0.431**	-0.595***	-0.139	-0.652***	0.017
(Eastern Europe)	(0.207)	(0.204)	(0.361)	(0.237)	(0.330)
Export exposure	0.426***	0.506***	0.265	0.564***	0.067
(Eastern Europe)	(0.164)	(0.156)	(0.294)	(0.190)	(0.233)
Observations	76,796	56,726	19,870	42,053	34,720
Mean of dep. var.	2.236	2.181	2.388	2.186	2.298
Std. dev. of dep. var.	3.603	3.450	3.985	3.654	3.541
Panel B: Hours Worked					
Import exposure	-0.204	-0.131	0.042	-0.214	-0.010
(Eastern Europe)	(0.132)	(0.116)	(0.302)	(0.144)	(0.252)
Export exposure	0.151	0.107	-0.017	0.150	0.081
(Eastern Europe)	(0.093)	(0.083)	(0.199)	(0.101)	(0.174)
Observations	93,955	67,811	25,770	48,812	45,125
Mean of dep. var.	1.915	1.778	2.256	1.726	2.121
Std. dev. of dep. var.	2.974	2.587	3.748	2.667	3.261

Notes - Standard errors are reported in parentheses and are clustered at the 2-digit industry and year level. All models include individual, year $\times$ federal state, and 1-digit industry fixed effects. Further controls include age and its quadratic term, indicators for education, and household size. * Significant at 10%; ** significant at 5%; *** significant at 1%.

Table A.15: Effects of Trade Exposure on Fertility - Adding Controls for ISCO 2-digit FE - 2SLS Estimates

	(1) Pooled	(2) Low-educated	(3) High-educated	(4) Males	(5) Females
Panel A: Overall Fertility					
Import exposure	-0.020	-0.050**	0.036	-0.018	0.001
(Eastern Europe)	(0.024)	(0.024)	(0.065)	(0.033)	(0.032)
Export exposure	0.012	0.029*	-0.012	0.009	0.007
(Eastern Europe)	(0.017)	(0.017)	(0.044)	(0.024)	(0.022)
Observations	97,281	71,148	25,775	49,910	47,356
Mean of dep. var.	0.0387	0.0345	0.0504	0.0504	0.0264
Std. dev. of dep. var.	0.193	0.183	0.219	0.219	0.160
Panel B: Marital Fertility					
Import exposure	-0.040	-0.076**	0.038	-0.023	-0.030
(Eastern Europe)	(0.038)	(0.036)	(0.103)	(0.050)	(0.054)
Export exposure	0.023	0.048*	-0.029	0.013	0.025
(Eastern Europe)	(0.027)	(0.027)	(0.071)	(0.036)	(0.036)
Observations	55,105	38,539	16,454	29,435	25,646
Mean of dep. var.	0.0502	0.0448	0.0626	0.0675	0.0303
Std. dev. of dep. var.	0.218	0.207	0.242	0.251	0.171
Panel C: Nonmarital Fertility					
Import exposure	-0.00755	-0.028	0.066	-0.0212	0.0177
(Eastern Europe)	(0.024)	(0.024)	(0.078)	(0.032)	(0.032)
Export exposure	0.0115	0.017	-0.007	0.0204	-0.00321
(Eastern Europe)	(0.017)	(0.017)	(0.052)	(0.023)	(0.025)
Observations	40,348	31,212	8,833	19,605	20,707
Mean of dep. var.	0.0209	0.0195	0.0259	0.0228	0.0192
Std. dev. of dep. var.	0.143	0.138	0.159	0.149	0.137

Notes - Standard errors are reported in parentheses and are clustered at the 2-digit industry and year level. All models include individual, year $\times$ federal state, and 1-digit industry fixed effects. Further controls include age and its quadratic term, indicators for education, and household size. * Significant at 10%; ** significant at 5%; *** significant at 1%.

Table A.16: Effects of Trade Exposure on Marriage - Adding Controls for ISCO 2-digit FE - 2SLS Estimates

	(1) Pooled	(2) Low-educated	(3) High-educated	(4) Males	(5) Females
Panel A: Marriage					
Import exposure	0.048*	0.050	0.124***	0.038	0.051
(Eastern Europe)	(0.028)	(0.035)	(0.044)	(0.033)	(0.045)
Export exposure	-0.039*	-0.041	-0.076**	-0.035	-0.039
(Eastern Europe)	(0.021)	(0.027)	(0.030)	(0.024)	(0.033)
Observations	98,089	71,768	25,953	50,920	47,152
Mean of dep. var.	0.575	0.551	0.646	0.596	0.553
Std. dev. of dep. var.	0.494	0.497	0.478	0.491	0.497
Panel B: Divorce					
Import exposure	-0.017	-0.017	-0.026*	-0.017	-0.017
(Eastern Europe)	(0.012)	(0.016)	(0.016)	(0.014)	(0.025)
Export exposure	0.009	0.009	0.012	0.009	0.008
(Eastern Europe)	(0.009)	(0.012)	(0.012)	(0.011)	(0.020)
Observations	98,511	72,175	25,965	51,258	47,236
Mean of dep. var.	0.0597	0.0665	0.0412	0.0376	0.0837
Std. dev. of dep. var.	0.237	0.249	0.199	0.190	0.277
Panel C: Cohabitation					
Import exposure	-0.081**	-0.070	-0.148***	-0.105**	-0.066
(Eastern Europe)	(0.036)	(0.044)	(0.053)	(0.042)	(0.066)
Export exposure	0.066**	0.060*	0.091**	0.081**	0.052
(Eastern Europe)	(0.026)	(0.032)	(0.036)	(0.031)	(0.045)
Observations	97,358	71,320	25,670	50,579	46,760
Mean of dep. var.	0.258	0.263	0.244	0.229	0.290
Std. dev. of dep. var.	0.438	0.440	0.429	0.420	0.454

Notes - Standard errors are reported in parentheses and are clustered at the 2-digit industry and year level. All models include individual, year $\times$ federal state, and 1-digit industry fixed effects. Further controls include age and its quadratic term, indicators for education, and household size. * Significant at 10%; ** significant at 5%; *** significant at 1%.

Table A.17: Effects of Trade Exposure on Labor Market Outcomes - Years up to 2008 - 2SLS Estimates

	(1) Pooled	(2) Low-educated	(3) High-educated	(4) Males	(5) Females
Panel A: Income					
Import exposure	-0.392*	-0.449*	0.054	-0.490*	-0.264
(Eastern Europe)	(0.212)	(0.242)	(0.409)	(0.270)	(0.318)
Export exposure	0.429***	0.462***	0.218	0.454**	0.432*
(Eastern Europe)	(0.148)	(0.163)	(0.358)	(0.188)	(0.223)
Observations	47,337	35,741	11,478	26,833	20,504
Mean of dep. var.	1.982	1.948	2.085	1.965	2.005
Std. dev. of dep. var.	3.067	2.979	3.293	3.116	3.003
Panel B: Hours Worked					
Import exposure	-0.245*	-0.121	-0.274	-0.269	-0.167
(Eastern Europe)	(0.140)	(0.136)	(0.263)	(0.169)	(0.217)
Export exposure	0.172*	0.105	0.100	0.186	0.178
(Eastern Europe)	(0.094)	(0.097)	(0.160)	(0.113)	(0.168)
Observations	54,474	40,407	13,855	29,435	25,039
Mean of dep. var.	1.659	1.587	1.845	1.523	1.818
Std. dev. of dep. var.	2.367	2.120	2.879	2.082	2.656
Panel C: Unemployment					
Import exposure	0.072**	0.083**	-0.001	0.040	0.127***
(Eastern Europe)	(0.033)	(0.039)	(0.036)	(0.040)	(0.048)
Export exposure	-0.048**	-0.059**	0.003	-0.037	-0.063**
(Eastern Europe)	(0.019)	(0.023)	(0.021)	(0.023)	(0.026)
Observations	76,426	58,279	17,867	40,478	35,948
Mean of dep. var.	0.0553	0.0642	0.0267	0.0587	0.0514
Std. dev. of dep. var.	0.229	0.245	0.161	0.235	0.221

Notes - Standard errors are reported in parentheses and are clustered at the 2-digit industry and year level. All models include individual, year $\times$ federal state, and 1-digit industry fixed effects. Further controls include age and its quadratic term, indicators for education, and household size. * Significant at 10%; ** significant at 5%; *** significant at 1%.

Table A.18: Effects of Trade Exposure on Fertility - Years up to 2008 - 2SLS Estimates

	(1) Pooled	(2) Low-educated	(3) High-educated	(4) Males	(5) Females
Panel A: Overall Fertility					
Import exposure	-0.052	-0.079**	0.056	-0.056	-0.032
(Eastern Europe)	(0.034)	(0.035)	(0.109)	(0.051)	(0.038)
Export exposure	0.033	0.043*	-0.005	0.036	0.030
(Eastern Europe)	(0.021)	(0.023)	(0.061)	(0.031)	(0.026)
Observations	56,532	42,571	13,770	29,862	26,670
Mean of dep. var.	0.0402	0.0375	0.0487	0.0489	0.0305
Std. dev. of dep. var.	0.196	0.190	0.215	0.216	0.172
Panel B: Marital Fertility					
Import exposure	-0.023	-0.055	0.055	-0.010	-0.041
(Eastern Europe)	(0.047)	(0.051)	(0.114)	(0.064)	(0.061)
Export exposure	0.009	0.027	-0.032	0.002	0.046
(Eastern Europe)	(0.030)	(0.033)	(0.070)	(0.039)	(0.038)
Observations	31,228	22,371	8,802	16,936	14,289
Mean of dep. var.	0.0509	0.0474	0.0598	0.0661	0.0329
Std. dev. of dep. var.	0.220	0.213	0.237	0.249	0.178
Panel C: Nonmarital Fertility					
Import exposure	-0.0843*	-0.131***	0.329*	-0.110	-0.0550
(Eastern Europe)	(0.044)	(0.043)	(0.187)	(0.070)	(0.044)
Export exposure	0.0661**	0.078***	-0.116	0.0857**	0.0420
(Eastern Europe)	(0.026)	(0.028)	(0.098)	(0.041)	(0.031)
Observations	24,106	19,219	4,723	12,373	11,733
Mean of dep. var.	0.0233	0.0230	0.0248	0.0233	0.0234
Std. dev. of dep. var.	0.151	0.150	0.155	0.151	0.151

Notes - Standard errors are reported in parentheses and are clustered at the 2-digit industry and year level. All models include individual, year $\times$ federal state, and 1-digit industry fixed effects. Further controls include age and its quadratic term, indicators for education, and household size. * Significant at 10%; ** significant at 5%; *** significant at 1%.

Table A.19: Effects of Trade Exposure on Marriage - Years up to 2008 - 2SLS Estimates

	(1) Pooled	(2) Low-educated	(3) High-educated	(4) Males	(5) Females
Panel A: Marriage					
Import exposure	0.017	0.023	0.065	-0.001	0.049
(Eastern Europe)	(0.041)	(0.048)	(0.081)	(0.057)	(0.056)
Export exposure	-0.008	-0.002	-0.043	-0.007	-0.018
(Eastern Europe)	(0.026)	(0.031)	(0.047)	(0.035)	(0.035)
Observations	57,545	43,365	13,976	31,088	26,457
Mean of dep. var.	0.562	0.536	0.647	0.573	0.549
Std. dev. of dep. var.	0.496	0.499	0.478	0.495	0.498
Panel B: Divorce					
Import exposure	-0.009	0.001	-0.082**	0.001	-0.027
(Eastern Europe)	(0.020)	(0.025)	(0.037)	(0.026)	(0.033)
Export exposure	0.000	-0.010	0.051**	0.001	-0.004
(Eastern Europe)	(0.014)	(0.018)	(0.022)	(0.018)	(0.022)
Observations	58,027	43,838	13,982	31,411	26,616
Mean of dep. var.	0.0638	0.0683	0.0501	0.0471	0.0836
Std. dev. of dep. var.	0.244	0.252	0.218	0.212	0.277
Panel C: Cohabitation					
Import exposure	-0.147***	-0.143**	-0.094	-0.162**	-0.118
(Eastern Europe)	(0.055)	(0.064)	(0.097)	(0.075)	(0.083)
Export exposure	0.094***	0.081**	0.071	0.103**	0.069
(Eastern Europe)	(0.033)	(0.039)	(0.058)	(0.046)	(0.053)
Observations	57,943	43,749	13,987	31,356	26,587
Mean of dep. var.	0.260	0.267	0.239	0.231	0.295
Std. dev. of dep. var.	0.439	0.442	0.426	0.421	0.456

Notes - Standard errors are reported in parentheses and are clustered at the 2-digit industry and year level. All models include individual, year $\times$ federal state, and 1-digit industry fixed effects. Further controls include age and its quadratic term, indicators for education, and household size. * Significant at 10%; ** significant at 5%; *** significant at 1%.

Table A.20: Effects of Trade Exposure on Labor Market Outcomes - OLS Estimates

	(1) Pooled	(2) Low-educated	(3) High-educated	(4) Males	(5) Females
Panel A: Income					
Import exposure	-0.016	-0.238	0.320	0.043	-0.130
(Eastern Europe)	(0.129)	(0.153)	(0.218)	(0.132)	(0.265)
Export exposure	0.181*	0.323***	-0.059	0.116	0.243
(Eastern Europe)	(0.097)	(0.114)	(0.148)	(0.103)	(0.190)
Observations	82,271	61,576	20,515	45,031	37,240
Mean of dep. var.	2.210	2.154	2.374	2.163	2.267
Std. dev. of dep. var.	3.597	3.451	3.978	3.641	3.541
Panel B: Hours Worked					
Import exposure	-0.103*	-0.058	-0.079	-0.192***	0.139
(Eastern Europe)	(0.061)	(0.062)	(0.089)	(0.068)	(0.116)
Export exposure	0.088*	0.064	0.079	0.147***	-0.027
(Eastern Europe)	(0.051)	(0.054)	(0.068)	(0.052)	(0.104)
Observations	99,001	72,072	26,549	51,500	47,501
Mean of dep. var.	1.909	1.772	2.258	1.719	2.115
Std. dev. of dep. var.	2.980	2.599	3.768	2.663	3.277
Panel C: Unemployment					
Import exposure	0.017*	0.021*	-0.006	0.006	0.037**
(Eastern Europe)	(0.009)	(0.011)	(0.009)	(0.010)	(0.016)
Export exposure	-0.016***	-0.020**	0.000	-0.014**	-0.021*
(Eastern Europe)	(0.006)	(0.008)	(0.007)	(0.007)	(0.011)
Observations	143,610	107,488	35,563	73,263	70,347
Mean of dep. var.	0.0489	0.0579	0.0224	0.0514	0.0463
Std. dev. of dep. var.	0.216	0.234	0.148	0.221	0.210

Notes - Standard errors are reported in parentheses and are clustered at the 2-digit industry and year level. All models include individual, year $\times$ federal state, and 1-digit industry fixed effects. Further controls include age and its quadratic term, indicators for education, and household size. * Significant at 10%; ** significant at 5%; *** significant at 1%.

Table A.21: Effects of Trade Exposure on Fertility, by Education and Gender - OLS Estimates

	(1) Pooled	(2) Low-educated	(3) High-educated	(4) Males	(5) Females
Panel A: Overall Fertility					
Import exposure	-0.008	-0.022**	0.030	-0.010	0.009
(Eastern Europe)	(0.010)	(0.010)	(0.025)	(0.014)	(0.014)
Export exposure	0.004	0.012	-0.018	0.002	0.003
(Eastern Europe)	(0.008)	(0.009)	(0.018)	(0.011)	(0.011)
Observations	104,531	77,474	26,695	53,691	50,840
Mean of dep. var.	0.0394	0.0358	0.0502	0.0496	0.0287
Std. dev. of dep. var.	0.195	0.186	0.218	0.217	0.167
Panel B: Marital Fertility					
Import exposure	-0.008	-0.027*	0.024	-0.017	0.030
(Eastern Europe)	(0.013)	(0.015)	(0.029)	(0.019)	(0.023)
Export exposure	0.003	0.018	-0.027	0.009	-0.010
(Eastern Europe)	(0.011)	(0.013)	(0.023)	(0.015)	(0.017)
Observations	57,889	40,917	16,874	30,870	27,016
Mean of dep. var.	0.0510	0.0459	0.0631	0.0676	0.0320
Std. dev. of dep. var.	0.220	0.209	0.243	0.251	0.176
Panel C: Nonmarital Fertility					
Import exposure	-0.00730	-0.010	0.032	-0.0130	0.00364
(Eastern Europe)	(0.012)	(0.011)	(0.040)	(0.015)	(0.018)
Export exposure	0.00704	0.004	0.005	0.00801	0.00479
(Eastern Europe)	(0.010)	(0.009)	(0.029)	(0.012)	(0.016)
Observations	44,706	35,074	9,327	21,904	22,802
Mean of dep. var.	0.0224	0.0216	0.0252	0.0229	0.0219
Std. dev. of dep. var.	0.148	0.146	0.157	0.150	0.146

Notes - Standard errors are reported in parentheses and are clustered at the 2-digit industry and year level. All models include individual, year $\times$ federal state, and 1-digit industry fixed effects. Further controls include age and its quadratic term, indicators for education, and household size. * Significant at 10%; ** significant at 5%; *** significant at 1%.

Table A.22: Effects of Trade Exposure on Marital Behavior - OLS Estimates

	(1) Pooled	(2) Low-educated	(3) High-educated	(4) Males	(5) Females
Panel A: Marriage					
Import exposure	0.003	-0.016	0.056**	0.016	-0.022
(Eastern Europe)	(0.011)	(0.013)	(0.023)	(0.013)	(0.020)
Export exposure	-0.004	0.009	-0.029*	-0.016	0.010
(Eastern Europe)	(0.009)	(0.010)	(0.017)	(0.010)	(0.016)
Observations	105,402	78,162	26,865	54,787	50,615
Mean of dep. var.	0.563	0.537	0.640	0.581	0.542
Std. dev. of dep. var.	0.496	0.499	0.480	0.493	0.498
Panel B: Divorce					
Import exposure	-0.001	0.007	-0.028***	-0.011*	0.019
(Eastern Europe)	(0.006)	(0.007)	(0.010)	(0.006)	(0.014)
Export exposure	-0.003	-0.008	0.016**	0.005	-0.014
(Eastern Europe)	(0.005)	(0.006)	(0.008)	(0.005)	(0.011)
Observations	105,916	78,649	26,889	55,197	50,719
Mean of dep. var.	0.0631	0.0704	0.0423	0.0400	0.0883
Std. dev. of dep. var.	0.243	0.256	0.201	0.196	0.284
Panel C: Cohabitation					
Import exposure	-0.004	-0.002	-0.031	-0.016	0.013
(Eastern Europe)	(0.016)	(0.018)	(0.027)	(0.018)	(0.029)
Export exposure	0.011	0.011	0.019	0.014	-0.001
(Eastern Europe)	(0.012)	(0.014)	(0.020)	(0.014)	(0.022)
Observations	104,598	77,657	26,570	54,417	50,181
Mean of dep. var.	0.264	0.269	0.246	0.234	0.295
Std. dev. of dep. var.	0.441	0.443	0.431	0.424	0.456

Notes - Standard errors are reported in parentheses and are clustered at the 2-digit industry and year level. All models include individual, year $\times$ federal state, and 1-digit industry fixed effects. Further controls include age and its quadratic term, indicators for education, and household size. * Significant at 10%; ** significant at 5%; *** significant at 1%.

Table A.23: Effects of Trade Exposure on Labor Market Outcomes - Exposure to China - 2SLS Estimates

	(1) Pooled	(2) Low-educated	(3) High-educated	(4) Males	(5) Females
Panel A: Income					
Import exposure	-0.186	-0.355	0.468	-0.082	-0.438
(China)	(0.197)	(0.224)	(0.373)	(0.165)	(0.384)
Export exposure	0.484**	0.681***	-0.201	0.268	0.853**
(China)	(0.218)	(0.228)	(0.538)	(0.219)	(0.430)
Observations	81,980	61,393	20,409	44,827	37,153
Mean of dep. var.	2.211	2.155	2.375	2.162	2.270
Std. dev. of dep. var.	3.609	3.460	3.999	3.649	3.558
Panel B: Hours Worked					
Import exposure	-0.142	-0.050	-0.178	-0.195*	-0.021
(China)	(0.090)	(0.086)	(0.159)	(0.116)	(0.147)
Export exposure	0.251**	0.090	0.172	0.337**	0.094
(China)	(0.117)	(0.107)	(0.128)	(0.143)	(0.227)
Observations	98,654	71,857	26,420	51,270	47,384
Mean of dep. var.	1.907	1.771	2.257	1.718	2.112
Std. dev. of dep. var.	2.977	2.596	3.764	2.662	3.271
Panel C: Unemployment					
Import exposure	0.035	0.046*	-0.017	0.015	0.060
(China)	(0.023)	(0.028)	(0.018)	(0.026)	(0.039)
Export exposure	-0.031*	-0.048**	0.031	-0.020	-0.053*
(China)	(0.017)	(0.021)	(0.020)	(0.019)	(0.032)
Observations	143,093	107,172	35,365	72,926	70,167
Mean of dep. var.	0.0490	0.0579	0.0225	0.0515	0.0464
Std. dev. of dep. var.	0.216	0.234	0.148	0.221	0.210

Notes - Standard errors are reported in parentheses and are clustered at the 2-digit industry and year level. All models include individual, year $\times$ federal state, and 1-digit industry fixed effects. Further controls include age and its quadratic term, indicators for education, and household size. * Significant at 10%; ** significant at 5%; *** significant at 1%.

Table A.24: Effects of Trade Exposure on Fertility – Exposure to China - 2SLS Estimates

	(1) Pooled	(2) Low-educated	(3) High-educated	(4) Males	(5) Females
Panel A: Overall Fertility					
Import exposure (China)	-0.027*	-0.020	-0.026	-0.031	-0.007
	(0.016)	(0.018)	(0.043)	(0.024)	(0.020)
Export exposure (China)	0.013	0.008	0.014	0.006	0.033
	(0.017)	(0.019)	(0.040)	(0.024)	(0.026)
Observations	104,155	77,237	26,562	53,440	50,715
Mean of dep. var.	0.0395	0.0358	0.0502	0.0496	0.0288
Std. dev. of dep. var.	0.195	0.186	0.218	0.217	0.167
Panel B: Marital Fertility					
Import exposure (China)	-0.062***	-0.052*	-0.067	-0.076**	-0.016
	(0.024)	(0.028)	(0.054)	(0.036)	(0.030)
Export exposure (China)	0.049*	0.051	0.031	0.060	0.045
	(0.027)	(0.032)	(0.056)	(0.038)	(0.039)
Observations	57,677	40,782	16,799	30,728	26,946
Mean of dep. var.	0.0510	0.0459	0.0633	0.0677	0.0320
Std. dev. of dep. var.	0.220	0.209	0.243	0.251	0.176
Panel C: Out-of-wedlock Fertility					
Import exposure (China)	-4.06e-05	0.000	0.027	0.014	-0.009
	(0.020)	(0.022)	(0.051)	(0.025)	(0.028)
Export exposure (China)	-0.0128	-0.013	-0.028	-0.042*	0.039
	(0.020)	(0.019)	(0.057)	(0.024)	(0.034)
Observations	44,551	34,980	9,271	21,800	22,751
Mean of dep. var.	0.0223	0.0216	0.0248	0.0226	0.0219
Std. dev. of dep. var.	0.148	0.146	0.156	0.149	0.146

Notes - Standard errors are reported in parentheses and are clustered at the 2-digit industry and year level. All models include individual, year $\times$ federal state, and 1-digit industry fixed effects. Further controls include age and its quadratic term, indicators for education, and household size. * Significant at 10%; ** significant at 5%; *** significant at 1%.

Table A.25: Effects of Trade Exposure on Marital Behavior – Exposure to China - 2SLS Estimates

	(1) Pooled	(2) Low-educated	(3) High-educated	(4) Males	(5) Females
Panel A: Marriage					
Import exposure (China)	0.030	0.034	0.053	0.039	0.012
	(0.025)	(0.028)	(0.041)	(0.030)	(0.038)
Export exposure (China)	-0.026	-0.035	-0.020	-0.038	-0.021
	(0.022)	(0.024)	(0.038)	(0.026)	(0.038)
Observations	105,029	77,928	26,732	54,539	50,490
Mean of dep. var.	0.562	0.537	0.641	0.581	0.542
Std. dev. of dep. var.	0.496	0.499	0.480	0.493	0.498
Panel B: Divorce					
Import exposure (China)	-0.029**	-0.026*	-0.043**	-0.024	-0.035
	(0.013)	(0.016)	(0.022)	(0.015)	(0.023)
Export exposure (China)	0.011	0.004	0.029	0.011	0.014
	(0.011)	(0.014)	(0.018)	(0.011)	(0.023)
Observations	105,541	78,413	26,756	54,947	50,594
Mean of dep. var.	0.0632	0.0704	0.0423	0.0400	0.0883
Std. dev. of dep. var.	0.243	0.256	0.201	0.196	0.284
Panel C: Cohabitation					
Import exposure (China)	-0.052*	-0.059*	-0.015	-0.049	-0.080
	(0.031)	(0.035)	(0.049)	(0.036)	(0.058)
Export exposure (China)	0.054*	0.072**	-0.014	0.035	0.074
	(0.028)	(0.032)	(0.046)	(0.032)	(0.053)
Observations	104,241	77,433	26,443	54,182	50,059
Mean of dep. var.	0.264	0.269	0.246	0.234	0.295
Std. dev. of dep. var.	0.441	0.443	0.431	0.424	0.456

Notes - Standard errors are reported in parentheses and are clustered at the 2-digit industry and year level. All models include individual, year $\times$ federal state, and 1-digit industry fixed effects. Further controls include age and its quadratic term, indicators for education, and household size. * Significant at 10%; ** significant at 5%; *** significant at 1%.

Table A.26: Effects of Trade Exposure on Labor Market Outcomes - Exposure to East - 2SLS Estimates

	(1) Pooled	(2) Low-educated	(3) High-educated	(4) Males	(5) Females
Panel A: Income					
Import exposure	-0.157	-0.239*	0.073	-0.153*	-0.205
(East)	(0.100)	(0.122)	(0.120)	(0.092)	(0.184)
Export exposure	0.210***	0.265***	0.040	0.182**	0.252*
(East)	(0.077)	(0.095)	(0.101)	(0.072)	(0.152)
Observations	82,162	61,515	20,468	44,985	37,177
Mean of dep. var.	2.210	2.156	2.371	2.163	2.268
Std. dev. Of dep. Var.	3.602	3.461	3.975	3.644	3.551
Panel B: Hours Worked					
Import exposure	-0.053	-0.019	-0.026	-0.067	-0.010
(East)	(0.047)	(0.050)	(0.078)	(0.064)	(0.074)
Export exposure	0.066*	0.041	0.028	0.070	0.072
(East)	(0.037)	(0.038)	(0.054)	(0.048)	(0.069)
Observations	98,897	72,012	26,505	51,455	47,442
Mean of dep. var.	1.909	1.773	2.256	1.717	2.116
Std. dev. Of dep. Var.	2.978	2.600	3.758	2.654	3.280
1-1					
Panel C: Unemployment					
Import exposure	0.022**	0.029**	-0.003	0.018	0.027
(East)	(0.011)	(0.014)	(0.008)	(0.015)	(0.018)
Export exposure	-0.016**	-0.021**	0.002	-0.016*	-0.015
(East)	(0.007)	(0.009)	(0.005)	(0.009)	(0.011)
Observations	143,477	107,427	35,489	73,210	70,267
Mean of dep. var.	0.0490	0.0579	0.0224	0.0515	0.0464
Std. dev. Of dep. Var.	0.216	0.234	0.148	0.221	0.210

Notes - Standard errors are reported in parentheses and are clustered at the 2-digit industry and year level. All models include individual, year $\times$ federal state, and 1-digit industry fixed effects. Further controls include age and its quadratic term, indicators for education, and household size. * Significant at 10%; ** significant at 5%; *** significant at 1%.

Table A.27: Effects of Trade Exposure on Fertility, by Education – Exposure to East - 2SLS Estimates

	(1) Pooled	(2) Low-educated	(3) High-educated	(4) Males	(5) Females
Panel A: Overall Fertility					
Import exposure	-0.016*	-0.014	-0.017	-0.017	-0.010
(East)	(0.008)	(0.010)	(0.020)	(0.012)	(0.011)
Export exposure	0.008	0.006	0.011	0.005	0.015*
(East)	(0.006)	(0.007)	(0.014)	(0.009)	(0.009)
Observations	104,419	77,407	26,649	53,641	50,778
Mean of dep. var.	0.0394	0.0357	0.0501	0.0495	0.0287
Std. dev. Of dep. Var.	0.195	0.186	0.218	0.217	0.167
Panel B: Marital Fertility					
Import exposure	-0.033***	-0.030**	-0.032	-0.046**	-0.005
(East)	(0.012)	(0.015)	(0.025)	(0.019)	(0.015)
Export exposure	0.020**	0.020*	0.015	0.028**	0.010
(East)	(0.009)	(0.011)	(0.018)	(0.013)	(0.013)
Observations	57,817	40,881	16,840	30,849	26,965
Mean of dep. var.	0.0509	0.0459	0.0630	0.0675	0.0320
Std. dev. Of dep. Var.	0.220	0.209	0.243	0.251	0.176
Panel C: Nonmarital Fertility					
Import exposure	-0.00536	-0.005	0.017	0.002	-0.014
(East)	(0.011)	(0.012)	(0.029)	(0.015)	(0.015)
Export exposure	0.00263	-0.001	0.004	-0.006	0.016
(East)	(0.008)	(0.009)	(0.018)	(0.010)	(0.013)
Observations	44,669	35,050	9,311	21,877	22,792
Mean of dep. var.	0.0223	0.0216	0.0250	0.0227	0.0219
Std. dev. Of dep. Var.	0.148	0.145	0.156	0.149	0.146

Notes - Standard errors are reported in parentheses and are clustered at the 2-digit industry and year level. All models include individual, year × federal state, and 1-digit industry fixed effects. Further controls include age and its quadratic term, indicators for education, and household size. * Significant at 10%; ** significant at 5%; *** significant at 1%.

Table A.28: Effects of Trade Exposure on Marital Behavior – Exposure to East - 2SLS Estimates

	(1) Pooled	(2) Low-educated	(3) High-educated	(4) Males	(5) Females
Panel A: Marriage					
Import exposure	0.019	0.026*	0.005	0.021	0.016
(East)	(0.014)	(0.015)	(0.028)	(0.017)	(0.020)
Export exposure	-0.016*	-0.021*	-0.001	-0.019	-0.017
(East)	(0.009)	(0.011)	(0.018)	(0.012)	(0.015)
Observations	105,293	78,098	26,819	54,740	50,553
Mean of dep. var.	0.562	0.537	0.640	0.582	0.542
Std. dev. Of dep. Var.	0.496	0.499	0.480	0.493	0.498
Panel B: Divorce					
Import exposure	-0.017**	-0.017*	-0.018**	-0.013	-0.022*
(East)	(0.007)	(0.008)	(0.009)	(0.008)	(0.011)
Export exposure	0.009*	0.008	0.012*	0.006	0.015
(East)	(0.005)	(0.006)	(0.007)	(0.005)	(0.010)
Observations	105,805	78,583	26,843	55,148	50,657
Mean of dep. var.	0.0631	0.0704	0.0423	0.0399	0.0884
Std. dev. Of dep. Var.	0.243	0.256	0.201	0.196	0.284
Panel C: Cohabitation					
Import exposure	-0.037**	-0.037*	-0.020	-0.039*	-0.046*
(East)	(0.016)	(0.019)	(0.026)	(0.021)	(0.027)
Export exposure	0.032***	0.035***	0.006	0.028**	0.040**
(East)	(0.011)	(0.013)	(0.018)	(0.014)	(0.020)
Observations	104,503	77,602	26,529	54,381	50,122
Mean of dep. var.	0.264	0.269	0.246	0.234	0.296
Std. dev. Of dep. Var.	0.441	0.443	0.431	0.424	0.456

Notes - Standard errors are reported in parentheses and are clustered at the 2-digit industry and year level. All models include individual, year $\times$ federal state, and 1-digit industry fixed effects. Further controls include age and its quadratic term, indicators for education, and household size. * Significant at 10%; ** significant at 5%; *** significant at 1%.