ERASMUS UNIVERSITY ROTTERDAM

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Reevaluating Gender Roles: Pandemic Impacts in Four European Countries

An empirical study on the effect of the pandemic on beliefs about gender roles in four European countries.

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Abstract

In this research, the effect of the pandemic on beliefs about gender roles in four European countries is studied. Attitudes toward gender roles are measured with six statements from the European Values Study (EVS) and the World Values Study (WVS). The data of the WVS survey has been collected in 2021 or 2022, at times where most strict COVID-19 measures already had been eased. Therefore, I studied the effect of the period of lockdowns and the period of re-opening society. By performing a Nearest-Neighbour Match, gender role beliefs before and at the end of the pandemic can be compared. The main results suggest that the pandemic is associated with a significant decrease in agreement with traditional beliefs in Armenia, The Netherlands and The Slovak Republic. Additionally, I find evidence that the pandemic in The Czech Republic is associated with a significant increase in traditional beliefs. The pandemic's effect suggests to be concentrated among men in Armenia, The Netherlands and The Czech Republic. Furthermore, the results suggest that the impact of the pandemic differed significantly across and within countries, when comparing the effect on males, females, employed respondents and respondents with at least one child living at home. Although the validity of the results is threatened by the quality of the matching exercise, this study finds evidence for heterogenous effects of the pandemic on attitudes toward gender roles.

Table of Contents

1. Introduction

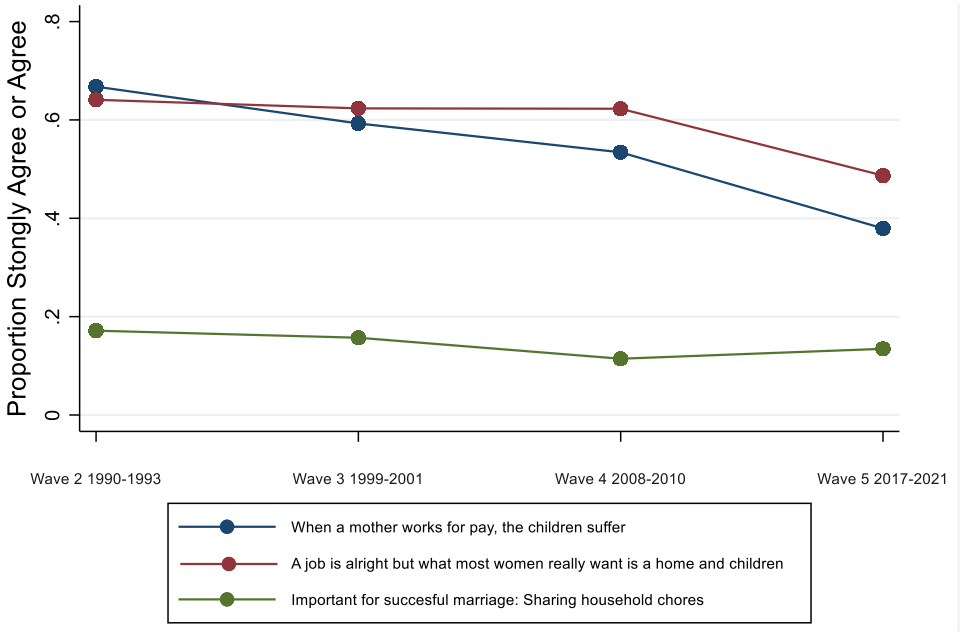
Despite several waves of emancipation, a significant and enduring gender wage gap of 12.7% continues to exist in Europe (European Commission, n.d.). The gender gap in unpaid labor also remains substantial. In 2017, only 34% of men spent at least one hour every day on household chores and cooking, compared to 79% of women. This division of labor in household chores has not changed much over the past decade (European Institute for Gender Equality, 2019). Besides the unequal division of paid and unpaid labor, there is also a significant inequality in the external demand for parental involvement. A recent study found that mothers are 1.4 times more likely to be contacted by school principals than fathers (Buzard, Gee & Stoddard, 2023). Buzard et al. (2023) propose that this discrimination stems from varying beliefs regarding parental availability, which are partly formed by gender norms.

Over the last decades, there has been a strong negative trend in the proportion of Europeans that (strongly) agree with statements like "When a mother works for pay, the children suffer" and "A job is alright but what most women really want is a home and children" (Figure 1). These statements capture attitudes toward gender roles. However, there has not been much of a change in agreement with the statement "Important for a successful marriage: sharing household chores". This possibly indicates that beliefs about women's role in the labor market has changed more than women's role at home. In December 2020, the first few COVID-19 cases in Wuhan were brought to light. Three months later, almost all countries announced a lockdown to control the spread of the virus. Schools were closed, working from home was mandatory and you were not allowed to receive guests. The closing of educational centers and childcare made it impossible to outsource household labor. The pandemic had a significant impact on paid and unpaid labor and could therefore have an impact on beliefs about gender roles, captured by statements shown in Figure 1.

Previous crises resulted in bigger unemployment effects for males than females (Alon, Doepke, Olmstead-Rumsey & Tertilt, 2020). Therefore, one could argue that a crisis like the pandemic could increase the time spent on household labor by males, because they are less time-restricted if they become unemployed. However, a study conducted in the US found that the COVID-19 crisis led to a larger employment loss for women, rather than for males (Alon et al., 2020). Similarly, Farré, Fawaz, Gonzalez and Graves (2021) studied the effect of the pandemic on gender inequality in paid and unpaid labor, in Spain. They found that the pandemic symmetrically affected females' and men's employment, but asymmetrically affected unpaid labor. The burden of domestic workload continued to be carried by women (Farré et al., 2021). Additionally, Hupkau and Pertongolo (2020) found that labor market outcomes at the extensive margin were roughly similar affected for both men and women in the United Kingdom. However, at the intensive margin, women experienced smaller losses. Their hours and

earnings changed less than for men. Regarding unpaid work, women provided on average the larger share of increased childcare needs (Hupkau & Pertongolo, 2020).

Figure 1. Development of beliefs about gender roles in Europe, 1990-2018.



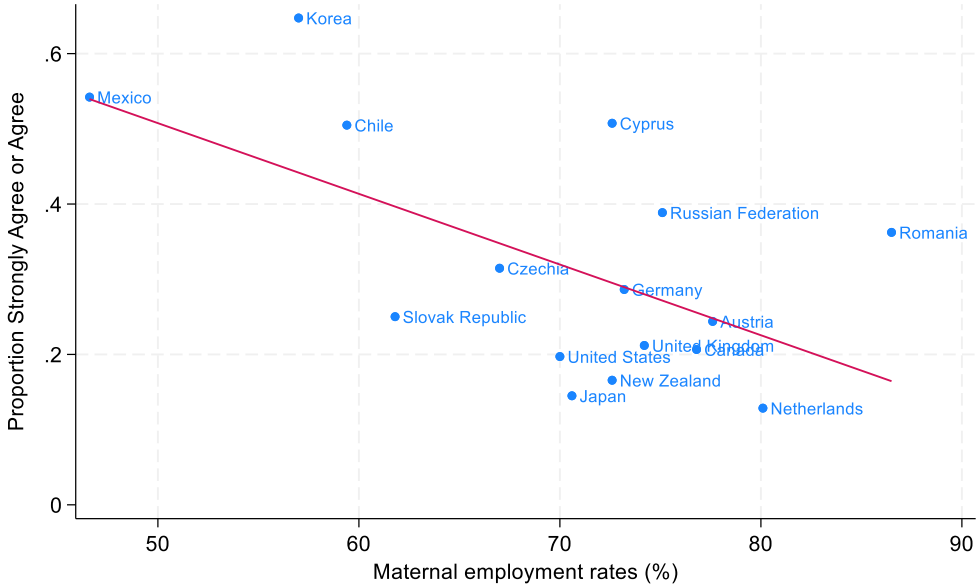
Source: European Values Study Trend File 1981-2017 (EVS, 2022). *https://doi.org/10.4232/1.14021*.

Notes: The figure shows the development of the beliefs about gender roles in Europe since 1990. The statements denoted with the blue and red lines, show a strong decrease in traditional attitudes toward gender roles. The other statement about the division of household chores has not changed much over time. However, since Wave 4 the proportion of Europeans who belief sharing household chores is important for a good marriage increased slightly. The figure shows data from 1990, because the EVS collected data on these statements since the second Wave of their study. Figure 1 shows the mean share of individuals wo (strongly) agree with three gender role statements of the following European countries: Albania, Azerbaijan, Austria, Armenia, Belgium, Bosnia, Bulgari, Belarus, Croatia, Czech Republic, Denmark, Estonia, Finland, France, Georgia, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Moldova, Montenegro, The Netherlands, Norway, Poland, Portugal, Romania, Russia, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Ukraine, North Macedonia, Great Britain, Northern Ireland and Kosovo.

So, the COVID-19 crisis had an immediate and direct impact on paid and unpaid labor. Additionally, the pandemic could also have a more long-term effect on labor outcomes and the division of household labor between men and women. Outsourcing household labor has been impactful in increasing female labor force participation (Goldin, 2006). However, since this was not possible during strict lockdown measures, it is plausible that the social norm on outsourcing household labor, and thereby women's labor supply, has changed. Increasing women's labor supply has been heavily discussed in politics, especially since it has been stagnant the last three decades (The World Bank Gender Data Portal, 2022). Despite the occurrence of structural transformation, declining fertility rates, and increased female education in various regions across the globe, the anticipated significant increase in women's labor force participation has not been materialized. The reason that the female labor force

participation is stagnant, is partly because of rigid historic, economic and social structures and norms (The World Bank Gender Data Portal, 2022). Therefore, the pandemic could impact female labor force participation, since this crisis influenced economic and social structures and norms. Citizens of countries with high maternal employment rates and female labor force participation tend to have beliefs in line with equal gender roles (Figure 2 and 3). This adds power to the idea of increasing female labor supply by changing attitudes toward gender roles.

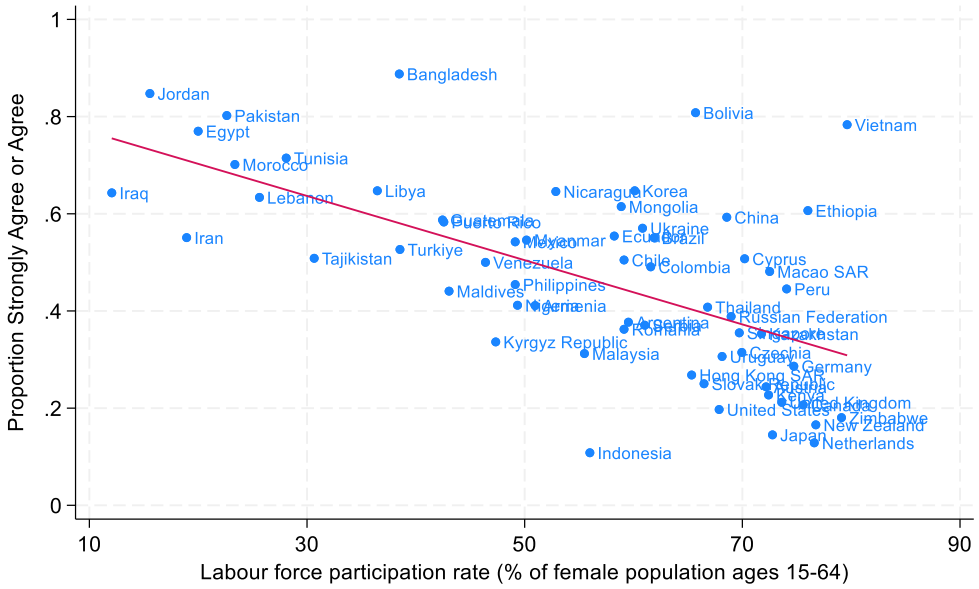
Figure 2. Correlation between beliefs about gender roles and maternal employment rates, OECD countries.



Source: To measure the beliefs about gender roles, a statement from the seventh wave of the WVS is used (WVS, 2022). The OECD Family Database is used for data of maternal employment rates from 2019, or the latest year available. The OECD defines the maternal employment rate as the percentage of women (15-64 year-olds) with at least one child aged 0-14, that works part-time or full-time. The WVS data is online available at https://www.worldvaluessurvey.org/WVSDocumentationWV7.jsp . And the OECD Family Database is online available at https://www.oecd.org/els/family/database.htm, Table LMF1.2A.

Notes: The figure above shows the correlation between the proportion of respondents who strongly agree or agree with the statement "When a mother works for pay, the children suffer." and the maternal employment rates in OECD countries. The red line gives the Fitted values. The Pearson correlation coefficient has a value of 0.5849 and is significant at the 5% level.

Figure 3. Correlation between beliefs about gender roles and female labor force participation rates.



Source: To measure the beliefs about gender roles, a statement from the seventh wave of the WVS is used (WVS, 2022). The Gender Data Portal of The World Bank is used to collect data of the female labor force participation rate of 2019 (The World Bank, 2019). Female labor force participation is defined as the percentage of the female population (15-64 year-olds) that is economically active and supply labor. The WVS data is online available at https://www.worldvaluessurvey.org/WVSDocumentationWV7.jsp. Data of the female labor force participation rate is online available at: https://genderdata-worldbank-org.eur.idm.oclc.org/indicators/sl-tlf-acti-zs/?age=15-64.

Notes: The figure above shows the correlation between the proportion of respondents who strongly agree or agree with the statement "When a mother works for pay, the children suffer." and the female labour force participation rate. The red line gives the Fitted values. The Pearson correlation coefficient has a value of 0.7596 and is significant at the 5% level.

Boring and Moroni (2023) recently conducted a study in which they examine the effect of the first lockdown on beliefs about gender roles. They found that the first lockdown in France in 2020 is associated with a significant change in beliefs about gender roles. Respondents of the *Lockdown* survey increased agreement with statements in line with traditional beliefs about gender roles. Boring and Moroni (2023) focus only on the first lockdown, whereas it would also be meaningful to study if this revert to traditional beliefs continues after re-opening society. Therefore, this study tries to answer the following research question:

How did the COVID-19 pandemic impact the beliefs about gender roles, in four European countries?

More specifically, this research studies the effect in Armenia, The Czech Republic, The Netherlands and The Slovak Republic. This adds to existing literature since the pandemic is still a relatively new exogenous shock. So, it is useful to examine if the effect found by Boring and Moroni (2023) also holds for different countries. In addition, Boring and Moroni (2023) focus only on the first lockdown, whereas

this study examines a more long-term effect of the pandemic. In this study the pandemic consists of the period of lockdowns and the period of re-opening society.

Understanding how beliefs about gender roles are formed and influenced by exogenous shocks is of high economic and social value, since social norms have an impact on female labor force participation and equalizing the opportunities young girls and boys get (Save the Children, n.d.). Increasing female labor force participation, in turn, significantly increases the GDP, productivity and gender equality in society (International Monetary Fund [IMF] et al., 2018). Therefore, increasing knowledge on this mechanism is relevant for designing policy implications to increase social welfare and help to achieve gender equality.

The research question will be answered by comparing attitudes toward gender roles before and after the pandemic by performing a Nearest-Neighbor Match with Mahalanobis distance. Beliefs about gender roles will be measured by six statements questioned by the World Values Survey (WVS) and the European Values Study (EVS). The matching exercise results in predicted values that form the pre-pandemic beliefs of WVS respondents. The main regression allows the effect of the pandemic to differ between men and women. Each country is analyzed separately, and the regression allows to control for region fixed effects.

The main results of this research suggest that the pandemic is associated with a significant decrease in traditional beliefs about gender roles in Armenia, The Netherlands and The Slovak Republic. In The Czech Republic the pandemic is associated with a significant increase in traditional attitudes toward gender roles. I find evidence that the effect of the pandemic is concentrated among men in Armenia, The Netherlands and The Czech Republic. In addition, the findings suggest that the pandemic had heterogenous effects in the four countries. This study also analyzes the pandemic's effect on employed respondents and on respondents that have a child living at home. Results of Armenia, The Netherlands and The Czech Republic suggest to support this heterogeneity, although weakly.

The structure of this paper is as follows. Section 2 discusses existing research in this field and establishes its relevance to this study. In Section 3, the data will be presented and discussed. Section 4 discusses the empirical strategy used in this research. Section 5 presents some descriptive evidence, before the main results are discussed in Section 6. Section 7 analyzes two heterogenous effects. The robustness of the results will be discussed in Section 8. Section 9 consists of the discussion and conclusion. Finally, in Section 10 the bibliography is shown and Section 11 consists of the appendix.

2. Related literature

Gender roles are based on "a set of beliefs and opinions about males and females and about the purported qualities of masculinity and femininity" (Deaux & Kite, 1987, p. 97). These gender roles are

stereotyping and assume that a characteristic or quality is either feminine, or masculine. They indicate what is found to be socially accepted and help to form social norms. As a result of social norms formed by the system of gender roles, society has different expectations and obligations for men and women (Mencarini, 2014). Beliefs about gender roles differ widely between cultures and have changed a lot over time. For example, pink used to be a masculine color and blue a feminine color, but nowadays we associate pink with girls and blue with boys (Bhattacharjee, 2018). According to the United Nations (n.d.), gender stereotyping becomes harmful when it limits an individual's choices and ability to develop, both personally and in their career. Stereotypes can be adverse or seemingly innocent. Nevertheless, they preserve and contribute to gender inequalities we observe. Beliefs about gender roles become even more harmful when they are combined with other stereotypes about for example religion or economic status (United Nations, n.d.). Therefore, it is valuable to broaden knowledge about how beliefs about gender roles are affected by an exogenous shock like the pandemic.

Before discussing existing research on the effect of the pandemic on beliefs about gender roles, this paragraph discusses the historical background of how these assumptions and expectations of both genders have been formed. It has been acknowledged that the way agriculture was traditionally practiced may have contributed to the development of contemporary gender roles. Baumann (1928) conducted an initial study on the correlation between the use of hoes and matriarchy in Africa, while Boserup (1970) expanded on this idea by highlighting key distinctions between plough cultivation and shifting cultivation. Plough cultivation requires more upper body strength and therefore men have a comparative advantage in ploughing. As a result, in countries where they used plough cultivation, men worked outside and women were mostly responsible for household labor. Gender-based division of labor generated social norms on the role of women in society. Regions with plough-intensive agriculture developed the belief that women should take care of the family and the household labor. These beliefs tend to remain, even when a society moves out of agriculture. Alesina, Giuliuna and Nunn (2013) explicitly found that individuals whose ancestors engaged in plough agriculture tend to have more traditional beliefs about gender roles. Furthermore, female labor force participation appears to remain lower among these individuals.

Besides historical factors that influence attitudes toward gender roles, there are many short-run factors that might be just as important. Therefore, to examine the historical origins of beliefs about gender roles Alesina et al. (2013) controls for the following short-run factors: economic development, medical improvements, technological change and the production structure of the economy. The COVID-19 pandemic had an impact on most of these short-run factors and therefore it is plausible that this crisis influenced beliefs about gender roles. In the remaining paragraphs of this section, existing literature on the impact of the COVID-19 pandemic on beliefs about gender roles and gender inequality in the labor market will be discussed.

The study by Boring and Moroni (2023) previously stated, found that the COVID-19 lockdown in France in 2020 is associated with a significant change in beliefs about gender roles. They conducted a survey during the first lockdown by which they collected the opinion of 1,000 employed individuals on 6 statements from the EVS. By performing a Nearest-Neighbor Match on observable characteristics of respondents from the EVS and their own survey, Boring and Moroni (2023) formed their counterfactual. They matched respondents on age, education category, marital status, geographic region, the number of children living in the household and the pre-lockdown employment status of the partner. Moreover, Boring and Moroni (2023) employed an exact match based on the sex of the respondent and whether the respondent has a child aged 12 or under residing in the same household. Subsequently, utilizing the predicted values from the matching exercise, Boring and Moroni (2023) were able to estimate the changes in beliefs about gender roles. Respondents of the *Lockdown* survey increased agreement with statements in line with traditional beliefs about gender roles. This effect was primarily observed among fathers with young children. This result is in line with the time-constrained mechanism. Additionally, the shift towards more traditional beliefs was also concentrated among men in relationships where both partners had equal time available for household labor and shared the responsibility of the increased household production. This could be explained by motivated reasoning; believing in egalitarian beliefs can become costly for men when constraints of household production increase, since men now actually have to increase their time spent on household chores (Boring and Moroni, 2023). Finally, they find that higher household incomes are associated with more equal beliefs about gender roles among men and women, using cross country EVS data. Boring and Moroni (2023) reason that the ability to outsource household labor increases as their income increases, which could lead to more egalitarian beliefs. This would make egalitarian beliefs a type of luxury good, but Boring and Moroni (2023) make no hard conclusions based on this association.

This research has a very similar set-up as the study conducted by Boring and Moroni (2023). However, there are some significant disparities, especially the data that has been used. Boring and Moroni (2023) used data that has been collected during the first lockdown period, so their study focusses on the direct effect of the lockdown measures. The data used in this research has been collected in 2021 and 2022, at times where most strict COVID-19 measures already had been eased. More specifically, this study takes the period of re-opening schools and childcare into account. Therefore, this study adds to existing literature on the effect of the pandemic on beliefs about gender roles by looking at a more long-run effect. Boring and Moroni (2023) predict that loosening the COVID-19 measures and re-opening schools would reverse the effect that they have found. Additionally, this study adds to the work of Boring and Moroni (2023) since the geographical region of interest will be expanded to four different European countries. Considering the more long-term approach of this study and the prediction of Boring and Moroni (2023), the first hypothesis of this research is formulated as follows: The pandemic, including the period of re-opening society, will not lead to an increase in traditional beliefs about gender

roles in Europe. In other words, the development of egalitarian beliefs will continue to follow the pre-pandemic trend (Figure 1).

Another study that examines the effect of the pandemic on gender role attitudes, is a study by Danzer et al. (2021). More specifically, this study focusses on gender role attitudes towards maternal employment in Germany. By performing a difference-in-difference comparison with state and age fixed effects, they compare the beliefs of men and women with and without children, before and one year after the outbreak of the virus. The pre-pandemic data is from three years 2008, 2012 and 2016 and they use one pandemic year, 2021. Danzer et al. (2021) found that egalitarian attitudes toward maternal employment substantially dropped among men in West Germany, whereas attitudes by women are not affected. In accordance with findings by Boring and Moroni (2023), this increase in traditional beliefs about gender roles is largest among fathers of young children. In contrast to Boring and Moroni (2023), Danzer et al. (2021) did not match the respondents of the pre-pandemic survey with respondents who took the survey one year after the COVID-19 outbreak. Danzer et al. (2021) did suggest that variables like age, region and gender are balanced across datasets. However, this can be seen as a limitation and therefore it is interesting to see if matching results in different outcomes. In addition, Danzer et al. (2021) uses pre-pandemic data collected at least three and a half year before the outbreak of the coronavirus. In their study, beliefs from 2016 form a proxy for beliefs just before the start of the pandemic. However, that is a strong assumption that is unlikely to hold and forms a limitation of their research. To narrow the time gap between the pre-pandemic and pandemic survey, this study uses data from Wave 5 of the EVS.

The COVID-19 crisis had an immediate impact on the labor market and restructuring employment (Alon et al., 2020; Farré et al., 2021; Hupkau and Pertongolo, 2020). It is plausible that those changes on the labor market have a more long-term impact on gender role attitudes within households. Therefore, Reichelt, Makovi and Sargsyan (2021) studied the impact of COIVD-19 on gender inequality in the labor market and gender role attitudes. First, Reichelt et al. (2021) examined whether the employment status, working hours and working arrangements changed during the pandemic, for both men and women. Secondly, they studied the relationship between a change in one of those three work elements and gender role attitudes. Reichelt et al. (2021) collected data from respondents from the U.S., Germany and Singapore, between May and June 2020. With use of a linear probability model, they show that women in the U.S., Germany and Singapore more often got unemployed, reduced working hours or transitioned to working from home, than men. To answer their second research question, Reichelt et al. (2021) estimated a linear regression where the dependent variable is an index measuring gender norms that consists of four statements from the General Social Survey. These statements are very similar to the statements used in this research. Among couples where both partners were employed before COVID-19, men expressed more egalitarian beliefs about gender roles if they became unemployed, while their partner remained employed. This association could add

power to the available time theory as a possible mechanism, like Boring and Moroni (2023) suggest. Different from men, women shifted to more traditional beliefs about gender roles, if they became unemployed, while their partner remained employed. This could indicate that respondents changed their beliefs to their own lived reality.

All three studies find that the impact of the COVID-19 crisis on beliefs about gender roles differs between men and women. More specifically, fathers significantly reverted to more traditional beliefs about gender roles, whereas women did not change their beliefs (Boring and Moroni, 2023; Danzer et al., 2021). However, if the pandemic led to unemployment among men, while their partner remained employed, they increased agreement with egalitarian beliefs. Women in this situation increased agreement with traditional beliefs (Reichelt et al., 2021). Re-opening educational centers and childcare will decrease household production constraints and may lead to an increase in egalitarian beliefs. In most studies, the effect of the COVID-19 crisis was bigger for men than for women. Therefore, the second hypothesis is stated as follows: The increase in egalitarian beliefs about gender roles during the pandemic, including the period of re-opening society, is concentrated among men. Men's beliefs showed significant reversions when household constraints increased, indicating that it is plausible for men to change their beliefs more than women when those constraints are lifted. This research also studies two heterogeneous effects. Both Boring and Moroni (2023) and Reichelt et al. (2021) found that the effect of the pandemic differs when taking working arrangements and employment status into account. Therefore, the third hypothesis is formulated as follows: The effect of the pandemic on beliefs about gender roles will be larger among employed respondents, compared to the full sample. This hypothesis can be linked to the time-constrained mechanism. The effect of the pandemic among employed respondents will also be studied for men and women separately, since the COVID-19 crisis impacted men and women differently. Lastly, the effect of having at least one child living at home will also be part of the heterogeneity of this research. In line with existing research and the available time theory, the fourth hypothesis states: Having at least one child living at home lowers the increase in egalitarian beliefs.

3. Data

3.1 Data sources

To study the impact of the COVID-19 pandemic on the beliefs on gender roles, data is needed that is conducted after the pandemic. Wave 7 of the World Value Survey (WVS, 2022) is conducted worldwide between 2017 and 2022. To study the effect of the period of multiple lockdowns and the period of slowly opening up again, countries that conducted the WVS survey in 2021 or 2022 have been selected. A similar survey conducted in 37 European countries, the European Value Study (EVS, 2022a), is used to measure the beliefs about gender roles before the outbreak of COVID-19. Data of the fifth

Wave of the EVS has been collected between 2017 and 2021. The WVS and EVS are longitudinal research programs across countries that focus on capturing beliefs and preferences of citizens all over the world. The surveys focus on topics like religion, politics, poverty, but also beliefs towards gender. These programs are insightful since they are conducted on a regular basis and on a large scale.

Using the EVS2017 survey, instead of the 6th Wave of the WVS survey, minimizes the time gap between the survey before and at the end of the pandemic. However, a drawback of using the Wave 7 of the EVS is that only a few of these statements overlap with statements used in Wave 7 of the WVS. Table A1 shows the statements used in this research to study attitudes towards gender roles. Combining the EVS Wave 5 and the WVS Wave 7, led to a dataset that consists of the following four countries: Armenia, The Czech Republic, The Netherlands and The Slovak Republic. All of these countries went in to a first lockdown in March 2020. Table A2 gives an overview of the dates and modes of data collection per country.

3.2 Variables

The two datasets only contain respondents who completed the whole survey and never answered "don't know" to the questions used in this research. Observations that used the answer option "not applicable" were only kept for questions regarding the partner of the respondent, like their partner's educational level and employment status. Respondents who answered this, simply do not have a spouse or partner. This resulted in a small number of Dutch EVS2017 observations. This influences the quality of the matching exercise, which will be discussed in Section 8 and 9. Since not all questions in the two surveys have the exact same order of answer options, a few variables have been recoded before appending the two datasets. However, there are still some important differences between the two datasets that are worthy to point out. First, the sixth category of the legal marital status of the respondent is different across the two surveys. In EVS2017 the sixth category is "never married and never registered partnership", whereas in the WVS survey this is "single". Secondly, in WVS Wave 7 they did not ask Armenian respondents in which region the interview was conducted. Therefore, respondents from Armenia can only be matched on country and not on region. In the unmatched WVS dataset there are 1,062 respondents from Armenia. This will lower the quality of the match of Armenian respondents, since there can be substantial differences in beliefs and unobserved characteristics of respondents across regions in Armenia[1]. Lastly, the EVS and WVS survey differ in the information they gather about the children of the respondent and the structure of their household. EVS2017 has the most complete information about family life of the respondents. EVS2017 questions the number of children living inside and outside of the household and the age of the youngest person in the household of the respondent. However, the WVS W7 survey only captures the number of children of the respondent,

[1] Attitudes towards gender roles may vary by region, as research by Alesina et al. (2013) suggests. Therefore, the matching exercise will include the region where the study is conducted.

where there is not made a distinction between children living inside or outside the household of the respondent. Additionally, the WVS W7 survey questions the number of people, and not the number of children in the household of the respondent. To still match respondents with children living in the household, a new variable has been generated. The variable *Child* is equal to one in the EVS2107 dataset if the respondent has at least one child living in the household, and zero otherwise. In the WVS W7 dataset, the variable *Child* is equal to one if the respondent has at least one child and if there are at least two people living in the household of the respondent. The variable *Child* is equal to zero if one or both conditions do not hold. By conditioning for a minimum of two people living in the household instead of at least three, I allow single parents with a child living at home to still be included in this study. Although matching on this variable might not be perfect, it still creates a way to match individuals that were mostly impacted by the closing of childcare and educational institutions. Finally, in the EVS2017 dataset, if the respondent has three or more children, the variable *Number of children* is coded with a 3. Therefore, this rule is also applied to the WVS W7 dataset so both datasets have the same amount of information. As a result of recoding the variable in the WVS survey some information gets lost.

Five statements measuring beliefs about gender roles are expressed as binary variables. These variables take on the value one if the respondent answered either agree or strongly agree. If the respondent answered either "disagree" or "strongly disagree", the variables are equal to zero. For statement (5) from Table A1 there are five answer options instead of four. Respondents can also choose to "neither agree nor disagree" with the statement: "When jobs are scarce, men should have more right to a job than women". To still express this statement as a binary outcome variable, "neither agree nor disagree" will be denoted with a zero. By recoding the outcome variables to binary variables, some information gets lost. However, it makes the outcome variables easier to interpret when running the regression. Beliefs that are in line with traditional gender roles will be denoted with a one and beliefs that are not in line with traditional beliefs will be denoted with a zero. Statement (6) is not recoded to a binary variable. The respondents provide a rating on a scale of 1 till 10 to indicate the level of importance they attribute to equal rights for men and women in a democratic society. The scale ranges from 1, representing "not essential", to 10, signifying "an essential characteristics of democracy". If the respondent answers that having unequal rights is against democracy, a zero will be assigned. To interpret the coefficient of the regression as an increase in egalitarian beliefs, the zero is recoded to 11. This means that the scale of this dependent variable is from 1 to 11.

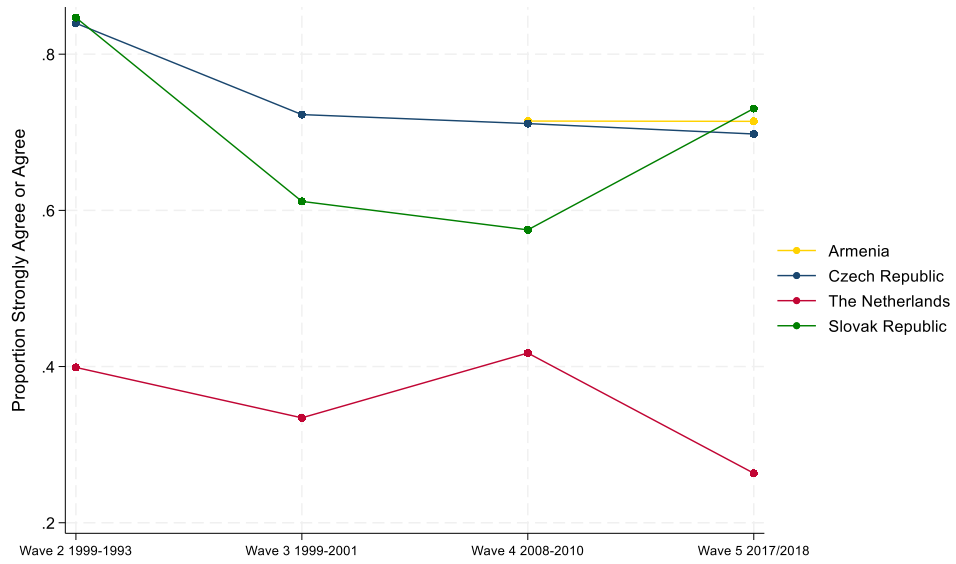
3.3 Descriptive statistics

Table A3 till A6 show the demographic characteristics of respondents of the unmatched dataset for each survey per country. The tables include the observable characteristics used to match respondents on, which will be discussed in Section 4. All respondents are at least 18 years old. By comparing the tables, differences between countries can be seen, which explains my decision to analyze each country

separately. For example, in The Netherlands a relatively large proportion of the respondents and their partners obtained a master's degree, compared to the other countries. In The Slovak Republic, for instance, a relatively large proportion of respondents obtained an upper secondary degree. There are also relatively big differences concerning the distribution of respondents over the income deciles. The largest proportion of Armenian respondents belongs to the fourth and fifth income decile, whereas in The Netherlands a relatively large proportion belongs to the nineth and tenth income decile. Also, within a country there are relatively big differences. The matching exercise takes this into account, which can be seen in Tables A15 till A18 where the standardized mean differences and variance ratios for each covariate are presented. In Section 8, the quality of the match and the balance of the matching exercise will be further discussed. However, it is worthy to note that The Netherlands has a very small EVS2017 sample size. This lowers the quality of the matching exercise and lowers the validity of the estimations.

Figure 4 also demonstrates significant disparities among the four countries. Before the pandemic, the countries already differed in their attitudes toward gender roles. The statement "A job is alright, but what most women want is a home and children" captures what the respondent thinks that most women want and therefore captures beliefs about gender roles. Overall, the lowest percentage of respondents agree with traditional gender roles in The Netherlands. Meanwhile, agreement with this statement remains high in the fifth Wave of the EVS Survey in the other three countries. So, prior to the pandemic, The Netherlands followed a trend in line with increased egalitarian beliefs, whereas Armenia and The Czech Republic decreased their traditional beliefs slightly. In The Slovak Republic, agreement with this statement increased between Wave 4 and 5, meaning that the pre-pandemic trend followed an increase in traditional beliefs. This statement is not included as one of the dependent variables in this study, since the statement is not included in the WVS Wave 7 survey and therefore there is no post-pandemic data available on this statement. However, it does give a better understanding of the pre-pandemic trends of the countries.

Figure 4. Change in proportion who (strongly) agrees with "A job is alright, but what most women really want is a home and children", by country.



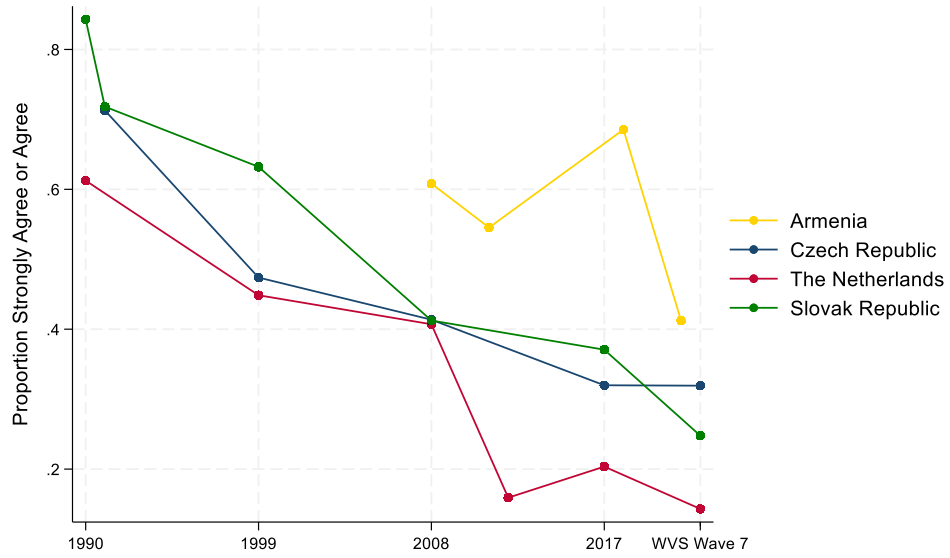
Source: European Values Study Trend File 1981-2017 (EVS, 2022b).

Notes: The figure above shows the development in respondents who (strongly) agree with the statement "A job is alright, but what most women really want is a home and children". In The Netherlands, agreement with this statement noticeably dropped. In the other three countries, agreement with this traditional gender role remains high. Note that this statement is not included as a dependent variable in the main regressions, since the WVS does not collect data on this statement.

To study how pre-pandemic beliefs have changed during the COVID-19 crisis, Figure 5 shows the development of the proportion of respondents that agree or strongly agree with the statement "When a mother works for pay, the children suffer" for each country. The figure includes the trends of the EVS and the most recent observation of the WVS Wave 7 survey. This allows for the comparison of pre-pandemic beliefs with post-pandemic beliefs. The Netherlands, The Czech Republic and The Slovak Republic have experienced a significant negative trend since the 1990s. Armenia follows a different trend, where there seems to be a relatively high increase in traditional beliefs in the EVS2017 survey. Additionally, the EVS survey has only data from Armenian respondents from EVS Wave 4 and Wave 5. In the Netherlands, the smallest proportion of respondents (strongly) agree with the statements capturing traditional attitudes toward gender roles. In Armenia around 75 percent of the respondents (strongly) agreed with the statement in 2017-2018. This dropped to just above 40 percent of the respondents of the seventh Wave of the WVS. Additionally, Figures A1 till A4 show the distribution of the pre- and post-pandemic answers per statement, for each country. Comparing the average trend in Figure 1 to the separate trends in Figure 4 and 5, confirms the big differences in beliefs about gender roles between countries. Therefore, it is necessary to analyze each country apart from each other. In all countries,

except for The Czech Republic, there seems to be a drop in agreement when comparing the EVS2017 and WVS Wave 7 outcomes. However, the pre-pandemic negative trend needs to be taken into account when analyzing the regression results of this study. So, a decline in agreement with traditional beliefs post-pandemic, will be overestimated by the pre-existing negative trend in The Czech Republic, The Netherlands and The Slovak Republic. Determining a clear pre-pandemic trend is harder in the case of Armenia. This study assumes that Armenia also experiences a negative pre-pandemic trend, since there is a strong negative trend in Europe.

Figure 5: Change in proportion who (strongly) agrees with "When a mother works for pay, the children suffer", by country.



Source: Integrated Values Survey (IVS); consists of the EVS Trend File 1981-2017 and the WVS Trend File 1981-2022.

Notes: Figure 4 shows the development of the proportion of respondents who (strongly) agree with the statement "When a mother works for pay, the children suffer". Overall, agreement with traditional gender roles has decreased significantly in The Czech Republic, The Netherlands and The Slovak Republic since 1990. The EVS started collecting data on this statement in Armenia from Wave 4. This figure includes the pre-pandemic data, that has been collected around 2017. Additionally, the post-pandemic data (WVS Wave 7) is also shown in this figure. For most countries, except for The Czech Republic, there seems to be a decline in agreement with this statement.

4. Methodology

Since individual panel data on beliefs about gender roles before and after the pandemic is not available, respondents of WVS Wave 7 will be matched to respondents of the EVS Wave 5. For the main results, Mahalanobis Nearest-Neighbor Matching will be used, but other matching techniques will be used as robustness checks. This scale-invariant matching method has also been used in the study of

Boring and Moroni (2023). The goal is to find as similar of a match of a respondent in the WVS Wave 7 to a respondent of the EVS survey. In this research, an exact match will be performed on whether the respondent is a female and the binary variable *Child*. Each country will be analyzed separately, so automatically the respondents are exactly matched on the country where the survey is conducted. A Mahalanobis Nearest-Neighbor Match will be performed on age, legal marital status, the number of children, educational level of the respondent, educational level of the partner of the respondent and the geographical region where the interview was conducted. Since the WVS Wave 7 survey does not include data on the pre-pandemic employment status of the respondent (and their partner), I chose to not match respondents on their (partner's) employment status. The COVID-19 crisis had a significant effect on the labor market and working arrangements. The focus of this study is on the complete effect of the COVID-19 crisis on attitudes toward gender roles. This also includes a change in beliefs about gender roles associated with a change in employment status, as a result of the pandemic.

Similar to Boring and Moroni (2023), an important assumption underlying this matching exercise is that beliefs of the respondents of the EVS Wave 5 study form a proxy for the pre-pandemic beliefs about gender roles. The EVS2017 study is conducted two and a half to three years before the start of the pandemic. Looking at the predominant downward trend in Figure 5, it is likely to assume that the EVS2017 trend continued till the start of the pandemic. If this study finds that the pandemic decreased traditional beliefs, then the estimations are likely to be overestimated considering the negative pre-pandemic trend.

With the matching exercise, the pre-pandemic beliefs are predicted and form the outcome variable of the beliefs about gender roles before the pandemic of the WVS Wave 7 respondents. Following the methodology of Boring and Moroni (2023), the predicted values obtained from the matching exercise demonstrate a binomial distribution, with peaks around zero (disagreement or strong disagreement) and one (agreement or strong agreement). The outcome variable of the WVS Wave 7 respondents was set to one if the predicted value was larger or equal to 0.5. Conversely, the predicted outcome variable was set to zero if the predicted value was below 0.5. The results will be discussed in Section 5. The quality of the match determines the precision of the predictions, which will be discussed in Section 8.

The effect of the pandemic on beliefs about gender roles will be estimated with the following regression:

$$Y_{it} = \alpha + \beta_1 Pandemic_t + \beta_2 Female_i + \beta_3 Pandemic_t * Female_i + \gamma X_{it} + \varepsilon_{it} \qquad (1)$$

Where Y_{it} is the dependent variable equal to one if respondent *i* (strongly) agrees to the statement capturing traditional beliefs about gender roles, at time *t*. The dependent variable is equal to zero if respondent *i* (strongly) disagrees with a gender role statement. For statement (6), the outcome variable

will take on a value between 1 and 11, as discussed above. Variable *t* is equal to zero when indicating observations before the pandemic and equal to one for the post-pandemic observation. The outcome variable of individual *i* before the crisis, is the predicted value from the matching exercise. α is a constant term. $Pandemic_i$ is the main variable of interest, which is equal to zero in the period before the pandemic and one in the period after the lockdown (2021 or 2022, depending on the country). $Female_i$ is also a binary variable that is equal to one if respondent *i* is a woman. By adding an interaction term of $Female_i$ and $Pandemic_t$, the effect of the pandemic on beliefs about gender roles for men and women can be distinguished. Variable X is a vector of characteristics that includes both time-variant and time-invariant characteristics: age, educational level of respondent, educational level of spouse of respondent, marital status, number of children, income decile and region fixed effects. Country fixed effects are automatically controlled for, since the regression is run for each country separately. Finally, ε_{it} is the error term of individual *i* at period *t*. To estimate equation (1), Ordinary Least Squares (OLS) is used.

5. Descriptive evidence

An increase in traditional beliefs about gender roles are measured by an increase in the proportion that agrees with the first five statements of Table A1. Note that an increase in the importance given to statement (6) captures an increase in egalitarian attitudes towards gender roles. Table 1 shows the proportion of respondents who agree with each statement, before and after the pandemic by gender.

Table 1. Descriptive statistics of main outcome variables per country, by gender.

	Before pandemic		After pandemic		Male – Female		Before - After	
	Mean		Mean		P-value difference		P-value difference	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(7)
	Male	Female	Male	Female	Before	After	Male	Female
Armenia:								
(1) Child	0.81	0.69	0.43	0.42	0.000	0.736	0.000	0.000
(2) Politics	0.74	0.59	0.60	0.46	0.000	0.000	0.000	0.000
(3) University	0.24	0.25	0.23	0.15	0.722	0.002	0.856	0.000
(4) Business	0.70	0.57	0.58	0.38	0.000	0.000	0.002	0.000
(5) Jobs	0.65	0.57	0.60	0.52	0.014	0.012	0.265	0.092
(6) Same rights	6.74	7.09	8.50	8.74	0.043	0.171	0.000	0.000
The Czech Republic:								
(1) Child	0.30	0.42	0.35	0.29	0.000	0.018	0.125	0.000
(2) Politics	0.42	0.40	0.62	0.36	0.385	0.000	0.000	0.214
(3) University	0.20	0.13	0.33	0.19	0.004	0.000	0.000	0.008

(4) Business	0.35	0.27	0.60	0.29	0.003	0.000	0.000	0.521
(5) Jobs	0.22	0.18	0.34	0.19	0.081	0.000	0.000	0.882
(6) Same rights	8.69	7.97	8.36	8.28	0.000	0.573	0.013	0.050
The Netherlands:								
(1) Child	0.27	0.08	0.16	0.08	0.000	0.000	0.000	0.830
(2) Politics	0.16	0.04	0.09	0.04	0.000	0.001	0.000	0.884
(3) University	0.02	0.00	0.04	0.01	0.014	0.004	0.018	0.057
(4) Business	0.14	0.01	0.10	0.03	0.000	0.000	0.024	0.013
(5) Jobs	0.05	0.05	0.03	0.02	0.663	0.304	0.077	0.021
(6) Same rights	9.03	9.06	9.02	8.99	0.785	0.808	0.901	0.530
The Slovak Republic:								
(1) Child	0.34	0.32	0.22	0.27	0.512	0.038	0.000	0.057
(2) Politics	0.58	0.43	0.60	0.38	0.000	0.000	0.409	0.111
(3) University	0.39	0.31	0.37	0.31	0.012	0.038	0.562	0.851
(4) Business	0.56	0.43	0.58	0.32	0.000	0.000	0.377	0.000
(5) Jobs	0.44	0.36	0.48	0.37	0.004	0.000	0.210	0.630
(6) Same rights	7.26	7.41	8.29	8.55	0.307	0.066	0.000	0.000

Source: Seventh wave of the WVS survey (WVS, 2022).

Notes: This table shows the descriptive statistics of the six dependent variables for each country. The outcome variables of the first five dependent variables, show the proportion of individuals that agree with the statement, by gender. Outcome variable (6) indicates the importance of this statement on a scale of 1 till 11. Armenia has 1,062 observations; The Czech Republic has 1,117 observations; The Netherlands has 1,165 observations; The Slovak Republic has 1,104 observations. See Table A1 for the full statements.

Statement (1) captures traditional beliefs about the role of women and especially the role of mothers. In Armenia and The Slovak Republic agreement with this statement significantly decreases for both men and women. In Armenia, the proportion of men that agree decreases from 0.81 to 0.43 and proportion of women from 0.69 to 0.42. In The Slovak Republic agreement decreases from 0.34 to 0.22 for men and from 0.32 to 0.27 for women. In The Czech Republic, women significantly decrease agreement with this statement (from 0.42 to 0.29), while men slightly increase agreement, although insignificantly. Agreement among Dutch women remains unchanged, while men significantly decrease agreement with statement (1) during the pandemic.

Statement (2) and (4) capture the belief that men have more advanced business and political leadership skills than women. In Armenia, agreement with these statements significantly decreases for both men and women after the pandemic. In The Czech Republic, men significantly increase agreement with statement (2) and (4), while agreement among women insignificantly changes during the pandemic. Dutch men significantly decrease agreement with statement (2) and (4); the proportion of men who agree with the statement changes from 0.16 to 0.09 and from 0.14 to 0.10, respectively. Agreement among women in The Netherlands remains unchanged for statement (2), while it significantly increases for

statement (4); an increase from 0.01 to 0.03. Agreement with statement (2) insignificantly changes for both men and women in The Slovak Republic, however the difference between men and women remains significantly. Slovenian women significantly decrease agreement with statement (4) (from 0.43 to 0.32), while men insignificantly change their agreement during the pandemic.

Statement (3) and (5) capture the belief that men should have greater opportunities in education and the labor market compared to women. Agreement with statement (3) significantly increases for both men and women in The Czech Republic and in The Netherlands. However, the proportion that agrees with this is drastically lower in The Netherlands (0.01 till 0.04) than in The Czech Republic (0.19 till 0.33). Armenian women significantly decrease agreement with statement (3) (from 0.25 to 0.25), whereas agreement insignificantly changes among men. Agreement with statement (3) in The Slovak Republic decreases, but insignificantly. Dutch men and women significantly decrease agreement with statement (5); the proportion that agrees drops from 0.05 to 0.03 and to 0.02, respectively. Armenian women also significantly decrease agreement with this statement (from 0.57 to 0.52), while agreement among men insignificantly decreases. However, in The Czech Republic men significantly increase agreement with statement (5) (from 0.22 to 0.34). Czech women also increase their agreement, but insignificantly. Similarly, Slovenian men and women increase agreement with the statement, but this is also not statistically significant.

Finally, statement (6) does not only capture the importance of equality for men and women, but also the democratic values of the respondent. In Armenia and The Slovak Republic, both men and women significantly increase agreement with this statement. Compared to the other statements, an increase in this agreement can be seen as an increase in egalitarian gender role beliefs. Czech men significantly decrease agreement with the importance of equal rights (from 8.69 to 8.36). Czech women on the other hand, significantly increase agreement with this statement (from 7.97 to 8.28). Lastly, in The Netherlands agreement with statement (6) insignificantly increases for both men and women.

These descriptive statistics of the six dependent variables highlight the importance of analyzing each country separately. Table 1 shows that agreement with the statements develops differently in each country. Additionally, the descriptive evidence suggests that within a country, men and women change their agreement distinctively. Finally, it confirms the pre-pandemic differences across countries due to historical, cultural and economic differences.

6. Results

This section discusses the main findings of regression (1) for all six dependent variables. More specifically, the effect of the pandemic on beliefs about gender roles will be discussed. The results of each country will be discussed separately.

6.1 Armenia

Table 2 presents the results of the regression of each statement. *Pandemic* has a significant effect on four out of six statements that capture beliefs about gender roles. Agreement with "When women work for pay, the children suffer" decreased by 38.7 percentage points during the pandemic. Agreement with "On the whole, men make better political leaders than women do" decreased by 14.3 percentage points. Agreement with "On the whole, men make better business executives than women do" decreased by 11.6 percentage points. As mentioned in Section 5, these statements capture the belief of unequal opportunities for men and women in education and the labor market. Lastly, the democratic value "Women have the same rights as men" increased importance by 1.758 on scale of 1 till 11 during the pandemic. The results of the four statements suggest that the pandemic is associated with an increase in egalitarian gender role beliefs in Armenia.

The interaction term between *Pandemic* and *Female* in statement (1) is positive and statistically significant. This means that the significant decrease in agreement with "When women work for pay, the children suffer" is concentrated among men. The interaction term for outcome variable (2) is also positive, but not statistically significant. This means that the effect of the pandemic on beliefs about gender roles is only significant for men and not for women. Therefore, the decrease in agreement with statement (2) during the pandemic is concentrated among men. For outcome variable (3), the interaction term is negative and statistically significant, while the effect of *Pandemic* is not significant. This suggests that the pandemic is associated with a significant decrease in agreement with the third statement, only among women. The interaction term and *Pandemic* are both negative and statistically significant for outcome variable (4). This suggests that both men and women significantly decreased agreement with this statement during the pandemic and the effect is concentrated among women. For statement (5), both *Pandemic* and the interaction term are not statistically significant, suggesting that agreement with this statement did not change during the pandemic for men and women. Finally, the interaction term for statement (6) is not statistically significant. This suggests that the increase in rate of importance is concentrated among men, while women do not significantly change their opinion during the pandemic.

Table 2. Effect of the pandemic on beliefs about gender roles in Armenia.

Statement:	(1) Child	(2) Politics	(3) University	(4) Business	(5) Jobs	(6) Rights
Dependent variable:	"Strongly agree" or "Agree" with statement					
Pandemic	-0.387***	-0.143***	-0.006	-0.116**	-0.042	1.758***
	(0.034)	(0.036)	(0.032)	(0.037)	(0.036)	(0.200)
Female	-0.118***	-0.156***	0.024	0.119***	-0.068**	0.318*
	(0.027)	(0.030)	(0.029)	(0.032)	(0.032)	(0.163)
Pandemic x Female	0.116**	0.013	-0.086**	-0.075**	-0.002	-0.104
	(0.043)	(0.044)	(0.039)	(0.045)	(0.045)	(0.244)
Constant	0.812	0.780	0.306	0.676	0.680	5.529
Observations	2,124	2,124	2,214	2,214	2,214	2,214
R-squared	0.110	0.042	0.022	0.070	0.038	0.103

Source: Seventh wave of the WVS survey (WVS, 2022).

Notes: The table above shows the results of the regression described in equation (1), using the predicted values from the matching exercise. See Table A1 for a description of the six statements. This table only shows the results of respondents from Armenia. All columns control for age, level of education of the respondent, marital status, level of education of the partner of the respondent, the number of children, income decile and region fixed effects. Note however that Armenian respondents of the WVS Wave 7 survey were not asked about the region in which the survey was conducted. Therefore, the results above do not control for region. The dependent variables in column 1-5 are binary variables that are equal to one if respondents (strongly) agree with statements in line with traditional beliefs about gender roles, and zero if they (strongly) disagree. The dependent variable in column 6 is not a binary variable. Respondents give a score from 1 to 11 on how essential this is in a democratic society, where 1 is not essential and 10 is an essential characteristic of democracy. If the respondent answers this question by saying that it is against democracy to have unequal rights, then 11 will be denoted. The coefficients are rounded to four decimals and calculated with clustered standard errors. The number in the parentheses indicates the robust standard error. *p < 0.10, **p < 0.05, and *** p < 0.01.

6.2 The Czech Republic

Table 3 presents the regression results with respondents from The Czech Republic, suggesting that *Pandemic* has a significant effect on five out of six statements. The pandemic is associated with a significant increase in agreement with "On the whole, men make better political leaders than women do", by 19.7 percentage points. Agreement also significantly increased with "A university education is more important for a boy than for a girl" by 13.6 percentage points. Agreement with "On the whole, men make better business executives than women do" significantly increased by 24.2 percentage points. In line with these results, agreement also significantly increased with "When jobs are scarce, men should have more right to a job than women" by 11.5 percentage points. Finally, the democratic value "Women have the same rights as men" significantly decreased importance by 0.332 on a scale of 1-11. The results suggest that the pandemic is associated with an increase in traditional beliefs about gender roles in The Czech Republic.

The interaction term is negative and significant for five statements and positive for statement (6). However, a decrease in outcome variable (6) is similar to an increase in the other outcome variables. Therefore, the increase in traditional beliefs about gender roles captured by statement (2) till (6) is concentrated among men. For statement (1), *Pandemic* is not statistically significant, while the interaction term is significant and negative. This suggests that during the pandemic, only women significantly decreased agreement with this outcome variable that captures beliefs about the role of women and mothers.

Table 3. Effect of the pandemic on beliefs about gender roles in The Czech Republic.

	(1)	(2)	(3)	(4)	(5)	(6)
Statement:	Child	Politics	University	Business	Jobs	Rights
Dependent variable:	"Strongly agree" or "Agree" with statement					
Pandemic	0.045	0.197***	0.136***	0.242***	0.115***	-0.332**
	(0.029)	(0.031)	(0.027)	(0.030)	(0.028)	(0.132)
Female	0.129***	-0.029	-0.058**	-0.083**	-0.041*	-0.749***
	(0.028)	(0.030)	(0.023)	(0.028)	(0.024)	(0.152)
Pandemic x	-0.181***	-0.232***	-0.080**	-0.225***	-0.112**	0.635**
Female	(0.039)	(0.041)	(0.034)	(0.0400	(0.035)	(0.202)
Constant	0.250	0.533	0.348	0.497	0.379	9.077
Observations	2,234	2,234	2,234	2,234	2,234	2,234
R-squared	0.060	0.049	0.062	0.085	0.041	0.035

Source: Seventh wave of the WVS survey (WVS, 2022).

Notes: The table above shows the results of the regression described in equation (1), using the predicted values from the matching exercise. See Table A1 for a description of the six statements. This table only shows the results of respondents from The Czech Republic. All columns control for age, level of education of the respondent, marital status, level of education of the partner of the respondent, the number of children, income decile and region fixed effects. The dependent variables in column 1-5 are binary variables that are equal to one if respondents (strongly) agree with statements in line with traditional beliefs about gender roles, and zero if they (strongly) disagree. The dependent variable in column 6 is not a binary variable. Respondents give a score from 1 to 11 on how essential this is in a democratic society, where 1 is not essential and 10 is an essential characteristic of democracy. If the respondent answers this question by saying that it is against democracy to have unequal rights, then 11 will be denoted.

6.3 The Netherlands

The third country in this study is The Netherlands. The Netherlands has a very low proportion of respondents that agreed with traditional beliefs about gender roles, before the outbreak of COVID-19 (see Figure 4, 5 and A3). Table 4 presents the regression results of Dutch respondents suggesting that *Pandemic* has a significant effect on five out of six outcome variables. Agreement with "When women work for pay, the children suffer" significantly decreased by 10.3 percentage points during the pandemic. Agreement also significantly declined for the statement "On the whole, men make better political leaders

than women do", by 7.1 percentage points. Agreement with "On the whole, men make better business executives than women do" significantly decreased by 4.2 percentage points. In line with these findings, agreement significantly decreased with the statement "When jobs are scarce, men should have more right to a job than women", by 0.2 percentage points. A result not in line with the previous results, is the significant increase in agreement with "A university education is more important for a boy than for a girl", by 2.4 percentage points. The pandemic had no effect on outcome variable (6). Overall, these results suggest that the pandemic is associated with an increase in egalitarian beliefs in The Netherlands. However, the pandemic is associated with an increase in the belief of unequal importance of education for men and women. The validity of the estimations in the case of The Netherlands is threatened by the small number of EVS2017 respondents. The quality of the match will be further discussed in Section 8.

The interaction term is statistically significant and positive for the outcome variables (1), (2) and (4). This suggests that for these statements, the increase in egalitarian beliefs during the pandemic is concentrated among men. The insignificance of the interaction term in statement (3) and (5) suggests that the pandemic only significantly changed men's agreement with these statements. This means that the increase in agreement with statement (3) and decrease in agreement with statement (5) are concentrated among men.

Table 4. Effect of the pandemic on beliefs about gender roles in The Netherlands.

	(1)	(2)	(3)	(4)	(5)	(6)
Statement:	Child	Politics	University	Business	Jobs	Rights
Dependent variable:	"Strongly agree" or "Agree" with statement					
Pandemic	-0.103***	-0.071***	0.024**	-0.042**	-0.020**	-0.013
	(0.023)	(0.019)	(0.010)	(0.018)	(0.011)	(0.100)
Female	-0.0195***	-0.126***	-0.021**	-0.143***	-0.009	0.107
	(0.021)	(0.017)	(0.007)	(0.015)	(0.013)	(0.089)
Pandemic x	0.100***	0.069**	-0.013	0.063**	-0.004	-0.052
Female	(0.028)	(0.022)	(0.011)	(0.020)	(0.015)	(0.142)
Constant	0.537	0.268	0.065	0.221	0.110	7.100
Observations	2,330	2,330	2,330	2,330	2,330	2,330
R-squared	0.101	0.060	0.034	0.067	0.034	0.043

Source: Seventh wave of the WVS survey (WVS, 2022).

Notes: The table above shows the results of the regression described in equation (1), using the predicted values from the matching exercise. See Table A1 for a description of the six statements. This table only shows the results of respondents from The Netherlands. All columns control for age, level of education of the respondent, marital status, level of education of the partner of the respondent, the number of children, income decile and region fixed effects. The dependent variables in column 1-5 are binary variables that are equal to one if respondents (strongly) agree with statements in line with traditional beliefs about gender roles, and zero if they (strongly) disagree. The

dependent variable in column 6 is not a binary variable. Respondents give a score from 1 to 11 on how essential this is in a democratic society, where 1 is not essential and 10 is an essential characteristic of democracy. If the respondent answers this question by saying that it is against democracy to have unequal rights, then 11 will be denoted. The coefficients are rounded to four decimals and calculated with clustered standard errors. The number in the parentheses indicates the robust standard error. *p < 0.10, **p < 0.05, and *** p < 0.01.

6.4 The Slovak Republic

The fourth country in this study is The Slovak Republic. The results in Table 5 suggest that *Pandemic* affects a small number of outcome variables, compared to the other three countries. The variable has an effect on the outcome variables of statement (1) and (6). More specifically, agreement with "When women work for pay, the children suffer" significantly decreased by 12.3 percentage points. In addition, the pandemic is associated with a significant increase in the importance of "Women have the same rights as men" in a democracy. The importance increased by 1.033 on a scale of 1-11. These results suggest that the pandemic is associated with an increase in egalitarian gender role beliefs in The Slovak Republic. *Pandemic* and the interaction term are both statistically insignificant for statement (3) and (5), suggesting that agreement with these statements did not change during the pandemic.

The interaction term is statistically significant and negative for statement (4), while *Pandemic* is not significant. This suggests that only women decreased agreement with this statement during the pandemic, while men did not change their opinion. The interaction term is weakly significant for statement (1) and (2). This suggests that the increase in egalitarian beliefs captured with statement (1) is concentrated among men. The interaction term in outcome variable (2) suggests that women decreased agreement with this statement, while men's agreement with this statement remains unchanged. The insignificance of the interaction term of statement (6) suggests that women did not significantly change their opinion on this statement. Therefore, the increase in egalitarian beliefs captured by statement (6) is concentrated among men.

Table 5. Effect of the pandemic on beliefs about gender roles in The Slovak Republic.

	(1)	(2)	(3)	(4)	(5)	(6)
Statement:	Child	Politics	University	Business	Jobs	Rights
Dependent variable:	"Strongly agree" or "Agree" with statement					
Pandemic	-0.123***	0.025	-0.018	0.027	0.039	1.033***
	(0.027)	(0.030)	(0.030)	(0.031)	(0.031)	(0.153)
Female	-0.022	-0.154***	-0.073**	-0.125***	-0.090**	0.144
	(0.028)	(0.029)	(0.029)	(0.030)	(0.029)	(0.154)
Pandemic x	0.073*	-0.071*	0.013	-0.137**	-0.026	0.100
Female	(0.038)	(0.041)	(0.040)	(0.042)	(0.041)	(0.208)

Constant	0.456	0.770	0.551	0.810	0.514	8.527
Observations	2,208	2,208	2,208	2,208	2,208	2,208
R-squared	0.036	0.064	0.035	0.066	0.045	0.066

Source: Seventh wave of the WVS survey WVS, 2022).

Notes: The table above shows the results of the regression described in equation (1), using the predicted values from the matching exercise. See Table A1 for a description of the six statements. This table only shows the results of respondents from The Slovak Republic. All columns control for age, level of education of the respondent, marital status, level of education of the partner of the respondent, the number of children, income decile and region fixed effects. The dependent variables in column 1-5 are binary variables that are equal to one if respondents (strongly) agree with statements in line with traditional beliefs about gender roles, and zero if they (strongly) disagree. The dependent variable in column 6 is not a binary variable. Respondents give a score from 1 to 11 on how essential this is in a democratic society, where 1 is not essential and 10 is an essential characteristic of democracy. If the respondent answers this question by saying that it is against democracy to have unequal rights, then 11 will be denoted. The coefficients are rounded to four decimals and calculated with clustered standard errors. The number in the parentheses indicates the robust standard error. *p < 0.10, **p < 0.05, and *** p < 0.01.

6.5 Comparison of the countries

The results suggest that the pandemic is associated with heterogeneous effects in the countries of interest. Overall, in Armenia, The Netherlands and The Slovak Republic the pandemic is associated with a decrease in traditional beliefs about gender roles. Contrary, in The Czech Republic, the pandemic is associated with an increase in traditional beliefs about gender roles. Agreement with statements (1), (2), (4) and (6) seems to have changed the most across the countries. In Armenia, the decrease in agreement with traditional beliefs is concentrated among men for statements (1), (2) and (6). The decrease in agreement with (3) and (4) is concentrated among women in Armenia. Similarly, Slovak women significantly decreased agreement with statement (2) and (4), whereas men's agreement did not change. The significant increase in traditional gender role beliefs in The Czech Republic is for most statements concentrated among men. Except for statement (1); only women significantly increased agreement with this statement, whereas for men the pandemic is not associated with a significant change in agreement with statement (1). Similar to Armenia, the decrease in agreement with traditional beliefs is concentrated among men in The Netherlands. However, the increase in agreement with statement (3) is also concentrated among men, which is more in line with the results of The Czech Republic. Similar to the case of The Netherlands and Armenia, decrease in agreement with statement (1) and (6) is concentrated among men in The Slovak Republic. Note that the interaction term generates different outcomes between countries, but also within a country the interaction term differs per statement. For example, the decrease in agreement with statement (2), (3) and (4) which is concentrated among women in Armenia and The Slovak Republic. This could be a result of the way the statement has been formulated. The statements state that men have a comparative advantage in a certain skill or have an increased right to something. Women could respond more hostile because of the way this gender belief is formulated.

The effect of the pandemic in The Czech Republic is significantly different than in the other three countries. This paragraph discusses four possible factors that might play a role in the deviating effect found in this country. Firstly, The Czech Republic has a very low Global Gender Gap Index compared to the other countries (World Economic Forum, 2023). Europe scores the highest of all regions, but The Czech Republic ranks at the bottom of the region with a rank of 101. There is especially a big gender gap in political empowerment in the country (World Economic Forum, 2023). Secondly and maybe even more important, is the generous maternal leave in The Czech Republic. Women have the freedom to stay 2 till 4 years at home when they become a mother. As a result, the gender pay gap strengthens and women become more dependent of their male partner (Kafkadesk Office Prague, 2022). Thirdly, only 6% of children under the age of 3 attend formal childcare, compared to the EU-wide average of 35% (Kafkadesk Office Prague, 2022). Lastly, the pandemic resulted in more than 42 thousand deaths, which is twice as much as in The Netherlands and The Slovak Republic and more than five times the COVID-19 deaths in Armenia. Even when considering the size of the population of the countries, this remains a high number of deaths (WHO Coronavirus (COVID-19) Dashboard, 2023). These four elements could play a role in explaining the significant increase in traditional beliefs among Czech men. Although existing research suggests that incentives for parental leave for fathers stimulates egalitarian beliefs about gender roles among men and women, further research must be done to conclude if these four factors play a role in this case (Omidakhsh, Sprague & Heymann, 2020; Unterhofer & Whrolich, 2017). Not all factors changed during the pandemic, but these differences could lead to a different development of the beliefs about gender roles during the pandemic in The Czech Republic.

7. Heterogeneous effects

This section discusses possible heterogeneous effects of the pandemic on beliefs about gender roles. First, the effect of the pandemic on beliefs about gender roles for respondents that have a child living at home will be studied. Second, the effect of the pandemic on attitudes toward gender roles will be studied on a sub-sample of only employed WVS Wave 7 respondents.

7.1 Effect of a child living at home

The COVID-19 crisis impacted daily life, but especially daily life of households with young children. Therefore, it is interesting to focus on the effect of the pandemic on attitudes towards gender roles for respondents with a child living at home. As discussed, the WVS Wave 7 survey collects limited data on the children of the respondent. Therefore, the variable *Child* is constructed. This binary variable is added to equation (1) and is equal to one if the WVS respondent has at least 1 child and the number of people living in the household is at least 2. The regression has the following form:

$$Y_{it} = \alpha + \beta_1 Pandemic_t + \beta_2 Female_i + \beta_3 Pandemic_t * Female_i + \beta_4 * Child_i + \beta_5 Pandemic_t * Child + \beta_6 Female * Child + \beta_7 Pandemic_t * Female_i * Child_i + \gamma X_{it} + \varepsilon_{it} \quad (2)$$

The regression allows the effect of the pandemic between men and women, with or without a child, to differ. The results of the regression are presented in Table A7 till A10.

7.1.1 Armenia

There are some differences regarding the sign and significance of the coefficients of *Pandemic* in Table A7, compared to Table 2. The size of the coefficients reduced. However, the pandemic no longer significantly changes agreement with statement (4) after adding *Child* and its corresponding interaction terms. *Pandemic* now also significantly affects agreement with statement (5). For this statement, the interaction between *Pandemic* and *Child* is also significant. This suggests that the decrease in agreement with statement (5) during the pandemic is concentrated among respondents that do not have a child living in their household. The interaction between *Pandemic, Female* and *Child* is statistically significant for statement (1) and (6). This suggests that the decrease in agreement with "When women work for pay, the children suffer" during the pandemic is concentrated among women with no child living at home and men with or without a child living at home. The increase in rate of importance of "Women have the same rights as men" during the pandemic is concentrated among women that have no children living at home.

7.1.2 The Czech Republic

Table A8 shows the results of regression equation (2) for Czech respondents. An important difference between these results and the main regression results in Table 3, is the regression estimation of statement (1). Table A8 suggests that the increase in agreement with statement (1) is concentrated among men without a child living in their household. Whereas women with a child living in their household significantly decreased agreement with this statement. Column (6) in Table A8 again shows that the decrease in egalitarian beliefs is concentrated among men without a child living in their household. Overall, women without a child increased the rate of importance of statement (6) more during the pandemic than women with a child living at home.

7.1.3 The Netherlands

Table A9 suggests than women with a child living at home significantly increased agreement with statement (1), whereas men with a child at home decreased agreement with this statement, although this effect is weakly significant. Decrease in agreement with statement (2) is concentrated among men with no children living at home. Women with a child living at home slightly increased agreement with this statement. Compared to Table 4, the pandemic no longer significantly affected agreement with statement (3). Decrease in agreement with statement (4) is concentrated among men without a child living at home.

Women with a child living at home increased agreement with this statement more than women without a child living at home. Decrease in agreement with statement (5) is concentrated among men with no child living at home. Additionally, women with a child at home also significantly decreased agreement with this statement during the pandemic.

7.1.4 The Slovak Republic

Compared to Table 5, the coefficient of *Pandemic* is now also statistically significant for statement (2) and (3) in Table A10. Column (3) of Table A10 suggests that the increase in agreement with statement (2) is concentrated among men and women without children. Women without children living at home significantly increased agreement with statement (3), whereas women with children decreased agreement. Additionally, women with children living at home significantly decreased agreement with statement (4). In line with this, women with children living at home also significantly decreased agreement with statement (5) during the pandemic. Finally, the increase the importance of statement (6) is concentrated among women with a child living at home. It is interesting to note that men without a child living at home increased importance of statement (6) more than women without a child living at home.

7.2 Effect of on employed respondents

This section discusses the effect of the pandemic on WVS Wave 7 respondents that are full time, part time or self-employed. The pandemic largely impacted the labor market and employed people, since most of the employees had to switch to working remotely. Besides, some of the statements capture beliefs toward the comparative advantage of men in businesses and politics. Therefore, it is insightful to test if the effect is different when focusing on employed respondents by running regression (1) on a sub-sample which are shown in Table A11 till A14.

7.2.1 Armenia

The results in Table A11 suggest that the effect of the pandemic on agreement with statement (1) remains concentrated among men, whereas the pandemic is no longer associated with a significant change in agreement among employed women. The pandemic has no significant effect on the agreement with statement (2) among employed respondents, whereas in the full sample the pandemic significantly changed outcome variable (2). In addition, employed women no longer significantly changed their opinion on statement (3) during the pandemic. In the sub-sample, the decrease in agreement with statement (4) remains among women. More specifically, the size of the effect enlarged among working women. The results of statement (5) and (6) remain similar to the effects found in Table 2.

7.2.2 The Czech Republic

The pandemic is associated with a decrease in agreement with the first statement, concentrated among women (see Table A12). This is similar to the effect found in the full sample in Table 3, however the negative effect for employed men is now also (weakly) significant. For statement (2), (3), (4), (5) and (6) the increase in agreement remains concentrated among men and even slightly increased in size.

7.2.3 The Netherlands

Table A13 suggests that the pandemic is associated with a decrease in agreement with statement (1) and (2) among men, but no longer among women in the employed sample. The positive effect of the pandemic remains concentrated among men for statement (3), but the size of the effect reduced slightly. Agreement with statement (4) significantly decreased among men, just as the results of the full sample suggest (Table 4). However, employed women now also significantly increased agreement with statement (4), but the size of the effect remains little compared to employed men. In the sub-sample of working respondents, men no longer significantly decreased agreement with statement (5) during the pandemic. Table A13 suggests that the effects found in the sub-sample for statement (6) are similar to the effects found in the full sample.

7.2.4 The Slovak Republic

Lastly, Table A14 presents the results of the regression ran on a sample of employed Slovenians. A decrease in agreement with statement (1) remains concentrated among men. The size of the effect enlarged when only taking employed respondents into account. Agreement with statement (2) no longer significantly changed among women during the pandemic. Compared to the main results presented in Table 5, the pandemic is now associated with a weakly significant decrease in agreement with statement (3) among men. The effects and pattern of concentration found for statement (4) and (6) remain similar to the main results, but the size of the effects reduced slightly. In the sub-sample, the pandemic had a similar effect on the importance of statement (6), compared to the full sample.

8. Robustness

8.1 Matching quality

The validity of the estimation of this research vitally relies on the quality of the matching exercise. The number of matches varied from three till fourteen matches, depending on the country. Table A15 till A18 give an indication of the quality of the match per country. For each covariate used in the Nearest-Neighbor Match, the standardized mean differences and variance ratios are presented for the raw and matched dataset. A standardized mean difference below 0.1 is an indication of good balance. Additionally, a variance ratio close to one also suggests good balance, since this means that the

variability of the matched and raw dataset is similar. Overall, the statistics indicate that the matching exercise roughly achieved balance, especially in the case of Armenia and The Slovak Republic. However, in The Netherlands and The Czech Republic high variance ratios can be found when looking at the educational level of the respondent. This lowers the quality of the matching exercise, but not drastically since this is the case for covariates with a relatively low share of respondents. However, the small number of EVS2017 observations in The Netherlands does threat the validity of the estimations, since the matching quality is highly influenced by this. Since the quality of the matching exercises is insufficient, this research fails to establish a causal relationship.

Deciding which and how many covariates to include is arbitrary. Therefore, Table A19 until Table A22 present the results of regression (1) where fewer covariates are used in the matching exercise. The main model is denoted as Model 1 and matches on age, marital status, education level of the respondent, education level of the spouse of the respondent, number of children and region. Model 1 exact matches on whether the respondent is a female and the binary variable *Child*. Model 2 matches on age, marital status, education level of respondent, region and exact matches on whether the respondent is a female and *Child*. Finally, Model 3 matches on the fewest number of covariates. This model matches on age, marital status, region and exact matches on whether the respondent is female. In addition, Tables A19 until A22 also present the results of the three models using Mahalanobis and Euclidean distances.

In the case of Armenia (Table A19), the effects found with the main model are quite similar to the effects found with the alternative models in terms of significance and sign. Model 1 with Mahalanobis distance tends to generate smaller ATEs than most other models. This could indicate that my findings for Armenia are more on the conservative side. Table A20 presents the results of The Czech Republic. Overall, Model 1 and 2 generate quite similar ATEs with both Mahalanobis and Euclidean distances. However, Model 3 tends to generate larger ATEs, especially when using Euclidean distances. The ATEs generated by the models differ considerably in the case of The Netherlands (Table A21). For example, Model 2 and 3 with Mahalanobis distance result in a significant ATE for outcome variable (3), whereas this is insignificant with Model 1. In addition, the models with Euclidean distance generate more often a significant and larger ATE, compared to the models with Mahalanobis distance. However, the difference in ATEs can also be a result of the poor quality of the matching exercise resulting from the small number of Dutch EVS2017 respondents. Finally, Table A22 presents the results of the different models for The Slovak Republic. Again, the models with Euclidean distances tend to generate larger ATEs than the models with Mahalanobis distance. Additionally, Model 2 and 3 tend to generate larger ATEs than the main model. This could indicate the results of The Slovak Republic found with the main model, are more on the conservative side.

8.2 Alternative empirical method

Another way of checking the robustness of the estimation found in this research, is by using different empirical methods to study the effect of the pandemic on gender role attitudes. A simple OLS cross-section analysis is performed, which means that equation (1) will be estimated with the unmatched dataset. The results of this method are presented in Table A23 till A26. Overall, the simple OLS analysis yields similar results as the main results of the Nearest-Neighbor match in the case of Armenia, The Czech Republic and The Slovak Republic. However, the size and significance of the effects found in the main results are larger than with the OLS analysis. Especially the significance of the interaction term differs from the main findings. Again, the OLS results of The Netherlands differ significantly from the main results. This lowers the validity of the estimations of The Netherlands.

8.3 Social-desirability bias

Finally, the social-desirability bias could influence the validity of the estimations. This often poses a challenge when conducting data collection through a survey. Respondents could feel some sort of pressure to answer questions in accordance with the social norms. However, this bias is expected to be small in surveys that are conducted online. Only the WVS Wave 7 study in The Netherlands is conducted online. All other surveys are conducted in face-to-face interviews. Therefore, the social-desirability bias lowers the validity of this study. However, the study by Boring and Moroni (2023) shows that the social-desirability bias does not seem to be the main driver of their results. They check for this by comparing answers of respondents of in-person and online surveys, in six European countries. Although only The Netherlands is one of the countries included in their robustness check, this lowers the threat of the social-desirability bias in this study.

9. Discussion and Conclusion

In this research, I studied the effect of the pandemic on gender role attitudes in four European countries, using a Nearest-Neighbor Matching technique. The results suggest that the effect of the pandemic varied widely across the four European countries of interest. To specify the pandemic's effect, the four hypotheses will be discussed. However, the estimated coefficients cannot be interpreted as a causal effect. Overall, the pandemic is associated with a decrease in traditional beliefs about gender roles in Armenia, The Netherlands and The Slovak Republic, which is in line with hypothesis 1. In The Czech Republic the pandemic is associated with an increase in traditional beliefs about gender roles. Therefore, the first hypothesis is not supported by The Czech Republic. Keeping in mind the pre-pandemic trend, it is plausible that this estimation is underestimated. The decrease in traditional beliefs is concentrated among men in The Netherlands and in Armenia, although weakly significant. The second hypothesis is not supported in the case of The Slovak Republic. The effect on beliefs about gender roles associated

with the pandemic, is strongly concentrated among men in the Czech Republic. However, not with an increase in egalitarian beliefs like the second hypothesis states. To check for heterogenous effects stated in hypothesis 3, the sample size reduced significantly. Keeping this in mind, the hypothesis seems to be supported by the results of The Czech Republic. The decrease in agreement enlarged among employed men in The Czech Republic. There is not enough evidence for the other countries to support this hypothesis. Finally, the last hypothesis stated that having at least one child living at home, lowers the increase in egalitarian beliefs. The results of Armenia and The Netherlands suggest to support this hypothesis, although weakly. The results of The Czech Republic and The Slovak Republic suggest the opposite holds; respondents without a child living at home increased agreement with traditional beliefs about gender roles, whereas respondents with a child living at home decreased agreement with traditional beliefs about gender roles during the pandemic.

My findings suggest that the prediction of Boring and Moroni (2023) of the pandemic's effect on the long-term seem to hold in Armenia, The Netherlands and The Slovak Republic. There is, to the best of my knowledge, no existing research on the effect of the first lockdown in these three countries that suggest that these countries reverted to traditional gender role beliefs, like in France. However, the results of this research still support to the prediction of Boring and Moroni (2023). In addition, my results add to existing literature by showing that in Armenia, The Netherlands and The Slovak Republic the pre-pandemic trend in Europe seems to have been continued. The prediction that once household production constraints disappear, respondents will revert to egalitarian beliefs, seems not to hold in The Czech Republic. In The Czech Republic, the pandemic is associated with an increase in traditional gender role beliefs, especially among men. However, this could be an indication that there are other household production constraints that have not, or not yet, disappeared. On the other hand, as discussed in Section 6.4, gender equality and good childcare is far from established in this country. This research emphasizes the importance of reducing gender discrimination by increasing egalitarian gender role beliefs. Establishing egalitarian beliefs about gender roles will increase equal opportunities for men and women, and could increase female labor supply further. In the case of The Czech Republic, this research also emphasizes the need to increase egalitarian beliefs, especially among men. This could possibly be realized with special educational programs. In addition, the results in The Czech Republic could suggest that the long maternal leave, the poor childcare facilities and the low female representation in politics, form a more structural problem. Therefore, further research on how these factors impact beliefs about gender roles in The Czech Republic would be meaningful.

The matching exercise is of poor quality, especially in the case of The Netherlands. This is partly due to the limited pre-pandemic data that is available. Another limitation concerning the data, is assuming that the EVS data forms a good proxy for pre-pandemic beliefs. However, it is possible that attitudes toward gender roles have changed in two and a half to three years. Another limitation of this research is the variable *Child*, that is used to study the effect of the pandemic on those that were most

affected by it. The two surveys have different data on the family life of the respondent. Therefore, this variable does not precisely estimate the pandemic's effect on parents with a child living at home. Finally, the statements used in this study, focus namely on women's role at home and men's role in business and politics. In a follow-up study, it would be interesting to see if beliefs about gender roles would be similar if more statements described men's role in unpaid labor and women's role in paid labor.

To sum up, this research did not establish causality, since the quality of the matching exercise is insufficient. Therefore, the policy implications following from this research are limited. However, this research shows how dynamic beliefs about gender roles are. It also emphasizes the need for policies that support the development of egalitarian beliefs about gender roles. Egalitarian beliefs might be supported through educational programs, but also through exposure to female role models in leadership positions, for example in politics. All in all, there is still a lot of room left for the development of insights in how beliefs about gender roles are formed and their influence on establishing gender equality.

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11. Appendix

Table A1. Overview of statements that capture beliefs about gender roles.

Statements	Variable Name EVS2017	Variable Name WVSW7
(1) When women work for pay, the children suffer.	V72	Q28
(2) On the whole, men make better political leaders than women do.	V76	Q29
(3) A university education is more important for a boy than for a girl.	V77	Q30
(4) On the whole, men make better business executives than women do.	V78	Q31
(5) When jobs are scarce, men should have more right to a job than women.	V81	Q33
(6) Women have the same rights as men.	V141	Q249

Notes: The table above shows the statements used in this research to measure the beliefs about gender roles. The statements are part of the EVS and WVS survey. The second and third column show the variable name of each statement in the two datasets.

Table A2. Overview of dates and modes of data collection per country.

	EVS data collected in	WVS data collected in	Mode EVS	Mode WVS
Armenia	24/02/2018 – 24/06/2018	07/05/2021 – 07/06/2021	PAPI	CAPI
Czech Republic	17/09/2017 – 01/12/2017	11/02/2022 – 13/05/2022	CAPI/PAPI	CAPI
The Netherlands	22/08/2017 – 28/02/2018	03/01/2022 – 25/01/2022	CAPI	CAWI
Slovak Republic	26/09/2017 – 23/12/2017	19/01/2022 – 22/02/2022	CAPI	CAPI

Notes: The table above shows the dates and modes of data collection per country. The EVS data of all four countries is collected before the start of the COVID-19 pandemic. The WVS data of all four countries is collected during the end of the pandemic, when countries opened up again. Note that all WVS surveys were conducted with use of a computer. CAPI = Computer-Assisted Personal Interview; PAPI = Paper and Pencil Interview; CAWI = Computer-Assisted Web Interview. The CAPI and PAPI are face-to-face interviews, whereas the CAWI is a self-administered questionnaire.

Table A3. Demographic characteristics of unmatched dataset, Armenia.

	EVS 2017 Survey			WVS Wave 7 Survey		
	Count	Mean	SD	Count	Mean	SD
Female	1,354	0.541	0.499	1,062	0.634	0.465
Age	1,354	44.446	17.312	1,062	48.601	16.915
Education Respondent						
Less than primary	1,354	0.018	0.132	1,062	0.001	0.031
Primary	1,354	0.018	0.132	1,062	0.015	0.122
Lower secondary	1,354	0.046	0.209	1,062	0.081	0.273
Upper secondary	1,354	0.474	0.500	1,062	0.330	0.470
Post-secondary	1,354	0.060	0.237	1,062	0.024	0.152
Short-cycle tertiary	1,354	0.096	0.295	1,062	0.239	0.427
Bachelor or eq.	1,354	0.109	0.311	1,062	0.138	0.346
Master or eq.	1,354	0.176	0.381	1,062	0.162	0.369
Doctoral or eq.	1,354	0.004	0.066	1,062	0.010	0.101
Children						
Number of children	1,354	1.591	1.195	1,062	1.845	1.064
Child	1,354	0.707	0.455	1,062	0.737	0.440
Marital status						
Married	1,354	0.570	0.495	1,062	0.605	0.489
Civil partnership	1,354	0.037	0.189	1,062	0.039	0.193
Widowed	1,354	0.088	0.283	1,062	0.162	0.369
Divorced	1,354	0.033	0.179	1,062	0.047	0.212
Separated	1,354	0.012	0.108	1,062	0.010	0.101
Other	1,354	0.260	0.439	1,062	0.137	0.344
Education Spouse						
Not applicable	1,354	0.370	0.483	1,062	0.346	0.476
Less than primary	1,354	0.008	0.090	1,062	0.001	0.031
Primary	1,354	0.004	0.066	1,062	0.004	0.061
Lower secondary	1,354	0.032	0.175	1,062	0.073	0.259
Upper secondary	1,354	0.332	0.471	1,062	0.241	0.428
Post-secondary	1,354	0.039	0.194	1,062	0.016	0.126
Short-cycle tertiary	1,354	0.052	0.223	1,062	0.152	0.359
Bachelor or eq.	1,354	0.064	0.244	1,062	0.073	0.261
Master or eq.	1,354	0.095	0.294	1,062	0.089	0.284
Doctoral or eq.	1,354	0.003	0.054	1,062	0.007	0.081
Income Decile						
1st decile	1,354	0.084	0.278	1,062	0.107	0.310
2nd decile	1,354	0.136	0.343	1,062	0.042	0.202
3rd decile	1,354	0.170	0.376	1,062	0.099	0.299
4th decile	1,354	0.212	0.409	1,062	0.093	0.291

5th decile	1,354	0.176	0.381	1,062	0.390	0.488
6th decile	1,354	0.126	0.331	1,062	0.089	0.284
7th decile	1,354	0.049	0.217	1,062	0.109	0.312
8th decile	1,354	0.027	0.161	1,062	0.043	0.204
9th decile	1,354	0.010	0.098	1,062	0.006	0.075
10th decile	1,354	0.011	0.105	1,062	0.022	0.146
Region						
ARM - Yerevan	1,354	0.372	0.484	1,062	NA	NA
ARM – II Region	1,354	0.237	0.425	1,062	NA	NA
ARM – III Region	1,354	0.189	0.392	1,062	NA	NA
ARM – IV Region	1,354	0.202	0.401	1,062	NA	NA

Source: Fifth wave of the EVS and seventh wave of the WVS survey (EVS, 2022; WVS, 2022).

Notes: The table above shows the demographic characteristics of the unmatched dataset. Note that all respondents are at least 18 years old. *Age* takes on the value of 82 for respondents who are 82 or older. *Other* in employment status includes individuals that have a military service or are disabled. *Other* in marital status differs between the EVS and WVS survey. In the EVS survey this answer option is for people who have never been married before or never have been in a registered partnership. In the WVS survey the last answer category is for individuals who are single. *Number of children* takes on the value three if the respondent has three or more children. *Number of children* is the sum of the children living inside and outside the household of the respondent. *Child* is equal to one in the EVS2107 dataset if the respondent has at least one child living in the household, and zero otherwise. In the WVS survey, *Child* is equal to one if the respondent has at least one child and if there are at least two people living in the household of the respondent. If one or both conditions do not hold, *Child* is equal to zero in the WVS survey. Note that 1,062 Armenian respondents of the WVS survey were not asked about the region in which the interview was conducted. Therefore, this information is missing.

Table A4. Demographic characteristics of unmatched dataset, The Czech Republic.

	EVS 2017 Survey			WVS Wave 7 Survey		
	Count	Mean	SD	Count	Mean	SD
Female	1,122	0.607	0.489	1,117	0.541	0.499
Age	1,122	52.106	16.861	1,117	48.806	16.883
Education Respondent						
Less than primary	1,122	0.001	0.030	1,117	0.001	0.230
Primary	1,122	0.001	0.030	1,117	0.064	0.244
Lower secondary	1,122	0.079	0.270	1,117	0.338	0.473
Upper secondary	1,122	0.552	0.498	1,117	0.403	0.491
Post-secondary	1,122	0.168	0.374	1,117	0.026	0.159
Short-cycle tertiary	1,122	0.025	0.156	1,117	0.021	0.142
Bachelor or eq.	1,122	0.030	0.171	1,117	0.033	0.179
Master or eq.	1,122	0.135	0.342	1,117	0.098	0.298
Doctoral or eq.	1,122	0.008	0.089	1,117	0.017	0.129

Children						
Number of children	1,122	1.624	0.967	1,117	1.373	0.997
Child	1,122	0.815	0.389	1,117	0.577	0.494
Marital status						
Married	1,122	0.471	0.499	1,117	0.459	0.499
Civil partnership	1,122	0.003	0.052	1,117	0.109	0.312
Widowed	1,122	0.129	0.336	1,117	0.108	0.311
Divorced	1,122	0.184	0.388	1,117	0.125	0.331
Separated	1,122	0.008	0.089	1,117	0.006	0.079
Other	1,122	0.204	0.403	1,117	0.192	0.394
Education Spouse						
Not applicable	1,122	0.393	0.489	1,117	0.432	0.496
Less than primary	1,122	0.000	0.000	1,117	0.000	0.000
Primary	1,122	0.001	0.030	1,117	0.020	0.139
Lower secondary	1,122	0.037	0.190	1,117	0.204	0.403
Upper secondary	1,122	0.377	0.485	1,117	0.235	0.424
Post-secondary	1,122	0.085	0.279	1,117	0.013	0.111
Short-cycle tertiary	1,122	0.011	0.103	1,117	0.007	0.084
Bachelor or eq.	1,122	0.013	0.115	1,117	0.028	0.164
Master or eq.	1,122	0.077	0.266	1,117	0.056	0.229
Doctoral or eq.	1,122	0.006	0.079	1,117	0.007	0.084
Income Decile						
1st decile	1,122	0.093	0.290	1,117	0.007	0.084
2nd decile	1,122	0.143	0.350	1,117	0.038	0.192
3rd decile	1,122	0.093	0.290	1,117	0.107	0.310
4th decile	1,122	0.131	0.338	1,117	0.160	0.367
5th decile	1,122	0.088	0.284	1,117	0.233	0.423
6th decile	1,122	0.095	0.294	1,117	0.212	0.409
7th decile	1,122	0.080	0.272	1,117	0.155	0.362
8th decile	1,122	0.073	0.260	1,117	0.067	0.250
9th decile	1,122	0.099	0.299	1,117	0.020	0.139
10th decile	1,122	0.105	0.307	1,117	0.000	0.000
Region						
CZ - Praha	1,122	0.093	0.290	1,117	0.131	0.337
CZ - Střední Čechy	1,122	0.094	0.293	1,117	0.118	0.323
CZ - Jihozápad	1,122	0.149	0.356	1,117	0.116	0.321
CZ - Severozápad	1,122	0.144	0.351	1,117	0.100	0.300

CZ - Severovýchod	1,122	0.127	0.334	1,117	0.139	0.346
CZ - Jihovýchod	1,122	0.154	0.361	1,117	0.168	0.374
CZ - Střední Morava	1,122	0.136	0.343	1,117	0.117	0.322
CZ - Moravskoslezsko	1,122	0.102	0.302	1,117	0.110	0.313

Source: Fifth wave of the EVS and seventh wave of the WVS survey (EVS, 2022; WVS, 2022).

Notes: The table above shows the demographic characteristics of the unmatched dataset. Note that all respondents are at least 18 years old. *Age* takes on the value of 82 for respondents who are 82 or older. *Other* in employment status includes individuals that have a military service or are disabled. *Other* in marital status differs between the EVS and WVS survey. In the EVS survey this answer option is for people who have never been married before or have been in a registered partnership. In the WVS survey the last answer category is for individuals who are single. *Number of children* takes on the value three if the respondent has three or more children. *Number of children* is the sum of the children living inside and outside the household of the respondent. *Child* is equal to one in the EVS2107 dataset if the respondent has at least one child living in the household, and zero otherwise. In the WVS survey, *Child* is equal to one if the respondent has at least one child and if there are at least two people living in the household of the respondent. If one or both conditions do not hold, *Child* is equal to zero in the WVS survey.

Table A5. Demographic characteristics of unmatched dataset, The Netherlands.

	EVS 2017 Survey			WVS Wave 7 Survey		
	Count	Mean	SD	Count	Mean	SD
Female	241	0.473	0.500	1,165	0.493	0.500
Age	241	45.224	17.947	1,165	52.591	15.290
Education Respondent						
Less than primary	241	0.004	0.064	1,165	0.001	0.029
Primary	241	0.017	0.128	1,165	0.013	0.113
Lower secondary	241	0.178	0.384	1,165	0.126	0.332
Upper secondary	241	0.357	0.480	1,165	0.079	0.270
Post-secondary	241	0.017	0.128	1,165	0.220	0.414
Short-cycle tertiary	241	0.075	0.263	1,165	0.044	0.205
Bachelor or eq.	241	0.083	0.276	1,165	0.264	0.441
Master or eq.	241	0.266	0.443	1,165	0.232	0.422
Doctoral or eq.	241	0.004	0.064	1,165	0.022	0.148
Children						
Number of children	241	0.992	1.284	1,165	1.406	1.138
Child	241	0.394	0.490	1,165	0.630	0.483
Marital status						
Married	241	0.390	0.489	1,165	0.575	0.495
Civil partnership	241	0.050	0.218	1,165	0.179	0.384
Widowed	241	0.029	0.168	1,165	0.000	0.000

Divorced	241	0.054	0.226	1,165	0.000	0.000
Separated	241	0.017	0.128	1,165	0.000	0.000
Other	241	0.461	0.499	1,165	0.245	0.431
Education Spouse						
Not applicable	241	0.452	0.499	1,165	0.245	0.431
Less than primary	241	0.008	0.091	1,165	0.001	0.029
Primary	241	0.008	0.091	1,165	0.010	0.101
Lower secondary	241	0.112	0.316	1,165	0.140	0.347
Upper secondary	241	0.141	0.349	1,165	0.075	0.263
Post-secondary	241	0.004	0.021	1,165	0.182	0.386
Short-cycle tertiary	241	0.021	0.143	1,165	0.024	0.153
Bachelor or eq.	241	0.054	0.226	1,165	0.154	0.361
Master or eq.	241	0.199	0.400	1,165	0.153	0.360
Doctoral or eq.	241	0.000	0.000	1,165	0.016	0.127
Income Decile						
1st decile	241	0.129	0.335	1,165	0.026	0.158
2nd decile	241	0.058	0.234	1,165	0.063	0.242
3rd decile	241	0.062	0.242	1,165	0.072	0.259
4th decile	241	0.075	0.263	1,165	0.123	0.328
5th decile	241	0.087	0.283	1,165	0.120	0.325
6th decile	241	0.095	0.294	1,165	0.123	0.328
7th decile	241	0.141	0.349	1,165	0.115	0.319
8th decile	241	0.091	0.289	1,165	0.114	0.318
9th decile	241	0.112	0.316	1,165	0.070	0.256
10th decile	241	0.149	0.357	1,165	0.174	0.379
Region						
NL - Groningen	241	0.029	0.168	1,165	0.054	0.226
NL - Friesland	241	0.037	0.190	1,165	0.039	0.193
NL - Drenthe	241	0.012	0.111	1,165	0.025	0.156
NL - Overijssel	241	0.058	0.234	1,165	0.062	0.241
NL - Gelderland	241	0.129	0.335	1,165	0.128	0.334
NL - Flevoland	241	0.017	0.128	1,165	0.028	0.166
NL - Utrecht	241	0.087	0.283	1,165	0.075	0.263
NL – Noord-Holland	241	0.191	0.394	1,165	0.157	0.364
NL – Zuid-Holland	241	0.257	0.438	1,165	0.180	0.385
NL – Zeeland	241	0.004	0.064	1,165	0.021	0.145

NL – Noord-Brabant	241	0.154	0.361	1,165	0.161	0.367
NL - Limburg	241	0.025	0.156	1,165	0.70	0.256

Source: Fifth wave of the EVS and seventh wave of the WVS survey (EVS, 2022; WVS, 2022).

Notes: The table above shows the demographic characteristics of the unmatched dataset. Note that all respondents are at least 18 years old. *Age* takes on the value of 82 for respondents who are 82 or older. *Other* in employment status includes individuals that have a military service or are disabled. *Other* in marital status differs between the EVS and WVS survey. In the EVS survey this answer option is for people who have never been married before or have been in a registered partnership. In the WVS survey the last answer category is for individuals who are single. *Number of children* takes on the value three if the respondent has three or more children. *Number of children* is the sum of the children living inside and outside the household of the respondent. *Child* is equal to one in the EVS2107 dataset if the respondent has at least one child living in the household, and zero otherwise. In the WVS survey, *Child* is equal to one if the respondent has at least one child and if there are at least two people living in the household of the respondent. If one or both conditions do not hold, *Child* is equal to zero in the WVS survey.

Table A6. Demographic characteristics of unmatched dataset, The Slovak Republic.

	EVS 2017 Survey			WVS Wave 7 Survey		
	Count	Mean	SD	Count	Mean	SD
Female	872	0.610	0.488	1,104	0.537	0.499
Age	872	51.986	16.548	1,104	52.368	15.848
Education Respondent						
Less than primary	872	0.002	0.048	1,104	0.003	0.052
Primary	872	0.009	0.095	1,104	0.047	0.212
Lower secondary	872	0.102	0.303	1,104	0.301	0.459
Upper secondary	872	0.733	0.443	1,104	0.422	0.494
Post-secondary	872	0.037	0.188	1,104	0.041	0.198
Short-cycle tertiary	872	0.002	0.048	1,104	0.009	0.095
Bachelor or eq.	872	0.014	0.117	1,104	0.034	0.180
Master or eq.	872	0.101	0.301	1,104	0.127	0.333
Doctoral or eq.	872	0.000	0.000	1,104	0.017	0.130
Children						
Number of children	872	1.594	1.045	1,104	1.561	1.040
Child	872	0.784	0.411	1,104	0.604	0.489
Marital status						
Married	872	0.501	0.500	1,104	0.505	0.500
Civil partnership	872	0.045	0.207	1,104	0.062	0.241
Widowed	872	0.151	0.359	1,104	0.147	0.354
Divorced	872	0.115	0.319	1,104	0.100	0.300

Separated	872	0.008	0.089	1,104	0.014	0.116
Other	872	0.180	0.384	1,104	0.173	0.378
Education Spouse						
Not applicable	872	0.433	0.496	1,104	0.433	0.496
Less than primary	872	0.000	0.000	1,104	0.000	0.000
Primary	872	0.008	0.089	1,104	0.023	0.149
Lower secondary	872	0.041	0.199	1,104	0.140	0.348
Upper secondary	872	0.431	0.496	1,104	0.277	0.448
Post-secondary	872	0.014	0.117	1,104	0.014	0.116
Short-cycle tertiary	872	0.005	0.068	1,104	0.008	0.0.90
Bachelor or eq.	872	0.009	0.095	1,104	0.023	0.149
Master or eq.	872	0.058	0.235	1,104	0.077	0.267
Doctoral or eq.	872	0.000	0.000	1,104	0.005	0.074
Income Decile						
1st decile	872	0.210	0.407	1,104	0.024	0.152
2nd decile	872	0.123	0.328	1,104	0.049	0.216
3rd decile	872	0.132	0.339	1,104	0.111	0.314
4th decile	872	0.116	0.320	1,104	0.146	0.353
5th decile	872	0.123	0.328	1,104	0.232	0.422
6th decile	872	0.083	0.275	1,104	0.184	0.388
7th decile	872	0.087	0.282	1,104	0.155	0.362
8th decile	872	0.072	0.259	1,104	0.076	0.265
9th decile	872	0.036	0.185	1,104	0.015	0.123
10th decile	872	0.019	0.138	1,104	0.009	0.095
Region						
SK - Bratislavský kraj	872	0.170	0.376	1,104	0.126	0.332
SK - Západné Slovensko	872	0.306	0.461	1,104	0.344	0.430
SK - Stredné Slovensko	872	0.256	0.437	1,104	0.245	0.430
SK - Východné Slovensko	872	0.268	0.443	1,104	0.285	0.452

Source: Fifth wave of the EVS and seventh wave of the WVS survey (EVS, 2022; WVS, 2022).

Notes: The table above shows the demographic characteristics of the unmatched dataset. Note that all respondents are at least 18 years old. *Age* takes on the value of 82 for respondents who are 82 or older. *Other* in employment status includes individuals that have a military service or are disabled. *Other* in marital status differs between the EVS and WVS survey. In the EVS survey this answer option is for people who have never been married before or have been in a registered partnership. In the WVS survey the last answer category is for individuals who are single. *Number of children* takes on the value three if the respondent has three or more children. *Number of children* is the sum of the children living inside and outside the household of the respondent. *Child* is equal to one in the EVS2107 dataset if the respondent has at least one child living in the household, and zero otherwise. In the WVS

survey, *Child* is equal to one if the respondent has at least one child and if there are at least two people living in the household of the respondent. If one or both conditions do not hold, *Child* is equal to zero in the WVS survey.

Table A7. Effect of the pandemic on beliefs about gender roles in Armenia, by having a child living at home.

Statement:	(1) Child	(2) Politics	(3) University	(4) Business	(5) Jobs	(6) Rights
Dependent variable:	"Strongly agree" or "Agree" with statement					
Pandemic	-0.309***	-0.117*	-0.074	-0.085	-0.170**	1.366***
	(0.068)	(0.067)	(0.060)	(0.068)	(0.070)	(0.387)
Female	-0.018	-0.177**	-0.064	-0.119**	-0.079	-0.191
	(0.057)	(0.059)	(0.055)	(0.060)	(0.063)	(0.316)
Pandemic x Female	-0.048	0.025	-0.007	-0.121	0.035	0.898*
	(0.084)	(0.085)	(0.072)	(0.085)	(0.087)	(0.471)
Child	0.114*	-0.022	-0.104*	-0.073	-0.100	-0.030
	(0.064)	(0.065)	(0.061)	(0.066)	(0.068)	(0.344)
Pandemic x Child	-0.109	-0.036	0.095	-0.043	0.178**	0.544
	(0.079)	(0.079)	(0.072)	(0.081)	(0.082)	(0.452)
Female x Child	-0.137**	0.029	0.121*	0.001	0.018	0.689*
	(0.065)	(0.070)	(0.065)	(0.071)	(0.074)	(0.370)
Pandemic x Female x Child	0.223**	-0.015	-0.110	0.076	-0.056	-1.364**
	(0.097)	(0.100)	(0.085)	(0.100)	(0.102)	(0.551)
Constant	0.723	0.798	0.377	0.736	0.756	5.511
Observations	2,214	2,214	2,214	2,214	2,214	2,214
R-squared	0.113	0.043	0.403	0.072	0.042	0.107

Source: Seventh wave of the WVS survey (WVS, 2022).

Notes: The table above shows the results of regression (2), where the effect of *Child* and the corresponding interaction terms are included. Outcome variables (1) till (5) are binary variables, whereas outcome variable (6) takes on a value between 1 and 11. See Table A1 for a description of the statements. All columns control for age, level of education of the respondent, marital status, level of education of the partner of the respondent, the number of children and income decile. The coefficients are rounded to three decimals and calculated with clustered standard errors. The number in the parentheses indicates the robust standard error. *p < 0.10, **p < 0.05, and *** p < 0.01.

Table A8. Effect of the pandemic on beliefs about gender roles in The Czech Republic, by having a child living at home.

Statement:	(1) Child	(2) Politics	(3) University	(4) Business	(5) Jobs	(6) Rights
Dependent variable:	"Strongly agree" or "Agree" with statement					
Pandemic	0.126**	0.213***	0.109**	0.248***	0.087**	-0.739***
	(0.041)	(0.046)	(0.043)	(0.045)	(0.041)	(0.191)
Female	0.215***	0.023	-0.079**	-0.027	-0.045	-1.043***
	(0.043)	(0.046)	(0.037)	(0.044)	(0.037)	(0.238)
Pandemic x Female	-0.254***	-0.258***	-0.059	-0.285***	-0.042	1.164***
	(0.060)	(0.064)	(0.055)	(0.062)	(0.055)	(0.319)

Child	0.112*** (0.048)	0.029 (0.053)	-0.051 (0.043)	-0.047 (0.050)	-0.028 (0.044)	-0.243 (0.232)
Pandemic x Child	-0.147** (0.057)	-0.029 (0.062)	0.050 (0.055)	-0.011 (0.061)	0.051 (0.056)	0.738** (0.264)
Female x Child	-0.152** (0.057)	-0.090 (0.060)	0.036 (0.046)	-0.096* (0.056)	0.005 (0.049)	0.522* (0.307)
Pandemic x Female x Child	0.135** (0.079)	0.047 (0.084)	-0.039 (0.070)	0.101 (0.081)	-0.121* (0.072)	-0.941** (0.413)
Constant	0.200	0.527	0.376	0.536	0.405	9.195
Observations	2,234	2,234	2,234	2,234	2,234	2,234
R-squared	0.460	0.050	0.063	0.090	0.044	0.039

Source: Seventh wave of the WVS survey (WVS, 2022).

Notes: The table above shows the results of regression (2), where the effect of *Child* and the corresponding interaction terms are included. Outcome variables (1) till (5) are binary variables, whereas outcome variable (6) takes on a value between 1 and 11. See Table A1 for a description of the statements. All columns control for age, level of education of the respondent, marital status, level of education of the partner of the respondent, the number of children, income decile and region fixed effects. The coefficients are rounded to three decimals and calculated with clustered standard errors. The number in the parentheses indicates the robust standard error. *p < 0.10, **p < 0.05, and *** p < 0.01.

Table A9. Effect of the pandemic on beliefs about gender roles in The Netherlands, by having a child living at home.

Statement:	(1) Child	(2) Politics	(3) University	(4) Business	(5) Jobs	(6) Rights
Dependent variable:	"Strongly agree" or "Agree" with statement					
Pandemic	-0.048 (0.041)	-0.190*** (0.040)	0.000 (0.024)	-0.148*** (0.040)	-0.074** (0.026)	-0.054 (0.186)
Female	-0.089** (0.038)	-0.249*** (0.036)	-0.062*** (0.017)	-0.265*** (0.033)	-0.116*** (0.022)	0.445** (0.140)
Pandemic x Female	-0.010 (0.050)	0.157*** (0.044)	0.000 (0.024)	0.144*** (0.041)	0.086** (0.027)	-0.024 (0.228)
Child	0.049 (0.042)	-0.221*** (0.040)	-0.043** (0.017)	-0.191*** (0.038)	-0.086*** (0.024)	0.021 (0.191)
Pandemic x Child	-0.082* (0.049)	0.176*** (0.045)	0.035 (0.025)	0.156*** (0.044)	0.079** (0.028)	0.062 (0.221)
Female x Child	-0.170*** (0.045)	0.188*** (0.040)	0.063*** (0.017)	0.188*** (0.035)	0.171*** (0.027)	-0.544** (0.181)
Pandemic x Female x Child	0.176** (0.060)	-0.121** (0.051)	-0.017 (0.027)	-0.112** (0.047)	-0.143*** (0.034)	-0.039 (0.294)
Constant	0.498	0.399	0.094	0.336	0.167	7.036
Observations	2,330	2,330	2,330	2,330	2,330	2,330
R-squared	0.109	0.088	0.045	0.095	0.058	0.050

Source: Seventh wave of the WVS survey (WVS, 2022).

Notes: The table above shows the results of regression (2), where the effect of *Child* and the corresponding interaction terms are included. Outcome variables (1) till (5) are binary variables, whereas outcome variable (6) takes on a value between 1 and 11. See Table A1 for a description of the statements. All columns control for age, level of education of the respondent, marital status, level of education of the partner of the respondent, the number of children, income decile and region fixed effects. The coefficients are rounded to three decimals and calculated with clustered standard errors. The number in the parentheses indicates the robust standard error. *p < 0.10, **p < 0.05, and *** p < 0.01.

Table A10. Effect of the pandemic on beliefs about gender roles in The Slovak Republic, by having a child living at home.

Statement:	(1) Child	(2) Politics	(3) University	(4) Business	(5) Jobs	(6) Rights
Dependent variable:	"Strongly agree" or "Agree" with statement					
Pandemic	-0.073*	0.117**	0.092**	0.063	0.044	1.109***
	(0.044)	(0.048)	(0.045)	(0.049)	(0.049)	(0.255)
Female	-0.122**	-0.194***	-0.188***	-0.256***	-0.341***	1.241***
	(0.043)	(0.046)	(0.039)	(0.046)	(0.042)	(0.243)
Pandemic x Female	0.155**	0.000	0.163**	-0.003	0.194**	-0.638*
	(0.059)	(0.065)	(0.059)	(0.064)	(0.062)	(0.331)
Child	0.079	0.205***	0.166**	0.109**	-0.028	0.586**
	(0.052)	(0.053)	(0.052)	(0.053)	(0.054)	(0.282)
Pandemic x Child	-0.085	-0.153**	-0.184**	-0.060	-0.008	-0.127
	(0.056)	(0.062)	(0.060)	(0.063)	(0.063)	(0.316)
Female x Child	0.161**	0.062	0.186**	0.212***	0.411***	-1.196***
	(0.058)	(0.059)	(0.055)	(0.060)	(0.057)	(0.314)
Pandemic x Female x Child	-0.133*	-0.113	-0.243**	-0.219**	-0.360***	1.212**
	(0.077)	(0.084)	(0.079)	(0.083)	(0.082)	(0.422)
Constant	0.368	0.585	0.401	0.682	0.491	8.217
Observations	2,208	2,208	2,208	2,208	2,208	2,208
R-squared	0.051	0.082	0.071	0.086	0.079	0.085

Source: Seventh wave of the WVS survey (WVS, 2022).

Notes: The table above shows the results of regression (2), where the effect of *Child* and the corresponding interaction terms are included. Outcome variables (1) till (5) are binary variables, whereas outcome variable (6) takes on a value between 1 and 11. See Table A1 for a description of the statements. All columns control for age, level of education of the respondent, marital status, level of education of the partner of the respondent, the number of children, income decile and region fixed effects. The coefficients are rounded to three decimals and calculated with clustered standard errors. The number in the parentheses indicates the robust standard error. *p < 0.10, **p < 0.05, and *** p < 0.01.

Table A11. Effect of the pandemic on beliefs about gender roles in Armenia, on sub-sample of employed respondents.

Statement:	(1) Child	(2) Politics	(3) University	(4) Business	(5) Jobs	(6) Rights
Dependent variable:			"Strongly agree" or "Agree" with statement			
Pandemic	-0.366***	-0.082	-0.031	-0.088*	-0.041	1.658***
	(0.046)	(0.048)	(0.043)	(0.049)	(0.049)	(0.264)
Female	-0.071*	-0.113**	-0.026	-0.087*	-0.021	0.421*
	(0.042)	(0.045)	(0.040)	(0.045)	(0.047)	(0.232)
Pandemic x Female	0.040	-0.094	-0.081	-0.178**	-0.037	-0.207
	(0.062)	(0.064)	(0.053)	(0.064)	(0.065)	(0.348)
Constant	0.833	0.771	0.142	0.609	0.875	5.356
Observations	922	922	922	922	922	922
R-squared	0.126	0.052	0.033	0.094	0.037	0.093

Source: Seventh wave of the WVS survey (WVS, 2022).

Notes: This table shows the effect of the pandemic on beliefs about gender roles on a sub-sample of the WVS Wave 7 respondents from Armenia. The sub-sample consists of employed people, so respondents that are in full time or part time employed or are self-employed. By selecting only employed respondents, the number of observations reduced to 922. All columns control for age, level of education of the respondent, marital status, level of education of the partner of the respondent, the number of children and income decile. The coefficients are rounded to three decimals and calculated with clustered standard errors. The number in the parentheses indicates the robust standard error. *p < 0.10, **p < 0.05, and *** p < 0.01.

Table A12. Effect of the pandemic on beliefs about gender roles for employed respondents in The Czech Republic, on sub-sample of employed respondents.

Statement:	(1) Child	(2) Politics	(3) University	(4) Business	(5) Jobs	(6) Rights
Dependent variable:			"Strongly agree" or "Agree" with statement			
Pandemic	0.059*	0.209***	0.150***	0.271***	0.138***	-0.587***
	(0.033)	(0.037)	(0.031)	(0.036)	(0.033)	(0.160)
Female	0.130***	-0.061*	-0.046*	-0.104**	-0.023	-0.696***
	(0.034)	(0.036)	(0.027)	(0.034)	(0.029)	(0.176)
Pandemic x Female	-0.188***	-0.220***	-0.094**	-0.216***	-0.133**	0.542**
	(0.047)	(0.051)	(0.040)	(0.048)	(0.042)	(0.176)
Constant	0.259	0.568	0.384	0.454	0.416	9.051
Observations	1,468	1,468	1,468	1,468	1,468	1,468
R-squared	0.067	0.061	0.072	0.105	0.050	0.041

Source: Seventh wave of the WVS survey (WVS, 2022).

Notes: This table shows the effect of the pandemic on beliefs about gender roles on a sub-sample of the WVS Wave 7 respondents from The Czech Republic. The sub-sample consists of employed people, so respondents that are in full time or part time employed or are self-employed. By selecting only employed respondents, the number of observations reduced to 1,468. All columns control for age, level of education of the respondent, marital status, level of education of the partner of the respondent, the number of children, income decile and region fixed effects.

The coefficients are rounded to three decimals and calculated with clustered standard errors. The number in the parentheses indicates the robust standard error. *p < 0.10, **p < 0.05, and *** p < 0.01.

Table A13. Effect of the pandemic on beliefs about gender roles for employed respondents in The Netherlands, on sub-sample of employed respondents.

Statement:	(1) Child	(2) Politics	(3) University	(4) Business	(5) Jobs	(6) Rights
Dependent variable:			"Strongly agree" or "Agree" with statement			
Pandemic	-0.066**	-0.046*	0.020*	-0.041*	-0.020	-0.078
	(0.027)	(0.024)	(0.012)	(0.024)	(0.014)	(0.127)
Female	-0.151***	-0.123***	-0.024**	-0.155***	-0.006	0.064
	(0.025)	(0.022)	(0.008)	(0.020)	(0.015)	(0.112)
Pandemic x Female	0.030	0.046	-0.015	0.053**	-0.010	0.004
	(0.033)	(0.028)	(0.013)	(0.026)	(0.018)	(0.175)
Constant	0.478	0.287	0.054	0.223	0.092	6.723
Observations	1,574	1,574	1,574	1,574	1,574	1,574
R-squared	0.091	0.057	0.039	0.072	0.031	0.047

Source: Seventh wave of the WVS survey (WVS, 2022).

Notes: This table shows the effect of the pandemic on beliefs about gender roles on a sub-sample of the WVS Wave 7 respondents from The Netherlands. The sub-sample consists of employed people, so respondents that are in full time or part time employed or are self-employed. By selecting only employed respondents, the number of observations reduced to 1,574. All columns control for age, level of education of the respondent, marital status, level of education of the partner of the respondent, the number of children, income decile and region fixed effects. The coefficients are rounded to three decimals and calculated with clustered standard errors. The number in the parentheses indicates the robust standard error. *p < 0.10, **p < 0.05, and *** p < 0.01.

Table A14. Effect of the pandemic on beliefs about gender roles for employed respondents in The Slovak Republic, on sub-sample of employed respondents.

Statement:	(1) Child	(2) Politics	(3) University	(4) Business	(5) Jobs	(6) Rights
Dependent variable:			"Strongly agree" or "Agree" with statement			
Pandemic	-0.144***	-0.024	-0.069*	-0.006	0.021	0.983***
	(0.033)	(0.037)	(0.037)	(0.038)	(0.039)	(0.187)
Female	-0.026	-0.192***	-0.123**	-0.140***	-0.131***	0.369**
	(0.036)	(0.037)	(0.037)	(0.038)	(0.037)	(0.187)
Pandemic x Female	0.032	-0.008	0.063	-0.118**	-0.033	-0.171
	(0.047)	(0.053)	(0.051)	(0.053)	(0.052)	(0.257)
Constant	0.526	0.776	0.586	0.729	0.459	8.180
Observations	1,346	1,346	1,346	1,346	1,346	1,346
R-squared	0.060	0.077	0.034	0.066	0.051	0.051

Source: Seventh wave of the WVS survey (WVS, 2022).

Notes: This table shows the effect of the pandemic on beliefs about gender roles on a sub-sample of the WVS Wave 7 respondents from The Slovak Republic. The sub-sample consists of employed people, so respondents that are in full time or part time employed or are self-employed. By selecting only employed respondents, the number of observations reduced to 1,346. All columns control for age, level of education of the respondent, marital status, level of education of the partner of the respondent, the number of children, income decile and region fixed effects. 3

Table A15. Balance matching, Armenia.

	Standardized differences		Variance ratio	
	Raw	Matched	Raw	Matched
Age	.2427556	.0763539	.9547337	1.051339
Number of children	.2243331	.093763	.7932343	.9332783
Marital Status				
Registered partnership	.0088028	-.0155053	1.043851	.9258561
Widowed	.2253493	.0834308	1.693484	1.232585
Divorced	.0705386	.0021455	1.396609	1.010318
Separated	-.0139283	-.0301613	.8780027	.7329096
Other	-.313258	-.0647948	.6129196	.9127582
Education Respondent				
Primary	-.0209336	.0189984	.852443	1.150934
Lower secondary	.1447376	.0321408	1.703612	1.121572
Upper secondary	-.2980391	-.0368018	.8863588	.9894017
Post-secondary	-.1822176	-.0186537	.4087727	.9178463
Short-cycle tertiary	.3903562	.0346711	2.096992	1.069949
Bachelor or eq.	.0907865	.0064391	1.23251	1.015475
Master or eq.	-.0368719	.0044314	.9370308	1.007919
Doctoral or eq.	.0691867	.0113135	2.323972	1.165696
Education Spouse				
Not applicable	-.0509816	.0129495	.9703774	1.007713
Primary	-.0104016	0	.8507091	1
Lower secondary	.183998	-.0038872	2.187421	.9836132
Upper secondary	-.2028313	-.001801	.8246518	.9984566
Post-secondary	-.1415818	-.0075333	.418879	.9577444
Short-cycle tertiary	.331965	-.0014197	2.589061	.9960495
Bachelor or eq.	.0393101	.0033186	1.144323	1.011602
Master or eq.	-.0233965	-.008613	.9361684	.9758782
Doctoral or eq.	.0527682	.013586	2.22348	1.248962

Source: Fifth wave of the EVS and seventh wave of the WVS survey (EVS, 2022; WVS, 2022).

Notes: The table shows the raw and matched standardized mean differences and variance ratios of all covariates used in the Nearest-Neighbor Match.

Table A16. Balance matching, The Czech Republic.

	Standardized differences		Variance ratio	
	Raw	Matched	Raw	Matched
Age	-.1956089	-.0059202	1.002647	.7582382
Number of children	-.2550653	.0765904	1.061962	.789264
Marital Status				
Registered partnership	.4763796	.2310932	36.48486	3.738976
Widowed	-.0646286	-.0187458	.8583477	.9475921
Divorced	-.163971	0	.7286387	1
Separated	-.0208253	-.0226601	.7826443	.7513495
Other	-.0314057	-.1966414	.9534451	.7659602
Education Respondent				
Primary	.3604348	.2316767	66.84448	13.96813
Lower secondary	.6701186	.2376411	3.061709	1.454514
Upper secondary	-.3011932	-.1653109	.9726595	1.024212
Post-secondary	-.4953104	-.1452983	.1805363	.6267857
Short-cycle tertiary	-.0292472	.0092021	.8288022	1.062374
Bachelor or eq.	.0160939	.0182805	.0182805	1.105805
Master or eq.	-.1152466	-.0271075	.7580327	.9346516
Doctoral or eq.	.0808826	.0160732	2.101355	1.151761
Education Spouse				
Not applicable	.0781664	-.0307302	1.028291	.9905141
Lower secondary	.5288743	.1236283	4.508631	1.394873
Upper secondary	-.312797	-.0218232	.7644181	.9844605
Post-secondary	-.3401351	-.0709336	.1596947	.7224141
Short-cycle tertiary	-.0375491	-.0097361	.6720451	.9008112
Bachelor or eq.	.1014452	.0165539	2.045661	1.125641
Master or eq.	-.0851501	-.0220596	.7407421	.9236352
Doctoral or eq.	.0113112	-.0113295	1.146911	.867446
Region				
CZ - Střední Čechy	.0769062	.0074041	1.218125	1.019785
CZ - Jihozápad	-.09577	-.0106078	.811749	.976979
CZ - Severozápad	-.1348856	.0040844	.7302624	1.009446
CZ - Severovýchod	.0332952	-.0272454	1.074655	.9441722
CZ - Jihovýchod	.0383819	.0344114	1.073352	1.062083
CZ - Střední Morava	-.0573501	-.0176446	.8790511	.9604045
CZ - Moravskoslezsko	.0276576	.0073328	1.073513	1.019292

Source: Fifth wave of the EVS and seventh wave of the WVS survey (EVS, 2022; WVS, 2022).

Notes: The table shows the raw and matched standardized mean differences and variance ratios of all covariates used in the Nearest-Neighbor Match.

Table A17. Balance matching, The Netherlands.

	Standardized differences		Variance ratio	
	Raw	Matched	Raw	Matched
Age	.4418595	.0735012	.725765	.9186252
Number of children	.3414498	-.1347607	.7846616	.77051
Marital Status				
Registered partnership	.415231	.3209833	3.10125	2.34919
Widowed	-.2440918	-.1000002	0	0
Divorced	-.3369895	-.1365704	0	0
Separated	-.1833445	-.0755121	0	0
Other	-.4612662	-.0912854	.7430841	.9250414
Education Respondent				
Primary	-.0308505	.0330144	.7761223	1.352268
Lower secondary	-.1455827	-.0894131	.7496885	.8395806
Upper secondary	-.7136078	-.3159294	.3158688	.5617938
Post-secondary	.6625981	.6479711	10.46996	30.60635
Short-cycle tertiary	-.1310402	.0470759	.6037086	1.24792
Bachelor or eq.	.4907446	.212872	2.541867	1.373048
Master or eq.	-.0781579	-.3103348	.9098775	.7750406
Doctoral or eq.	.1593837	.1062195	5.263022	2.66712
Education Spouse				
Not applicable	-.4438398	-.0882432	.7452532	.9271536
Primary	.0208309	.0072909	1.234616	1.07615
Lower secondary	.0839998	-.069382	1.234616	1.07615
Upper secondary	-.2149571	-.0327779	.5683791	.908379
Post-secondary	.6426398	.4580244	35.90599	5.093736
Short-cycle tertiary	.0221948	.0244044	1.150763	1.174295
Bachelor or eq.	.3310717	.139145	2.539809	1.408734
Master or eq.	-.1218593	-.2816516	.8088872	.6694949
Doctoral or eq.	.1820174	.1654623	.7599033	.6978801
Region				
NL - Friesland	.0066992	.0150698	1.029555	1.076814
NL - Drenthe	.0919448	.0943868	1.968011	2.107261
NL - Overijssel	.0156151	.0566186	1.056205	1.251602
NL - Gelderland	-.0021915	.0612462	.9918554	1.15422
NL - Flevoland	.0791309	.1227729	1.680743	2.599189
NL - Utrecht	-.04564	.0680213	.8658555	1.265771
NL – Noord-Holland	-.0891053	-.0132833	.8545147	.9767884
NL – Zuid-Holland	-.1868262	-.2430052	.7707745	.7468764
NL – Zeeland	.1543121	.1623961	5.065041	8.52459
NL – Noord-Brabant	.0191845	-.0975812	1.03347	.845142

NL - Limburg	.2146019	.1483083	2.686412	1.935389

Source: Fifth wave of the EVS and seventh wave of the WVS survey (EVS, 2022; WVS, 2022).

Notes: The table shows the raw and matched standardized mean differences and variance ratios of all covariates used in the Nearest-Neighbor Match.

Table A18. Balance matching, The Slovak Republic.

	Standardized differences		Variance ratio	
	Raw	Matched	Raw	Matched
Age	.0235476	.0880589	.9171707	.9220481
Number of children	-.0320031	.1870742	.9904649	.8651029
Marital Status				
Registered partnership	.0752073	-.0112528	1.352537	.9562564
Widowed	-.0130136	.0882082	.9744293	1.219555
Divorced	-.0486168	.0284255	.8833887	1.077709
Separated	.0537617	.0207396	1.682655	1.232772
Other	-.0184524	-.1238408	.9689213	.8264968
Education Respondent				
Primary	.2307656	.0615407	4.936344	1.460524
Lower secondary	.5110412	.0968164	2.294001	1.159628
Upper secondary	-.6622701	-.1635299	1.245489	1.067211
Post-secondary	.0210511	.0270041	1.105781	1.143234
Short-cycle tertiary	.0900918	.0576196	3.921553	2.740238
Bachelor or eq.	.1302358	.0379364	2.386033	1.282155
Master or eq.	.0815452	.0256869	1.220103	1.06536
Doctoral or eq.	.1870597	.1393113	2.344826	1.478233
Education Spouse				
Not applicable	-.0010392	0	.9994787	1
Lower secondary	.3499606	.0263444	3.048451	1.077664
Upper secondary	-.3261246	-.0368852	.8166667	.9787979
Post-secondary	-.0015019	-.0043985	.9872553	.963457
Short-cycle tertiary	.0448007	.0570644	1.770382	2.323858
Bachelor or eq.	.1077601	.0121188	2.434152	1.098304
Master or eq.	.0736563	.0081343	1.290238	1.028775
Doctoral or eq.	.1044943	.0780275	`2.2335980	1.291003
Region				
SK - Západné Slovensko	.081166	.0075515	1.062296	1.005599
SK - Stredné Slovensko	-.0257768	-.0527734	.9704436	.9452086
SK - Východné Slovensko	.0379313	.0468211	1.038344	1.050177

Source: Fifth wave of the EVS and seventh wave of the WVS survey (EVS, 2022; WVS, 2022).

Notes: The table shows the raw and matched standardized mean differences and variance ratios of all covariates used in the Nearest-Neighbor match.

Table A19. ATE of different Nearest-Neighbor Matching models, Armenia.

Statement:	(1) Child	(2) Politics	(3) University	(4) Business	(5) Jobs	(6) Same rights
Dependent variable:			"Strongly agree" or "Agree" with statement			
Mahalanobis distance:						
Model 1	-0.287***	-0.143***	-0.050**	-0.128***	-0.008	1.421***
	(0.028)	(0.028)	(0.023)	(0.028)	(0.029)	(0.160)
Model 2	-0.284***	-0.170***	-0.057**	-0.154***	-0.038	1.433***
	(0.025)	(0.028)	(0.025)	(0.025)	(0.028)	(0.173)
Model 3	-0.278***	-0.150***	-0.031	-0.162***	-0.026	1.284***
	(0.023)	(0.023)	(0.019)	(0.023)	(0.023)	(0.127)
Euclidean distance:						
Model 1	-0.301***	-0.152***	-0.047**	-0.156***	-0.038	1.359***
	(0.025)	(0.025)	(0.021)	(0.026)	(0.025)	(0.140)
Model 2	-0.281***	-0.171***	-0.056**	-0.175***	-0.057**	1.431***
	(0.025)	(0.025)	(0.021)	(0.026)	(0.025)	(0.143)
Model 3	-0.275***	-0.151***	-0.039**	-0.168***	-0.025	1.310***
	(0.023)	(0.023)	(0.018)	(0.023)	(0.023)	(0.123)

Source: Fifth wave of the EVS and seventh wave of the WVS survey (EVS, 2022; WVS, 2022).

Notes: The table above shows ATE of different Nearest-Neighbor Matching models. The variables used to match on differ by model. Model 1 is the main model that matches on age, marital status, education level of respondent, education level of spouse of respondent, region and number of children and exact matches on *Child* and female. Model 2: age, marital status, education level of respondent and region and exact matches on *Child* and female. Model 3: age, marital status and region and exact matches on female. The table shows ATE of the three models using Mahalanobis and Euclidean distances. With Mahalanobis distance: Model 1 and 2 have 14 matches; Model 3 has 19 matches. With Euclidean distance: Model 1 has 15 matches; Model 2 has 17 matches and Model 3 has 19 matches. The coefficients are rounded to three decimals and calculated with clustered standard errors. The number in the parentheses indicates the robust standard error. *p < 0.10, **p < 0.05, and *** p < 0.01.

Table A20. The ATE of different Nearest-Neighbor Matching models, The Czech Republic.

Statement:	(1) Child	(2) Politics	(3) University	(4) Business	(5) Jobs	(6) Same rights
Dependent variable:			"Strongly agree" or "Agree" with statement			
Mahalanobis distance:						
Model 1	-0.043	0.081**	0.087***	0.113***	0.057**	0.160
	(0.028)	(0.031)	(0.024)	(0.029)	(0.024)	(0.156)
Model 2	-0.041	0.076**	0.100***	0.098**	0.023	0.165
	(0.028)	(0.031)	(0.024)	(0.029)	(0.025)	(0.147)
Model 3	0.006	0.089**	0.105***	0.106***	0.034	0.011
	(0.026)	(0.027)	(0.024)	(0.026)	(0.024)	(0.132)
Euclidean distance:						

Model 1	-0.028	0.085**	0.085***	0.107***	0.060**	0.221
	(0.025)	(0.027)	(0.021)	(0.026)	(0.022)	(0.143)
Model 2	-0.012	0.084**	0.093***	0.118***	0.067**	0.220
	(0.025)	(0.026)	(0.021)	(0.025)	(0.021)	(0.140)
Model 3	0.025	0.087***	0.115***	0.119***	0.072***	0.056
	(0.022)	(0.023)	(0.019)	(0.023)	(0.020)	(0.116)

Source: Fifth wave of the EVS and seventh wave of the WVS survey (EVS, 2022; WVS, 2022).

Notes: The table above shows ATE of different Nearest-Neighbor Matching models. The variables used to match on differ by model. Model 1 is the main model that matches on age, marital status, education level of respondent, education level of spouse of respondent, region and number of children and exact matches on *Child* and female. Model 2: age, marital status, education level of respondent and region and exact matches on *Child* and female. Model 3: age, marital status and region and exact matches on female. The table shows ATE of the three models using Mahalanobis and Euclidean distances. With Mahalanobis distance: Model 1 has 3 matches; Model 2 has 4 matches and Model 3 has 6 matches. With Euclidean distance: Model 1 has 10 matches; Model 2 has 11 matches and Model 3 has 15 matches. The coefficients are rounded to three decimals and calculated with clustered standard errors. The number in the parentheses indicates the robust standard error. *p < 0.10, **p < 0.05, and *** p < 0.01.

Table A21. The ATE of different Nearest-Neighbor Matching models, The Netherlands.

Statement:	(1) Child	(2) Politics	(3) University	(4) Business	(5) Jobs	(6) Same rights
Dependent variable:			"Strongly agree" or "Agree" with statement			
Mahalanobis distance:						
Model 1	-0.049	-0.038	0.014	-0.013	-0.026	-0.048
	(0.038)	(0.024)	(0.009)	(0.023)	(0.022)	(0.143)
Model 2	-0.033	-0.018	0.017**	0.004	-0.007	0.048
	(0.031)	(0.022)	(0.008)	(0.022)	(0.025)	(0.162)
Model 3	-0.045	-0.031	0.029**	0.007	-0.026	0.088
	(0.035)	(0.025)	90.008)	(0.023)	(0.017)	(0.187)
Euclidean distance:						
Model 1	-0.073*	-0.062*	0.021	0.000	-0.036	-0.021
	(0.041)	(0.037)	(0.020)	(0.027)	(0.027)	(0.162)
Model 2	-0.088**	-0.063*	0.024	-0.019	-0.031	0.010
	(0.041)	(0.038)	(0.020)	(0.029)	(0.027)	(0.167)
Model 3	-0.071**	-0.036	0.024**	-0.016	-0.024	-0.078
	(0.036)	(0.032)	(0.011)	(0.025)	(0.024)	(0.174)

Source: Fifth wave of the EVS and seventh wave of the WVS survey (EVS, 2022; WVS, 2022).

Notes: The table above shows ATE of different Nearest-Neighbor Matching models. The variables used to match on differ by model. Model 1 is the main model that matches on age, marital status, education level of respondent, education level of spouse of respondent, region and number of children and exact matches on *Child* and female. Model 2: age, marital status, education level of respondent and region and exact matches on *Child* and female. Model 3: age, marital status and region and exact matches on female. The table shows ATE of the three models using Mahalanobis and Euclidean distances. With Mahalanobis distance: Model 1 and 2 have 3 matches; Model 3 has 5 matches. With Euclidean distance: Model 1 has 7 matches; Model 2 has 8 matches and Model 3 has 9 matches. The coefficients are rounded to three decimals and calculated with clustered standard errors. The number in the parentheses indicates the robust standard error. *p < 0.10, **p < 0.05, and *** p < 0.01.

Table A22. The ATE of different Nearest-Neighbor Matching models, The Slovak Republic.

Statement:	(1) Child	(2) Politics	(3) University	(4) Business	(5) Jobs	(6) Same rights
Dependent variable:			"Strongly agree" or "Agree" with statement			
Mahalanobis distance:						
Model 1	-0.115***	-0.026	-0.015	-0.061**	-0.007	0.982***
	(0.027)	(0.031)	(0.023)	(0.029)	(0.030)	(0.159)
Model 2	-0.128***	-0.042	-0.021	-0.072**	-0.015	0.965***
	(0.028)	(0.031)	(0.029)	(0.028)	(0.030)	(0.148)
Model 3	-0.144***	-0.048*	0.029**	-0.078**	0.010	1.075***
	(0.024)	(0.025)	(0.008)	(0.025)	(0.025)	(0.136)
Euclidean distance:						
Model 1	-0.148***	-0.006	-0.014	-0.051**	0.013	0.989***
	(0.026)	(0.026)	(0.026)	(0.026)	(0.027)	(0.140)
Model 2	-0.149***	-0.015	-0.022	-0.054**	0.012	1.058***
	(0.026)	(0.025)	(0.026)	(0.025)	(0.027)	(0.136)
Model 3	-0.147***	-0.065**	-0.044*	-0.097***	0.008	1.099***
	(0.023)	(0.024)	(0.024)	(0.024)	(0.024)	(0.126)

Source: Fifth wave of the EVS and seventh wave of the WVS survey (EVS, 2022; WVS, 2022).

Notes: The table above shows ATE of different Nearest-Neighbor Matching models. The variables used to match on differ by model. Model 1 is the main model that matches on age, marital status, education level of respondent, education level of spouse of respondent, region and number of children and exact matches on *Child* and female. Model 2: age, marital status, education level of respondent and region and exact matches on *Child* and female. Model 3: age, marital status and region and exact matches on female. The table shows ATE of the three models using Mahalanobis and Euclidean distances. With Mahalanobis distance: Model 1 has 4 matches; Model 2 has 7 matches and Model 3 has 9 matches. With Euclidean distance: Model 1 has 8 matches; Model 2 has 10 matches and Model 3 has 16 matches. The coefficients are rounded to three decimals and calculated with clustered standard errors. The number in the parentheses indicates the robust standard error. *p < 0.10, **p < 0.05, and *** p < 0.01.

Table A23. Effect of the pandemic on beliefs about gender roles in Armenia, cross-sectional evidence.

Statement:	(1) Child	(2) Politics	(3) University	(4) Business	(5) Jobs	(6) Rights
Dependent variable:			"Strongly agree" or "Agree" with statement			
Pandemic	-0.316***	-0.193***	-0.055*	-0.164***	-0.039	1.378***
	(0.032)	(0.032)	(0.029)	(0.033)	(0.033)	(0.191)
Female	-0.081**	-0.197***	-0.094***	-0.194***	-0.106***	0.408**
	(0.025)	(0.025)	(0.023)	(0.026)	(0.027)	(0.134)
Pandemic x Female	0.073*	0.054	0.029	-0.002	0.033	-0.201
	(0.041)	(0.041)	(0.035)	(0.041)	(0.042)	(0.228)
Constant	0.602	0.757	0.252	0.690	0.674	6.278
Observations	2,416	2,416	2,416	2,416	2,416	2,416
R-squared	0.084	0.070	0.034	0.088	0.033	0.079

Source: Fifth wave of the EVS and seventh wave of the WVS survey (EVS, 2022; WVS, 2022).

Notes: The table above shows the results of the regression described in equation (1), using the unmatched dataset of respondents of the EVS and WVS surveys. This table only shows the results of respondents from Armenia. All

columns control for age, level of education of the respondent, marital status, level of education of the partner of the respondent, the number of children and income decile. Outcome variables (1) till (5) are binary variables, whereas outcome variable (6) takes on a value between 1 and 11. See Table A1 for a description of the statements. The coefficients are rounded to three decimals and calculated with clustered standard errors. The number in the parentheses indicates the robust standard error. *p < 0.10, **p < 0.05, and *** p < 0.01.

Table A24. Effect of the pandemic on beliefs about gender roles in The Czech Republic, Cross-sectional evidence.

Statement:	(1) Child	(2) Politics	(3) University	(4) Business	(5) Jobs	(6) Rights
Dependent variable:			"Strongly agree" or "Agree" with statement			
Pandemic	0.047	0.167***	0.137***	0.212***	0.107***	0.117
	(0.030)	(0.033)	(0.028)	(0.032)	(0.029)	(0.157)
Female	-0.002	-0.088**	-0.066**	-0.113***	-0.058**	-0.236
	(0.028)	(0.030)	(0.023)	(0.029)	(0.024)	(0.160)
Pandemic x Female	-0.056*	-0.167***	-0.076**	-0.195***	-0.096**	0.158
	(0.039)	(0.042)	(0.034)	(0.040)	(0.035)	(0.207)
Constant	0.289	0.542	0.256	0.498	0.408	7.331
Observations	2,239	2,239	2,239	2,239	2,239	2,239
R-squared	0.042	0.053	0.069	0.083	0.054	0.031

Source: Fifth wave of the EVS and seventh wave of the WVS survey (EVS, 2022; WVS, 2022).

Notes: The table above shows the results of the regression described in equation (1), using the unmatched dataset of respondents of the EVS and WVS surveys. This table only shows the results of respondents from The Czech Republic. All columns control for age, level of education of the respondent, marital status, level of education of the partner of the respondent, the number of children, income decile and region fixed effects. Outcome variables (1) till (5) are binary variables, whereas outcome variable (6) takes on a value between 1 and 11. See Table A1 for a description of the statements. The coefficients are rounded to three decimals and calculated with clustered standard errors. The number in the parentheses indicates the robust standard error. *p < 0.10, **p < 0.05, and *** p < 0.01.

Table A25. Effect of the pandemic on beliefs about gender roles in The Netherlands, Cross-sectional evidence.

Statement:	(1) Child	(2) Politics	(3) University	(4) Business	(5) Jobs	(6) Rights
Dependent variable:			"Strongly agree" or "Agree" with statement			
Pandemic	-0.024	-0.048	0.038**	-0.016	-0.023	-0.375**
	(0.040)	(0.037)	(0.016)	(0.034)	(0.022)	(0.173)
Female	-0.077	-0.097**	-0.010	-0.106**	-0.014	-0.261
	(0.047)	(0.041)	(0.014)	(0.036)	(0.027)	(0.217)
Pandemic x Female	-0.013	0.039	-0.023	0.030	-0.001	0.318
	(0.051)	(0.043)	(0.017)	(0.039)	(0.029)	(0.246)
Constant	0.351	0.292	0.045	0.199	0.136	7.235
Observations	1,406	1,406	1,406	1,406	1,406	1,406

R-squared	0.068	0.036	0.030	0.044	0.036	0.045

Source: Fifth wave of the EVS and seventh wave of the WVS survey (EVS, 2022; WVS, 2022).

Notes: The table above shows the results of the regression described in equation (1), using the unmatched dataset of respondents of the EVS and WVS surveys. This table only shows the results of respondents from The Netherlands. All columns control for age, level of education of the respondent, marital status, level of education of the partner of the respondent, the number of children, income decile and region fixed effects. Outcome variables (1) till (5) are binary variables, whereas outcome variable (6) takes on a value between 1 and 11. See Table A1 for a description of the statements. The coefficients are rounded to three decimals and calculated with clustered standard errors. The number in the parentheses indicates the robust standard error. *p < 0.10, **p < 0.05, and *** p < 0.01.

Table A26. Effect of the pandemic on beliefs about gender roles in The Slovak Republic, Cross-sectional evidence.

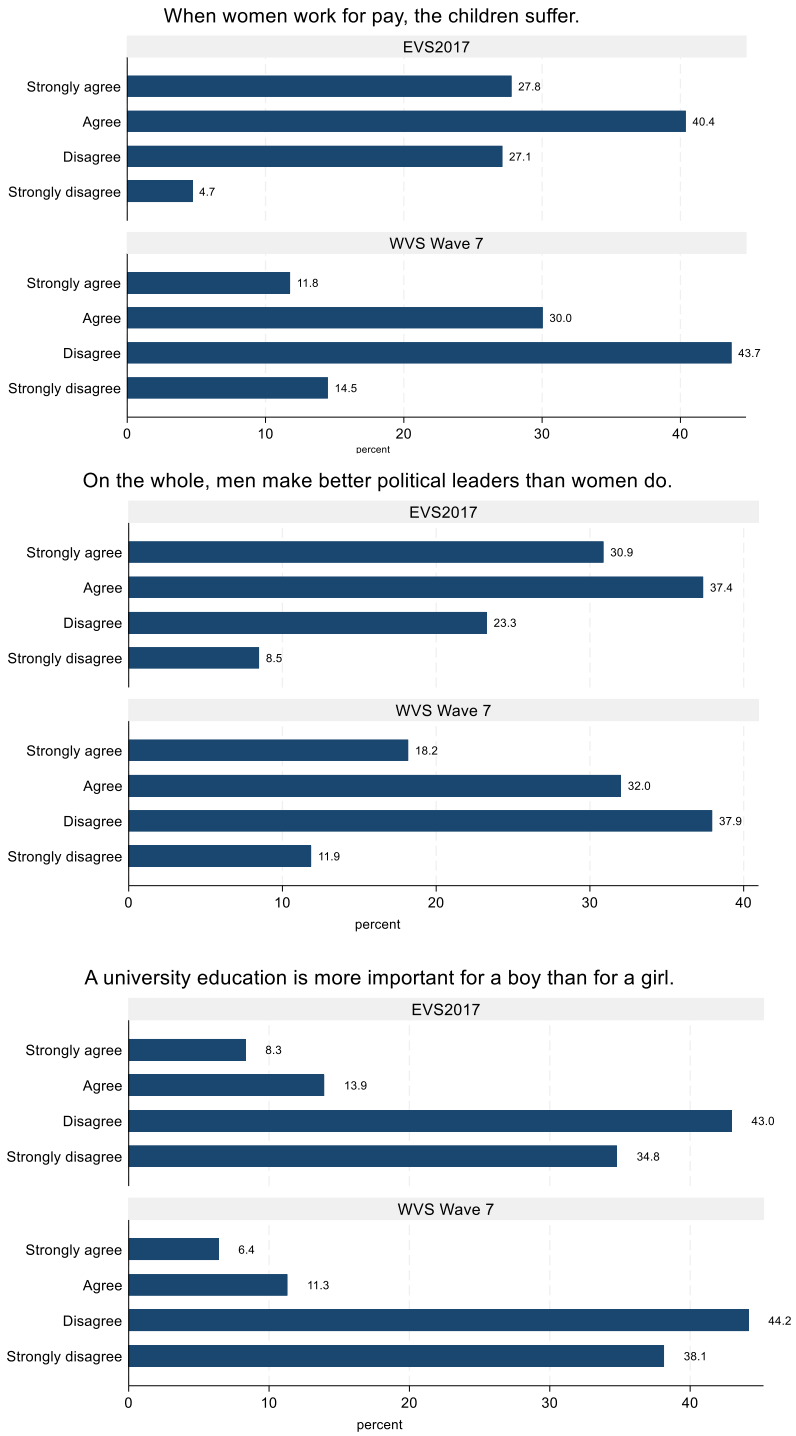
Statement:	(1) Child	(2) Politics	(3) University	(4) Business	(5) Jobs	(6) Rights
Dependent variable:			"Strongly agree" or "Agree" with statement			
Pandemic	-0.165***	-0.051	-0.040	-0.029	0.017	1.113***
	(0.033)	(0.034)	(0.034)	(0.035)	(0.036)	(0.178)
Female	-0.038	-0.217***	-0.115**	-0.179***	-0.100**	0.277
	(0.033)	(0.033)	(0.033)	(0.034)	(0.034)	(0.184)
Pandemic x Female	0.082*	-0.016	0.048	-0.091**	-0.017	-0.017
	(0.042)	(0.044)	(0.043)	(0.044)	(0.045)	(0.230)
Constant	0.470	0.636	0.520	0.645	0.356	7.851
Observations	1,976	1,976	1,976	1,976	1,976	1,976
R-squared	0.058	0.080	0.038	0.083	0.050	0.053

Source: Fifth wave of the EVS and seventh wave of the WVS survey (EVS, 2022; WVS, 2022).

Notes: The table above shows the results of the regression described in equation (1), using the unmatched dataset of respondents of the EVS and WVS surveys. This table only shows the results of respondents from The Slovak Republic. All columns control for age, level of education of the respondent, marital status, level of education of the partner of the respondent, the number of children, income decile and region fixed effects. Outcome variables (1) till (5) are binary variables, whereas outcome variable (6) takes on a value between 1 and 11. See Table A1 for a description of the statements. The coefficients are rounded to three decimals and calculated with clustered standard errors. The number in the parentheses indicates the robust standard error. *p < 0.10, **p < 0.05, and *** p < 0.01.

11.2 Appendix Figures

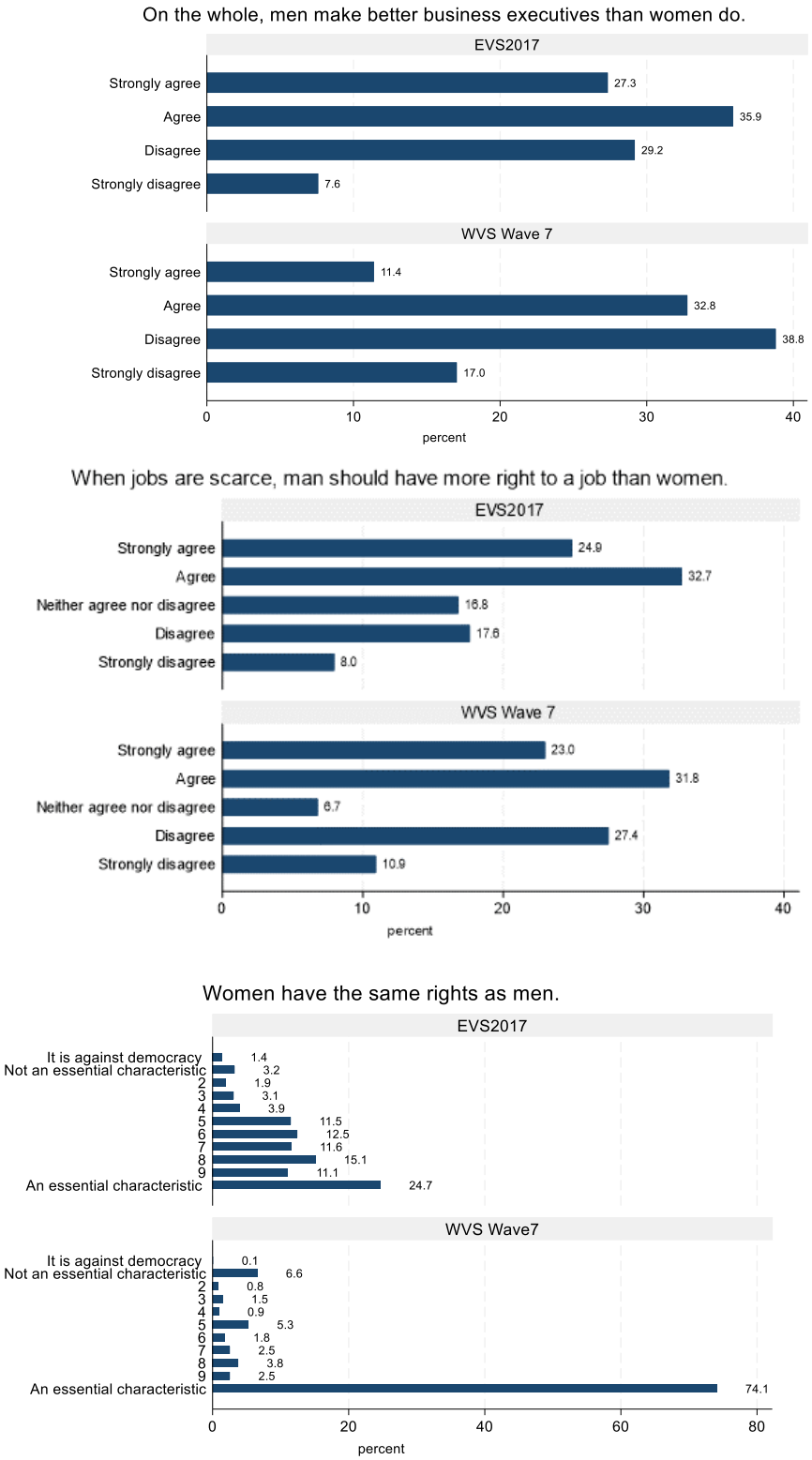
Figure A1.1 Distribution of answers, Armenia.



Source: Fifth wave of the EVS and seventh wave of the WVS survey (EVS, 2022; WVS, 2022).

Notes: The six panels above show the distribution of answers on the first three statements that capture beliefs about gender roles. The upper part of each panel shows the distribution of answers from the EVS2017 survey, and the lower part presents the results of the WVS Wave 7 survey. The distribution of answers is expressed in percentages.

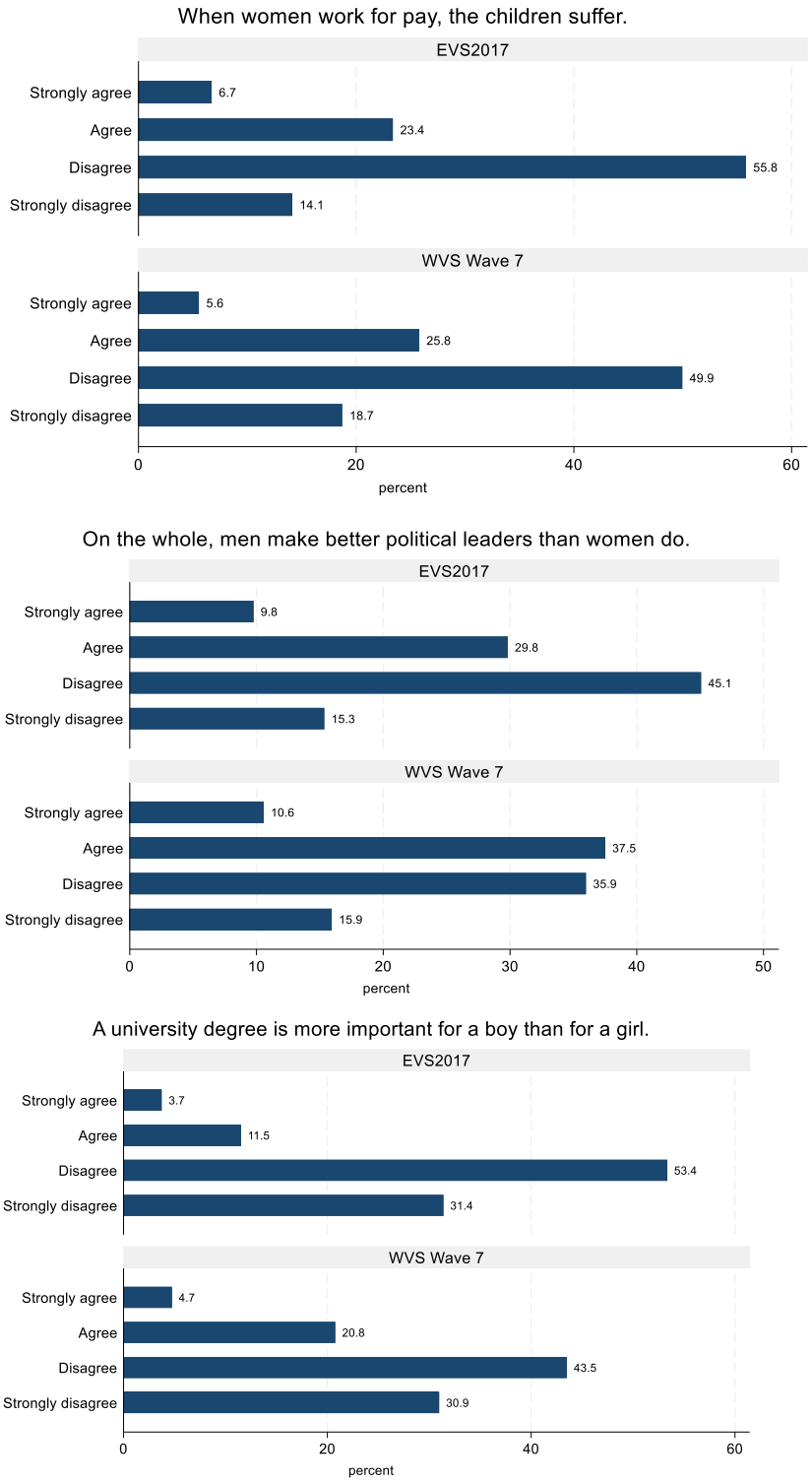
Figure A1.2 Distribution of answers, Armenia.



Source: Fifth wave of the EVS and seventh wave of the WVS survey (EVS, 2022; WVS, 2022).

Notes: The six panels above show the distribution of answers on the last three statements that capture beliefs about gender roles. The upper part of each panel shows the distribution of answers from the EVS2017 survey, and the lower part presents the results of the WVS Wave 7 survey. The distribution of answers is expressed in percentages.

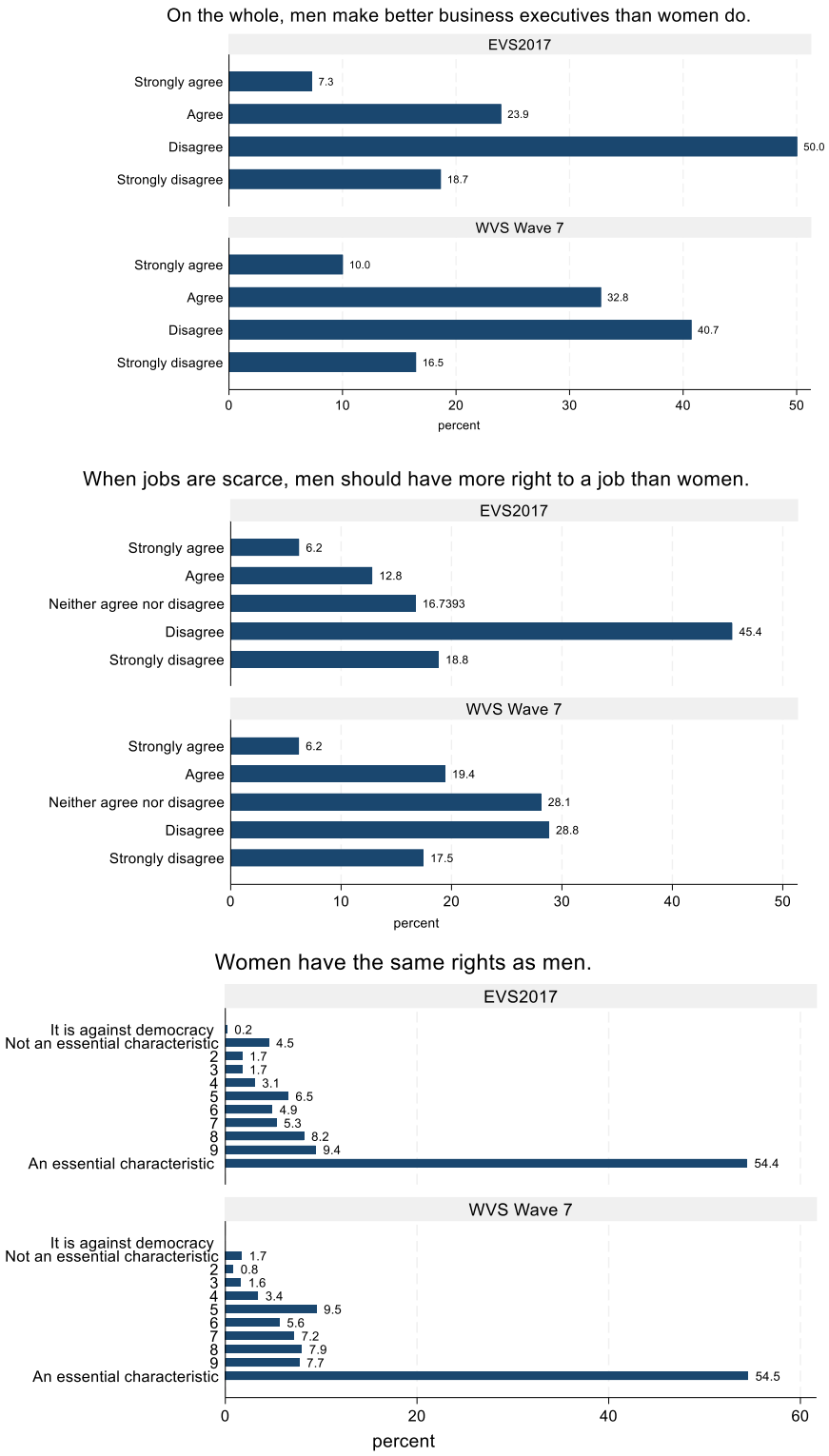
Figure A2.1 Distribution of answers, The Czech Republic.



Source: Fifth wave of the EVS and seventh wave of the WVS survey (EVS, 2022; WVS, 2022).

Notes: The six panels above show the distribution of answers on the first three statements that capture beliefs about gender roles. The upper part of each panel shows the distribution of answers from the EVS2017 survey, and the lower part presents the results of the WVS Wave 7 survey. The distribution of answers is expressed in percentages.

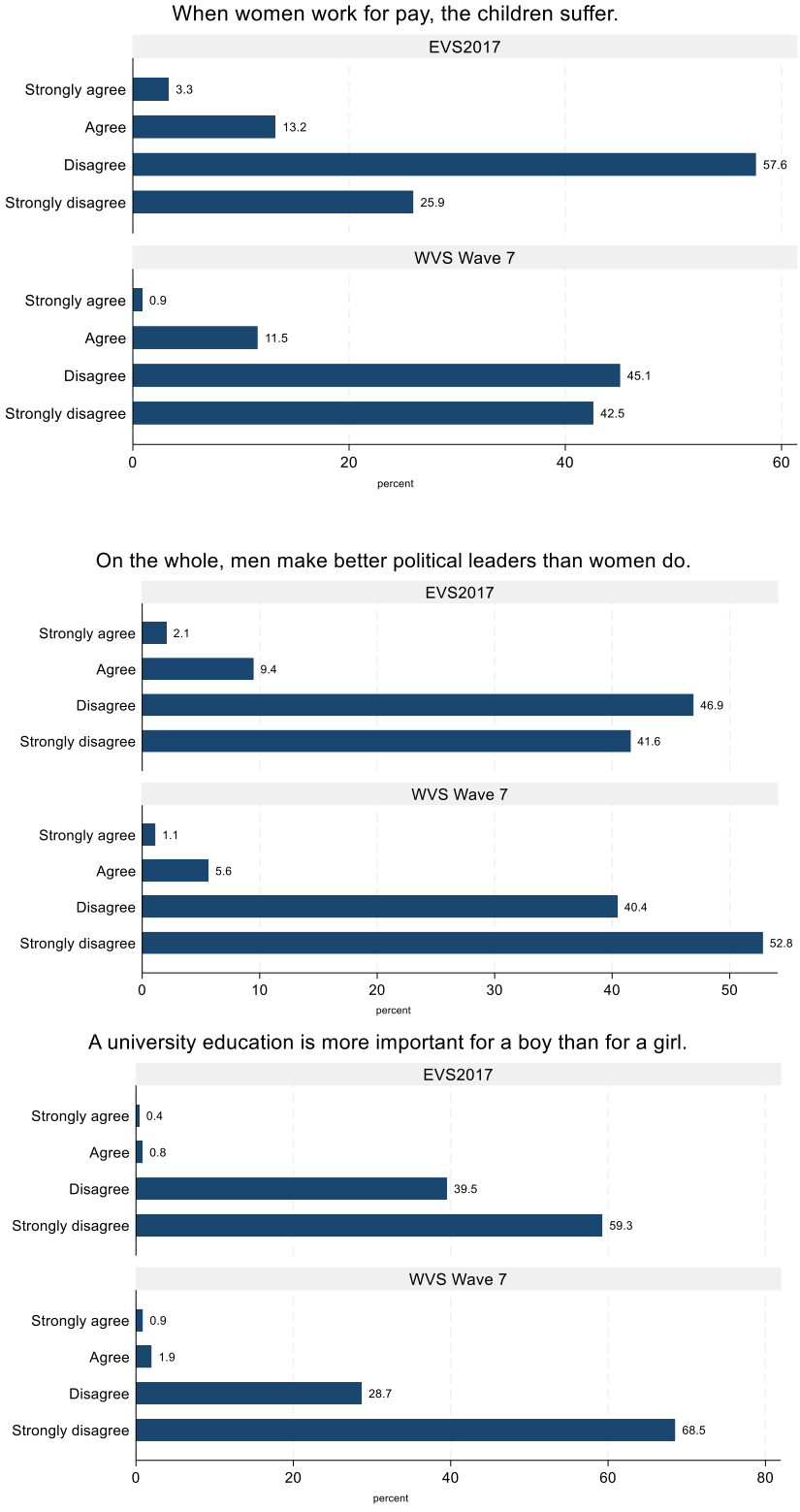
Figure A2.2 Distribution of answers, The Czech Republic.



Source: Fifth wave of the EVS and seventh wave of the WVS survey (EVS, 2022; WVS, 2022).

Notes: The six panels above show the distribution of answers on the last three statements that capture beliefs about gender roles. The upper part of each panel shows the distribution of answers from the EVS2017 survey, and the lower part presents the results of the WVS Wave 7 survey. The distribution of answers is expressed in percentages.

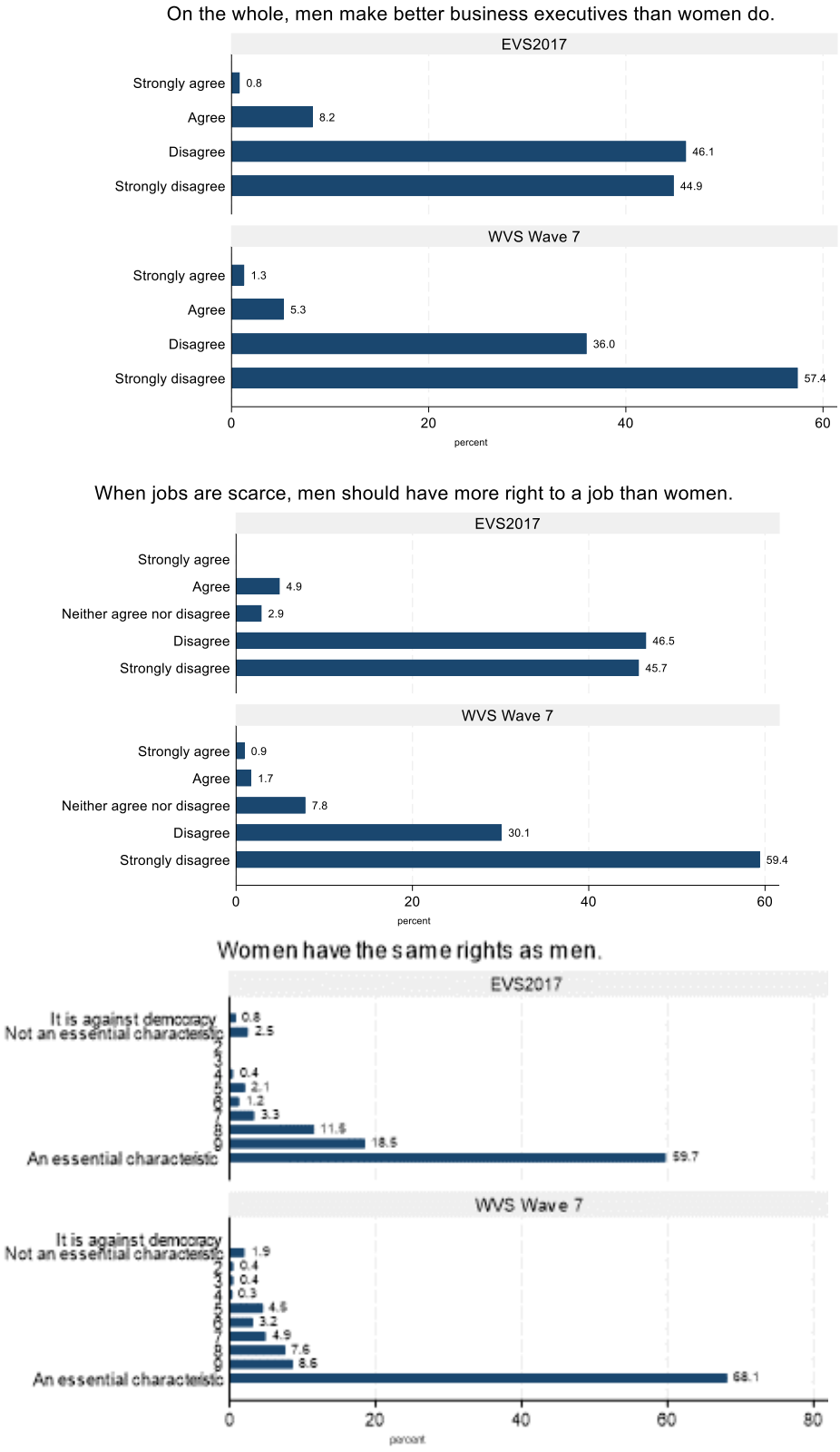
Figure A3.1 Distribution of answers, The Netherlands.



Source: Fifth wave of the EVS and seventh wave of the WVS survey (EVS, 2022; WVS, 2022).

Notes: The six panels above show the distribution of answers on the first three statements that capture beliefs about gender roles. The upper part of each panel shows the distribution of answers from the EVS2017 survey, and the lower part presents the results of the WVS Wave 7 survey. The distribution of answers is expressed in percentages.

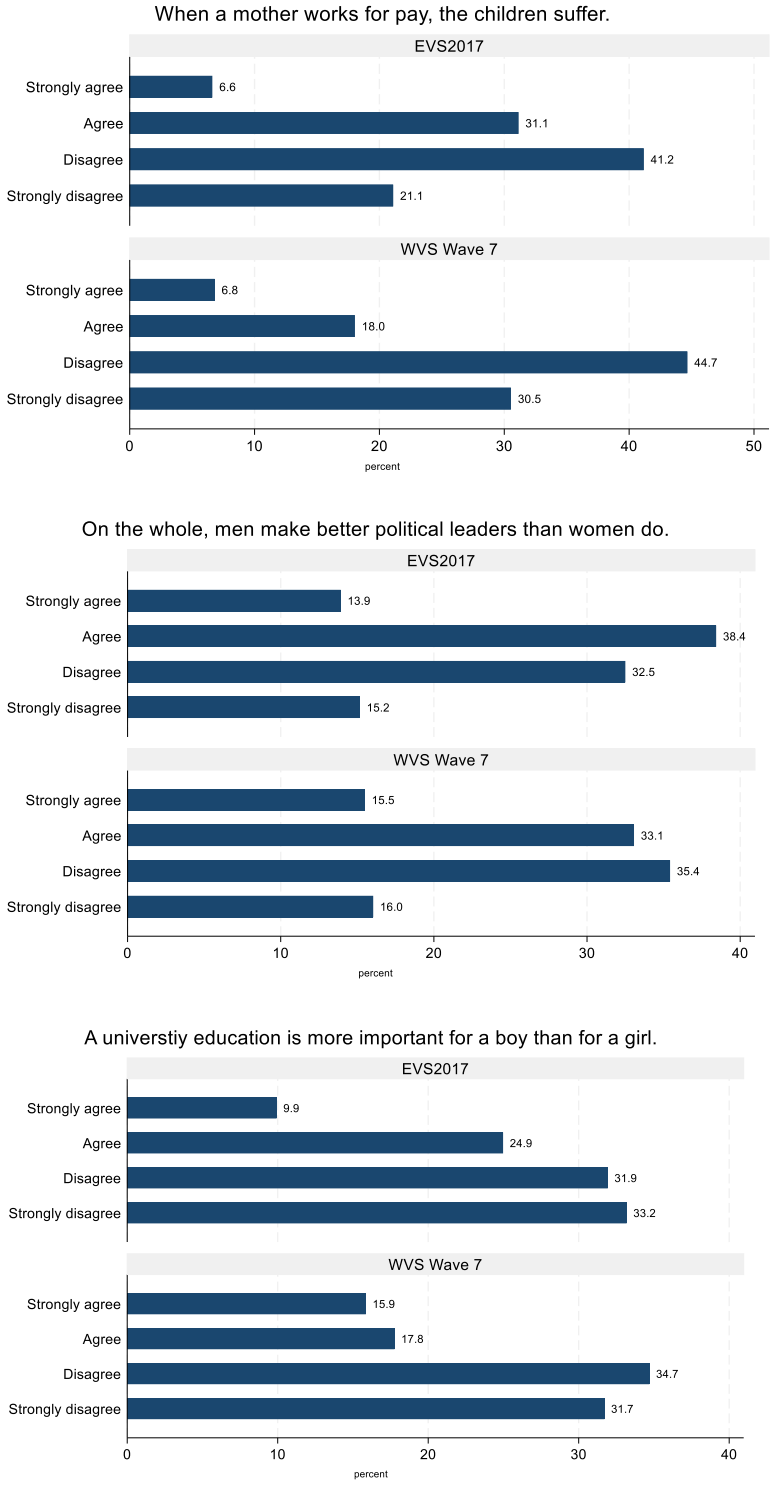
Figure A3.2 Distribution of answers, The Netherlands.



Source: Fifth wave of the EVS and seventh wave of the WVS survey (EVS, 2022; WVS, 2022).

Notes: The six panels above show the distribution of answers on the last three statements that capture beliefs about gender roles. The upper part of each panel shows the distribution of answers from the EVS2017 survey and the lower part presents the results of the WVS Wave 7 survey. The distribution of answers is expressed in percentages.

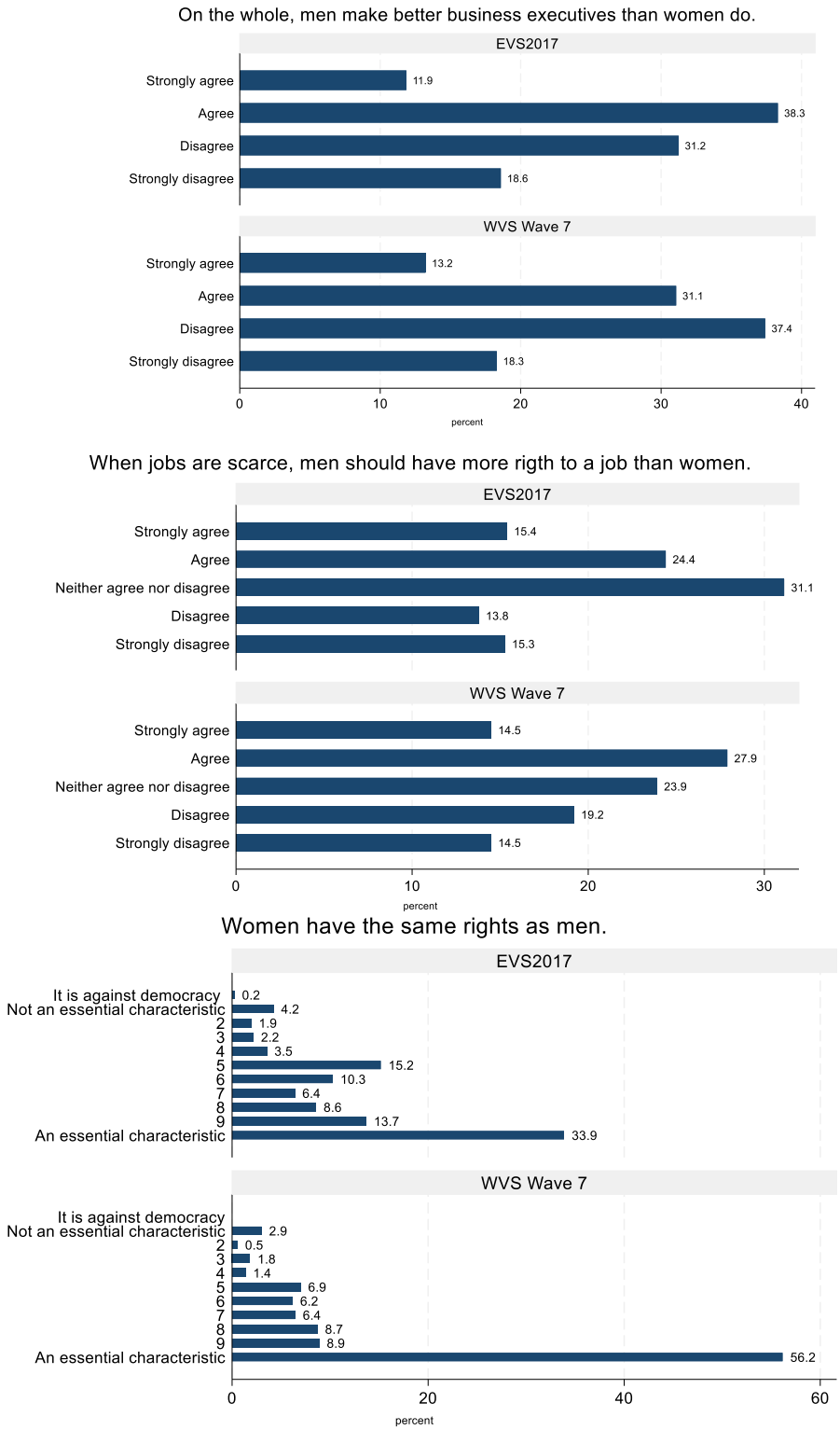
Figure A4.1 Distribution of answers, The Slovak Republic.



Source: Fifth wave of the EVS and seventh wave of the WVS survey (EVS, 2022; WVS, 2022).

Notes: The six panels above show the distribution of answers on the first three statements that capture beliefs about gender roles. The upper part of each panel shows the distribution of answers from the EVS2017 survey, and the lower part presents the results of the WVS Wave 7 survey. The distribution of answers is expressed in percentages.

Figure A4.2 Distribution of answers, The Slovak Republic.



Source: Fifth wave of the EVS and seventh wave of the WVS survey (EVS, 2022; WVS, 2022).

Notes: The six panels above show the distribution of answers on the last three statements that capture beliefs about gender roles. The upper part of each panel shows the distribution of answers from the EVS2017 survey and the lower part presents the results of the WVS Wave 7 survey. The distribution of answers is expressed in percentages.