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Essays on Individual Perceptions of Economic Reforms

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Abstract

Happiness economics is a relatively new field that has attracted the attention of researchers from many areas. Happiness economics explores the relationships between various economic factors and aspects of individual life and individual well-being. In this field, life satisfaction is frequently used as an indicator of individual well-being. Although subjective data can provide meaningful information regarding different aspects of individual life, their usefulness for policy purposes is still undervalued. In this dissertation, several issues are addressed. First, the impact of two corruption measures, state capture and individual perceptions of corruption, on voters' behavior and on the outcomes of elections is examined. Second, the effects of economic reforms on life satisfaction of religious and non-religious people are analyzed. Third, the impact of the euro introduction on life satisfaction is evaluated.

The first chapter examines to what extent voting behavior of people with different employment status and the distribution of votes are affected by regional differences in corruption. Using data from the Russian Parliamentary (State Duma) Elections of 1999 and 2003, I develop and estimate a SUR system of equations which takes into account specific features of the Russian electoral system. The paper distinguishes between hard and perceived measures of corruption and analyzes the effects of corruption on the shares of votes for particular parties and on voter participation in elections. Additionally, a series of Monte Carlo simulations are performed to analyze the effects of corruption on the distribution of votes.

The second chapter focuses on the effects of reforms and religion on happiness in transition economies. Previous literature suggests that religiousness insures happiness against various individual stressful life events. This phenomenon is well-explored in developed countries but rarely studied in Post-Communist countries where religion was officially suppressed for a long period. These countries have undergone significant economic transformations over the past two decades. Using cross-sectional Life in Transition Survey data and historical data on religions, I examine if religion insures against aggregate shocks to happiness during the transition period. Additionally, the endogeneity of religion is taken into account. The findings suggest that economic reforms may have both positive and negative effects on happiness. Religiousness indeed insures happiness against positive and negative effects of economic reforms during the transition period. Also, religiousness affects perceptions of economic and political situations in these countries positively.

In the third chapter, coauthored with Vladimir Otrachshenko, we analyze the perceived impact of the euro introduction on the life satisfaction of individuals in 17 European economies. Using data from the Eurobarometer surveys and applying the difference-in-differences approach, we explore which groups were primarily affected by the euro introduction and whether the life satisfaction of individuals adapted to the euro introduction within two years. Additionally, we test the association between changes in life satisfaction and perceived changes in prices after the euro introduction. The empirical findings suggest that in most EU12 countries, individuals perceived the euro introduction negatively, while individuals from most new member countries were either not affected or were affected positively. Our results also provide evidence of adaptation to the euro introduction within two years for some groups. These findings are particularly relevant for analyzing public opinion regarding the euro introduction.

Abstrakt

Ekonomie štěstí je relativně nový obor, který upoutává pozornost výzkumníků v mnoha vědeckých oblastech. Ekonomie štěstí zkoumá vztahy mezi různými aspekty jednotlivého života a individuálním blahobytem. V této oblasti spokojenost se životem je často používána jako indikátor úrovně individuálního blahobytu. Subjektivní údaje mohou poskytnout smysluplné informace o různých aspektech individuálního života, ale jejich užitečnost pro účely hospodářské politiky je stále podhodnocena. V této disertační práci se zabývám několika náměty. První námět se týká dopadu objektivní a vnímané korupce na volební chování a výsledky hlasování. Předmětem druhého námětu je vliv ekonomických reforem na spokojenost se životem nábožensky a nenábožensky založených lidí. Ve třetím námětu se jedná o hodnocení dopadu zavedení euro měny na lidskou spokojenost.

První kapitola disertační práce obsahuje studium vlivu regionálních rozdílů v rozměrech korupce na chování voličů s různými zaměstnaneckými poměry a na výsledky hlasování. Pro tento účel jsou použita data z voleb do ruského parlamentu (Státní Dumy) v letech 1999 a 2003. Konstruovaný model ve formě systému rovnic SUR bere v úvahu specifické rysy ruského volebního uspořádání. V analýze je brán ohled na rozdíl mezi objektivnou a vnímanou korupcí ve studiu dopadu korupce na výsledky jednotlivých stran a na účast na volbách. Vliv korupce na rozdělení hlasů mezi politickými stranami je dále zkoumán s pomocí Monte Carlo simulacemi.

Druhá kapitola se zaměřuje na dopady reforem a náboženství na štěstí v tranzitivních ekonomikách. Předchozí literatura naznačuje, že religiozita zajišťuje štěstí proti jednotlivým stresujícím životním událostem. Tento jev je dobře prozkoumán v rozvinutých zemích, ale jen zřídka studován v postkomunistických zemích, kde náboženství bylo po dlouhou dobu oficiálně potlačováno. Tyto země prošly významnými ekonomickými proměnami v posledních dvou desetiletích. Základem analýzy je ekonometrický model pro studium otázky, zda náboženství pojišťuje proti agregatním šokům ve štěstí během přechodného období. Modelové parametry jsou odhadovány s použitím dat z Life in Transition Survey a historických informací o náboženství. Endogeneita náboženství je patřičně brána v úvahu. Výsledky naznačují, že ekonomické reformy mohou mít pozitivní i negativní dopady na štěstí. Religiozita skutečně zajišťuje štěstí proti pozitivním a negativním účinkům ekonomických reforem během přechodného období. Religiozita rovněž pozitivně ovlivňuje vnímání současné ekonomické a politické situace v těchto zemích.

Ve třetí kapitole, v spoluautorství s Vladimírem Otrachshenko, zkoumáme vnímaný dopad zavedení eura na jednotlivou spokojenost se životem v 17 evropských ekonomikách. V tomto případě používáme data z Eurobarometru a „difference-in-differences“ přístup v zkoumání skupin, které byly primárně ovlivněny zavedením eura. Dále testujeme vztah mezi změnami v životní spokojenosti a vnímané změny cen po přechodu na euro. Empirické výsledky naznačují, že jedinci z různých zemí vnímají dopad zavedení eura odlišně. Ve většině zemí EU12, jednotlivci vnímají zavedení eura negativně, zatímco jedinci z většiny nových členských zemí buď nebyly ovlivněny nebo byly ovlivněny pozitivně. Naše výsledky rovněž poskytují evidenci o přízpůsobení se zavedení eura do dvou let u některých skupin. Tyto nálezy jsou zvláště důležité pro analýzu veřejného mínění, týkající se zavedení eura.

Chapter 1

Corruption, Voting and Employment Status: Evidence from Russian Parliamentary Elections

Abstract

This paper examines to what extent voting behavior of people with different employment status and the distribution of votes are affected by regional differences in corruption. Using data from the Russian Parliamentary (State Duma) Elections of 1999 and 2003, I develop and estimate a SUR system of equations which takes into account specific features of the Russian electoral system. The paper distinguishes between hard and perceived measures of corruption and analyzes the effects of corruption on the shares of votes for particular parties and on voter participation in elections. Additionally, a series of Monte Carlo simulations are performed to analyze the effects of corruption on the distribution of votes.

Keywords: corruption, economic voting, elections, employment status, Russia

JEL Classification: C31, D72, D73, E24

1.1. Introduction

The countries that experienced the transition from a planned to a market economy have undergone numerous interconnected economic, social and political reforms over the past two decades. However, the levels of democracy and law enforcement in these countries are yet weak. This reduces the credibility of reforms and the accountability of politicians to voters and provides incentives for corruption (Tavares, 2007).¹ Indeed, for most transition economies, a high level of corruption has become a prominent feature (e.g., according to the Corruption Perception Index of Transparency International). Numerous studies concur that corruption has a negative impact on economic development and the results of elections (among others, Rose-Ackerman, 1999; Svensson, 2005). Thus, understanding the role of corruption on economic behavior and electoral outcomes and reducing corruption are keys to economic development and growth in transition countries.

In the literature, the effects of economic factors on voters' choices are referred as "economic voting" (Powell and Whitten, 1993, among others). The research on economic voting in transition countries suggests that people with different employment status, including those who are unemployed, and the employees of private and state sectors, are likely to support or oppose different parties during elections. This is explained by their different income levels and employment prospects during transition period reforms (Rodrik, 1995; Fidrmuc, 1998; Jackson et al., 2003; Grafstein, 2005, among others).

When investigating different aspects of political support for economic reforms in different transition countries, very few studies have been focused on economic voting in Russia. Using data from the Russian Parliamentary (State Duma) Elections 1999 and 2003, this research in the SUR framework examines to what extent the distribution of votes and voting behavior of people with different employment status are affected by a regional level of corruption. The voters are divided into four groups by employ-

¹For the purposes of this research, I use the definition of corruption as "the use of public office for private gains", given by Bardhan (1997, p. 1321).

ment status: the employees of private and public sectors, those who are unemployed, and those who are out of the labor force. Also, the behavior of voters employed at enterprises of different size is explored. The contribution of the paper is threefold: (i) differently from other studies, participation in elections and the outcomes of elections are analyzed simultaneously; (ii) an evaluation of hard and perceived measures of corruption is provided; (iii) simulations of artificial outcomes of elections using different levels of corruption are performed. This paper also accounts for a specific feature of the Russian electoral system, the option to vote “Against All” parties. Such analysis aids understanding of factors that influence the distribution of voting outcomes in transition countries and should be taken into account when implementing reforms.

Two measures of corruption are used. The first measure is Corruption Perception Index (CPI) of Transparency International measured for Russian regions. The second measure is the state capture index constructed by Slinko et al. (2005) and Yakovlev and Zhuravskaya (2009) for Russian regions.² State capture is defined by the authors as legal privileges given by the regional government to the largest firms in the region that take various forms of soft budget constraints. As Slinko et al. (2005) argue, a large state capture index indicates high political power of the largest firms in a region. Firms with high political power are likely to seek the reelection of a current government and, thus, may make efforts to influence the voting choice of employees. Using two different measures of corruption also helps to evaluate perceived and hard evidence of corruption. Recently, using data from Indonesia, Olken (2009) attempted to evaluate hard and perceived measures of corruption in the analysis of determinants of corruption. As the author argues, researchers and policy makers should not rely solely on perceptions of corruption due to possible biases. The analysis of the effects of corruption on voting results provided in this paper expands the evaluation of hard and perceived measures of corruption.

The findings suggest that even when controlling for corruption, people with differ-

²Theoretical foundations for state capture were developed by Laffont and Tirole (1991). Hellman et al. (2000) and Hellman, Jones and Kaufmann (2003) study the dynamics and consequences of state capture in transition countries.

ent employment status vote differently. Moreover, regional differences in corruption are indeed correlated with changes in the voting behavior of people with different employment status. Corruption positively influences participation in elections and also has indirect effects on the participation of people with different employment status. Using two different measures of corruption provides complementary results for the analysis of voting outcomes.

The rest of the paper is organized as follows. The next section summarizes the literature relevant to this research. I then describe the methodological framework, data used, and results obtained.

1.2. Literature

This section is divided into two parts. The first reviews theoretical and empirical studies that highlight the different voting behavior of people with different employment status. The second addresses the effects of corruption on voting results and economic development

1.2.1. Employment Status and Different Voting Behavior

The first attempt to identify economic groups who support or oppose reforms in transition economies was Rodrik (1995). In Rodrik's model, employees vote in favor of or against state sector restructuring and privatization reform. The reform implies a reduction in the level of subsidy paid to state employees and financed through the taxation of the private sector. Rodrik argues that whereas privately employed individuals always support such reforms, political support from state employees depends on the timing of voting. During early transition voting, state employees support reforms since the probability of finding a higher-paid job in the private sector is high. During late transition voting, state employees tend to oppose reforms and prefer continue to receive some state subsidy. The model has the unrealistic assumption of no unemployment in the post-transition period. Fidrmuc (1998) further modified Rodrik's

model, allowing for some level of unemployment after the transition and introducing unemployment benefits into the model. Under these more realistic assumptions the preferences of the unemployed and state employees are similar: during the early transition period they prefer a low subsidy, whereas during the late transition period they tend to no longer support reforms and prefer the highest possible subsidy. Fidrmuc (1998) also finds empirical support for theoretical predictions of the voting preferences of the unemployed: a negative relationship exists between support for reforms and the unemployment rate. Jackson et al. (2003), using data from Poland, have also shown empirically that the privately employed more often support parties proposing market-oriented reforms.

The role of unemployment in the process of reform implementation was also emphasized by Blanchard (1997), who argues that a high unemployment rate tends to block reforms, as both the unemployed and state employees would not support the restructuring reforms. The author further argues that introducing unemployment benefits into the model may change the results. Under a certain level of wages in the state and private sector, the level of unemployment benefits, and the probabilities of losing and finding jobs, the unemployed and state employees may support restructuring of the state sector.

Grafstein (2005) emphasizes that the unemployed and the employed are basically different types of voters because of different initial income (unemployment benefits or wage) and different future employment prospects. In Grafstein's model, the employment prospects of voters depend on the victory of a particular party during the election, i.e. a voter either receives or loses his/her job depending on election results. Grafstein emphasizes that if a so-called party of growth proposes to increase the probability of receiving a job for the unemployed and decrease the probability of losing it for the employed, then both groups are likely to support such a party. Empirical tests of the model using US data support the author's hypotheses about the voting decisions of the unemployed: they support the party of growth less if their education, their income, unemployment benefits, and unemployment rate are greater.

Discussion of the specific features of the Russian transition began with Leijonhufvud and Ruhl (1997) and increased greatly after the famous keynote address by Stiglitz (1999). As Stiglitz (1999) argued, the specifics of Russian transition is characterized by the failure to understand the basic principles of market economy functioning and reform implementation. Russian reform-makers concentrated on the justification for particular reforms without a clear understanding of how to gain public support for the reforms. Stiglitz thus concluded that without a solid reform strategy, the implementation of reforms cannot be successful.

Few studies have attempted to empirically estimate public support for economic reforms in Russia. Warner (2001) examines differences in the support for price liberalization and small-scale privatization across Russian regions during the Parliamentary elections in 1995. Although economic reforms towards a market economy were not unpopular in the Russian regions, the average level of support for parties associated with market reforms was not strong. Another study of Russian public support for economic reforms was done by Frye (2006) who, using firm-level survey data from eight Russian regions, investigates how political support for four market-oriented parties depends on the creation of new workplaces in the country. Managers of fast-developing private enterprises are more likely to support market-oriented parties so as to avoid extra regulations and higher costs of hiring a workforce. This conclusion supplies a rationale for why employment in private and public sector should be taken into account when estimating political support for economic reforms in Russia.

1.2.2. Corruption, Voting and Economic Development

Numerous studies suggest that corruption is an obstacle to economic development (among others, Shleifer and Vishny, 1993; Mauro, 1995; Rose-Ackerman, 1999; Svensson, 2005). However, Basu and Li (1998) highlight that in transition economies, corruption often coexists with reforms which are successfully improving a country's economic development. The strategy for implementing reforms, the authors argue,

should allow for a temporary reduction in bureaucratic control so as to bring some benefits to corrupt bureaucrats and gain their support.

The impact of corruption on voting results has also been widely studied in political literature. Rundquist, Strom and Peters (1977) suggest that corrupt candidates may still have public support because voters are either unaware of the cases of corruption, they ignore corruption, or they have individual preferences to support a particular candidate even if this candidate is known to corrupt. Similarly, Peters and Welch (1980) point out that the reelection of corrupt candidates may occur for several reasons: imperfect information about a candidate's corruption, voting for a corrupt candidate in exchange for some personal benefits, and, finally, voting for a corrupt candidate because of that candidate's membership in a party whose program the voter supports. Also, Welch and Hibbing (1997) argue that the negative impact of corruption is different for challenger and incumbent: voters tend to punish challengers more.

Various impacts of corruption on the Russian economy have also been analyzed in the literature. Dininio and Orttung (2005), using corruption perceptions data, analyze regional differences in corruption between Russian regions. The authors emphasize the roles of political, social, institutional, and structural factors in explaining regional variation in corruption. Slinko et al. (2005) and Yakovlev and Zhuravskaya (2009) highlight that high levels of corruption are an obstacle to the development of small and medium enterprises in Russia. Using constructed data on Russian state capture, the authors argue that large firms which receive privileges from the regional government tend to be more profitable and to develop faster than firms without such privileges. Thus, a high state capture index reflects the political influence of large firms and implies weaker performance for small and medium businesses.

To summarize, corruption has been characterized in the literature as a significant factor influencing voting results and economic development. Yet previous studies analyzing the voting behavior of people with different employment status do not account for corruption as a factor that may influence their voting behavior. The

econometric model for analyzing multiparty elections constructed in this research enables such analysis.

1.3. Methodology

1.3.1. Specific Features of Russian Parliamentary Elections

According to the Constitution of the Russian Federation, Russian Parliament, the Federal Assembly, has two chambers: the Council of the Federation and the State Duma. The Council of the Federation is formed from the representatives of legislative and executive authorities from each region. The State Duma consists of 450 deputies who are elected for four years. In the 1999 and 2003 elections, 225 deputies were elected from federal lists of candidates proposed by political parties, proportionally to the vote share received by a party during parliamentary elections, and the other 225 deputies were elected by majority voting for one particular candidate from each out of 225 electoral districts in Russia (Federal Law # 175-FZ). According to the legislation, individual candidates may or may not be affiliated with a political party and cannot be elected from more than one electoral district. Also, individual candidates can be included both into a list of candidates by a particular party and as individual candidates, thus, there may be the interaction between voting for a particular party and for an individual candidate. It would be interesting to analyze such interaction and strategies of parties and voters. However, it would be difficult to control for such interaction in the estimation. Nevertheless, this paper still provides an interesting analysis of the voting outcomes of political parties during the State Duma elections, using data only on the voting results from federal lists of candidates.

Apart from voting for particular candidates (federal lists of candidates), until 2006 the Russian electoral system had a specific feature, the option to vote “Against All” candidates. The option to vote “Against All” is an explicit form of protest voting against all candidates which was available in the Russian Federation at elections at

all administrative levels and has become a basic element in the Russian Electoral system.³ “Against All” has not only regularly received a comparatively large share of votes, but even has its own unofficial electoral campaign on behalf of the opponents of reforms (Oversloot et al., 2002). For instance, during the Russian parliamentary (State Duma) election of 2003, the option “Against All” received almost enough votes to be “elected” to Parliament: “Against All” received 4.7%, while a party is required to receive 5% of all votes to be elected. This share was greater than that of 19 of 23 parties participating in the election.⁴ For comparison, at the State Duma election of 1995, the share of votes “Against All” was greater than the share of 33 out of 43 parties, and in 1999, 20 out of 26 (Oversloot et al., 2002). This evidence indicates that the option “Against All” played a significant role in Russian elections and should thus be included in the analysis of the 1999 and 2003 parliamentary elections.

According to Russian legislation, a party which receives more than 5 percent of all votes is elected to Parliament.⁵ During the 2003 parliamentary election, in total 23 political parties participated, though only four were elected to Parliament. During the 1999 parliamentary election, 26 parties participated and 6 were elected. Table 1 presents the results of 1999 and 2003 and a short description of the main parties participating.

I analyze the voting results for those parties which were elected to Parliament during the parliamentary elections of 1999 and 2003 (i.e. received more than 5 percent) or received more than 3.5 percent of votes. Since the list of parties participating in the 1999 and 2003 elections is slightly different, I include different parties in the analysis of the 1999 and 2003 voting results. The following parties are within the scope of analysis for the 2003 election: Political Party "United Russia", Communist Party of the Russian Federation (CPRF), Liberal Democratic Party of Russia

³According to The Federal Law of the Russian Federation #107-FZ of July 12, 2006 this option has been cancelled at all levels of elections.

⁴According to the statistical data from the Russian Parliamentary Election 2003 “Vote Return in Federal Electoral District”, available online from http://gd2003.cikrf.ru/gdrf4_engl.html

⁵On the Election of Deputies of the State Duma of the Federal Assembly of the Russian Federation, Federal Law of the Russian Federation No.175-FZ of December 20, 2002.

(LDPR), National-Patriotic Union "Rodina" ("Motherland"), Russian Democratic Party "Yabloko" ("Apple"), "Union of Right Forces", and the option "Against All". For the 1999 election, I analyze the results for parties "Interregional Party "Yedinstvo", Communist Party of the Russian Federation (CPRF), Liberal Democratic Party - Zhirinovskiy block, electoral block "Otechestvo-All Russia", Russian Democratic Party "Yabloko" ("Apple"), "Union of Right Forces", and the option "Against All". In both the 1999 and 2003 analyses, the returns to all other parties participating in elections are grouped into a category referred to as "other", satisfying the constraint that all shares of votes sum up to one.

1.3.2. Model

In this section, I present the econometric model to analyze the effects of regional differences in corruption on the distribution of votes, the voting behavior of people with different employment status, and on participation in elections.

In a model for the analysis of voting outcomes one has to account for two electoral data features. First, each vote share falls within the interval between zero and one, and, second, all vote shares sum up to one (King, 1990; Katz and King, 1999). This means that the vote shares of parties are dependent on each other. This is important for the choice of estimation method.

Different methods have been proposed for estimation of the voting outcomes model. As Katz and King (1999) point out, an ordinary least squares (OLS) regression is not applicable for the analysis of voting outcomes since it requires a potentially unbounded dependent variable. For the analysis of multiparty elections, the authors propose a method which requires multivariate logistic data transformation and then followed by the likelihood maximization of multivariate t distribution. The obvious disadvantage of such a method, as the authors concede, is that it is computationally difficult to apply to any case of more than three parties.

Based on Zellner's (1962) seemingly unrelated (SUR) method, Tomz, Tucker, and

Wittenberg (2002), propose a modification to Katz and King’s model. The SUR method jointly estimates equations for all parties participating in elections and links equations only by their disturbances (Greene, 2003). The observed vote share of each party has the form of multinomial logit (MNL). This method is suitable when an individual chooses one alternative from a group of choices (Wooldridge, 2002). This accurately represents voters’ decisions in multiparty elections. Tomz et al. (2002) apply multivariate logistic transformation to convert observed vote shares from the unit interval to an unbounded scale. The received vector of log-ratios for each electoral district is assumed to follow a multivariate normal distribution. Further, the feasible generalized least squares (FGLS) technique (as described, e.g., by Greene, 2003) is applied to the SUR system of regression equations of log-ratios of vote share on the set of explanatory variables. Tomz et al. (2002) point out that the estimates of coefficients can also be obtained by separate regressions for each party, but SUR is more efficient. Further, Jackson (2002), extending the analysis done by Tomz et al. (2002), gives a detailed description of the model and estimates the proposed model on data from the 1993 Polish Parliamentary election. The statistical model proposed by Jackson (2002) can be used for the analysis of any number of parties. The author pays special attention to the error term and the description of distributional assumptions.

The approach proposed and developed by Tomz et al.(2002) and extended by Jackson (2002) is applicable to analysis of the Russian Parliamentary elections because it allows analysis of multiparty elections and is relatively simple in terms of computations, which is important for transforming and estimating the large dataset of Russia.

In line with Tomz et al. (2002) and Jackson (2002), I first perform the MNL transformation of the dependent variable which is each party’s vote share:

$$Y_i = [\ln(\frac{V_{i1}}{V_{iJ}}), \ln(\frac{V_{i2}}{V_{iJ}}), \dots, \ln(\frac{V_{ij}}{V_{iJ}})], \quad (1.1)$$

where subscripts i , $i = 1, 2, \dots, I$, and j , $j = 1, 2, \dots, J - 1$, stand for electoral

district and party, respectively. Therefore, we have the vector Y_i of $J - 1$ log-ratios $Y_{ij} = \ln\left(\frac{V_{ij}}{V_{iJ}}\right)$, for each party j relative to base party J . It is assumed that the vector $Y_i = [Y_{i1}, \dots, Y_{i(J-1)}]$ follows multivariate normal distribution with mean vector m_i and variance matrix Σ . Like Tomz et al. (2002), I model m_i so that $m_i = [x_{i1}\beta_1, x_{i2}\beta_2, \dots, x_{i(J-1)}\beta_{(J-1)}]$, i.e., as a linear function of explanatory variables (x) and coefficients (β).

The observed vote share V_{ij} that party j receives in electoral district i during the elections has the form

$$V_{ij} = \Pr(\text{voters in region } i \text{ choose party } j) = \frac{e^{Y_{ij}}}{\sum_{j=1}^{J-1} e^{Y_{ij}}} \quad (1.2)$$

and V_{iJ} stands for the vote share that base party J receives in region i during the elections. $V_{ij} \in [0, 1]$ for all i and j , $\sum_{j=1}^J V_{ij} = 1$ and for all i .

To transform the data on vote shares, I choose a base party to use as a benchmark for comparison. For both the 1999 and 2003 elections I have 8 categories to estimate: 6 major parties, category "other", and the option "Against All".⁶ The category "other" stands for the sum of all vote shares of all other parties participating in the election, that is 17 other parties in the 2003 election and 20 other parties in the 1999 election. For both the 1999 and 2003 elections I use "the party of power" as the base party. In 2003, this party is "United Russia", while in 1999, this is the party "Otechestvo-All Russia".⁷

After the transformation, I construct the SUR system of linear regression equations. It has 7 linear equations to account for the major parties and "Against All" option, and the equation for participation in elections.

⁶It would be interesting to compare the results from the model with the "Against All" option (i.e., estimated using the data from the 1999 and 2003 elections) and without the "Against All" option (the 2007 and 2011 elections). However, data on regional corruption after 2003 are not available for this purpose. As mentioned by Dininio and Orttung (2005), data on regional corruption have been collected by INDEM after 2003, but have not been published due to inconsistency with previous findings.

⁷For the purpose of statistical analysis, any of the defined categories can be chosen as the base because the results are statistically invariant. However, to make the interpretation of the estimated parameters easier, the party of power is chosen as the base.

$$\begin{aligned}
Y_{i1} &= \ln\left(\frac{V_{i1}}{V_{ib}}\right) = \beta_{10} + \beta_{11}Corr_i + \beta_{12}State_i + \beta_{13}Private_i + \beta_{14}Unem_i + \beta_{15}Out_i + \\
&+ \beta_{16}Corr_i*State_i + \beta_{17}Corr_i*Private_i + \beta_{18}Corr_i*Unem_i + \beta_{19}Corr_i*Out_i + \gamma_1 X_i + \varepsilon_{i1} \\
Y_{i2} &= \ln\left(\frac{V_{i2}}{V_{ib}}\right) = \beta_{20} + \beta_{21}Corr_i + \beta_{22}State_i + \beta_{23}Private_i + \beta_{24}Unem_i + \beta_{25}Out_i + \\
&+ \beta_{26}Corr_i*State_i + \beta_{27}Corr_i*Private_i + \beta_{28}Corr_i*Unem_i + \beta_{29}Corr_i*Out_i + \gamma_2 X_i + \varepsilon_{i2} \\
&\dots \\
Y_{i7} &= \ln\left(\frac{V_{i7}}{V_{ib}}\right) = \beta_{70} + \beta_{71}Corr_i + \beta_{72}State_i + \beta_{73}Private_i + \beta_{74}Unem_i + \beta_{75}Out_i + \\
&+ \beta_{76}Corr_i*State_i + \beta_{77}Corr_i*Private_i + \beta_{78}Corr_i*Unem_i + \beta_{79}Corr_i*Out_i + \gamma_7 X_i + \varepsilon_{i7} \\
Participation_i &= \alpha_0 + \alpha_1Corr_i + \alpha_2State_i + \alpha_3Private_i + \alpha_4Unem_i + \alpha_5Out_i + \\
&+ \alpha_6Corr_i*State_i + \alpha_7Corr_i*Private_i + \alpha_8Corr_i*Unem_i + \alpha_9Corr_i*Out_i + \delta X_i + \mu_i
\end{aligned} \tag{1.3}$$

where subscripts i and j stand for electoral district and party, respectively. V_{ij} is the share of votes; $Participation_i$ is the number of voters participating in the elections; $Corr_i$ is the level of corruption measured either by state capture index or integral corruption perception index (integral CPI); $State_i$ is the number of state employees; $Private_i$ is the number of private employees; $Unem_i$ is the number of the unemployed; and Out_i is the number of people out of the labor force. \mathbf{X}_{ij} is the set of regional characteristics that may influence the votes for particular parties, such as the real gross regional product (GRP) per capita, the number of students and pensioners, the share of urban population, and the number of registered voters in the electoral district; β_j , γ_j , α , and δ are the parameters of the model, and ε_{ij} and μ_i are stochastic disturbances. The stochastic disturbances ε_{ij} are correlated across the equations since the dependent variable is constructed from the shares of votes for parties and a higher log-ratio for one party implies a lower log-ratio for others. Since the support for a particular party is conditional on voting, each disturbance term ε_{ij} is correlated with μ_i . To avoid the selectivity problem, participation in elections and voting outcomes are estimated simultaneously.⁸ The interaction terms between $Corr_i$ and $State_i$, $Private_i$,

⁸Since all equations have the same regressors, the estimated SUR model is equivalent to equation

$Unem_i$, and Out_i are included to account for the indirect effects of corruption on the voting behavior of people with different employment status.

The estimated parameters from the SUR system represent by how much a 1-unit change in some explanatory variable changes the log-ratio of the vote share of party j to the vote share of the party of power, $Y_{ij} = \ln(\frac{V_{ij}}{V_{ib}})$, given the variables in the model are held constant. To express the results in terms of vote shares, it is necessary to calculate a new set of Y s based on real or hypothetical values for X s and coefficient estimates, and then convert Y 's back to vote shares by reversing the logit transformation. However, the signs of the coefficients on particular variables in the SUR system can be interpreted as support (positive sign) or opposition (negative sign) to a particular political party in comparison with the vote share of the party of power.

The direction of causation in a relationship between employment status and voting behavior may be questionable. In principle, both employment status and voting behavior may be influenced by some third factor, for instance, individual attitudes or risk aversion. This argument questions the exogeneity of employment status as an explanatory factor in determining voting behavior. However, the propositions of previous theoretical literature (e.g., Rodrik, 1995; Fidrmuc, 1998; among others) suggest that voting behavior is directly influenced by employment status. Moreover, Mach and Jackson (2006) empirically establish a direct effect of changes in employment status on changes in voting behavior, using individual panel data from Poland. Even though, due to the cross-sectional nature of data used in this paper, it is more accurate to argue about a correlation, rather than causality, between employment status and voting behavior, I rely on previous literature when interpreting the results.

The main hypotheses that I test in this paper are as follows.

The hypotheses H_1 vs. H_{a1} and H_2 vs. H_{a2} are related to the effects of regional differences in corruption on voting outcomes of a particular party $j = 1..7$ and tested

by equation ordinary least squares (Greene, 2003). I justify the choice of SUR model by conducting the Breusch-Pagan test for independent equations, which rejects the null hypothesis of the independence of residuals across the equations.

for each party separately.

H₁: $\beta_{j1} = 0$, for each party $j = 1..7$, i.e. regional differences in corruption do not influence the results of the particular party j , versus H_{a1} : $\beta_{j1} \neq 0$, for $j = 1..7$, i.e. regional differences in corruption have an influence on voting results;

H₂: $\beta_{j1} = \beta_{71}$, for $j = 1..6$, i.e. regional differences in corruption have the same effect on the results of the particular party j and on the results of the "Against All" option, versus H_{a2} : $\beta_{j1} \neq \beta_{71}$, for $j = 1..6$, that the effect of regional differences in corruption on the results of the particular party j differs from the one on the results of the "Against All" option;

The hypotheses $H_{3.1}$ to $H_{3.4}$ vs. $H_{a3.1}$ to $H_{a3.4}$, respectively, are the four hypotheses of the effect of being employed by the state, privately employed, unemployed, or out of the labor force, respectively, on the results of the particular party j .

H₃: ($H_{3.1}$) $\beta_{j2} = 0$, ($H_{3.2}$) $\beta_{j3} = 0$, ($H_{3.3}$) $\beta_{j4} = 0$, ($H_{3.4}$) $\beta_{j5} = 0$, for $j = 1..7$, i.e. when corruption is controlled for in the model, employment status does not influence the results of the particular party j , versus ($H_{a3.1}$) $\beta_{j2} \neq 0$, ($H_{a3.2}$) $\beta_{j3} \neq 0$, ($H_{a3.3}$) $\beta_{j4} \neq 0$, ($H_{a3.4}$) $\beta_{j5} \neq 0$, for $j = 1..7$, i.e. employment status has an influence on the results of the particular party j ;

The hypotheses $H_{4.1}$ to $H_{4.4}$ vs. $H_{a4.1}$ to $H_{a4.4}$, respectively, are the four hypotheses of the effects of interaction terms on the results of the particular party j .

H₄: ($H_{4.1}$) $\beta_{j6} = 0$, ($H_{4.2}$) $\beta_{j7} = 0$, ($H_{4.3}$) $\beta_{j8} = 0$, ($H_{4.4}$) $\beta_{j9} = 0$, for $j = 1..7$, i.e. regional differences in corruption do not influence the voting choice of people with different employment status versus ($H_{a4.1}$) $\beta_{j6} \neq 0$, ($H_{a4.2}$) $\beta_{j7} \neq 0$, ($H_{a4.3}$) $\beta_{j8} \neq 0$, ($H_{a4.4}$) $\beta_{j9} \neq 0$, for $j = 1..7$, i.e. corruption influences the voting choice of people with different employment status.

Finally, I test several hypotheses regarding the effects of regional differences in corruption on participation in elections.

H₅: $\alpha_1 = 0$, i.e. regional differences in corruption do not influence participation in elections, versus H_{a5} : $\alpha_1 \neq 0$, i.e. regional differences in corruption have an influence on participation in elections;

H₆: ($H_{6.1}$) $\alpha_2 = 0$, ($H_{6.2}$) $\alpha_3 = 0$, ($H_{6.3}$) $\alpha_4 = 0$, ($H_{6.4}$) $\alpha_5 = 0$, i.e. when corruption is controlled for in the model, employment status does not influence participation in elections, versus ($H_{a6.1}$) $\alpha_2 \neq 0$, ($H_{a6.1}$) $\alpha_3 \neq 0$, ($H_{a6.3}$) $\alpha_4 \neq 0$, ($H_{a6.4}$) $\alpha_5 \neq 0$, i.e. employment status influences participation in elections, where 6.1-6.4 stand for the employed by the state, privately employed, unemployed, or out of the labor force, respectively;

H₇: ($H_{7.1}$) $\alpha_6 = 0$, ($H_{7.2}$) $\alpha_7 = 0$, ($H_{7.3}$) $\alpha_8 = 0$, ($H_{7.4}$) $\alpha_9 = 0$, i.e. regional differences in corruption do not influence the participation of people with different employment status, versus ($H_{7.1}$) $\alpha_6 \neq 0$, ($H_{7.2}$) $\alpha_7 \neq 0$, ($H_{7.3}$) $\alpha_8 \neq 0$, ($H_{7.4}$) $\alpha_9 \neq 0$, i.e. corruption influences the participation of people with different employment status.

After estimating the SUR system, I also perform statistical simulations of voting results for different corruption values: average corruption across regions, minimal corruption in all regions, and maximal corruption in all regions. Monte Carlo simulations of voting results have been performed using the methodology and software CLARIFY developed by King et al. (2000) and Tomz et al. (2001, 2002). First, I estimate parameters of the SUR system and then draw 1000 simulations of those parameters from the multivariate normal distribution. Second, I set hypothetical values for the explanatory variables (the **Xs**). To analyze the different impact of corruption on voting results, I consequently set each corruption measure to its mean across the regions, maximum across the regions, and minimum across the regions. All other explanatory variables are set at their mean. Then, based on chosen values of **Xs** and on the parameters that were generated at the first stage, I simulate predicted vote shares for each party and also calculate the corresponding number of seats in Parliament.

1.4. Data

Data from several sources are used. The first source is the Central Election Commission of the Russian Federation, which provides detailed results (in Russian) of the Russian parliamentary elections of 1999 and 2003 from each region and summary statistics of the election (both in English and Russian). These data give statistics on each of the 225 electoral districts in Russia: the number of voters on the voter lists, the number of ballots received, the number of votes received in favor of each party, and the number of votes "Against All".⁹

The second source of data is the publication "Regions of Russia" from the Russian State Statistical Office. This source contains statistical information on the social and economic development of every region of the Russian Federation (republics, territories, regions, cities of the federal subordination, autonomous regions and autonomous areas), including data on employment and unemployment, money income and consumer expenditures of the population, and other indicators.

I use regional level data on corruption in Russia from two sources.¹⁰ The first is the survey of Transparency International-Russia (TI-Russia) and the Information for Democracy Foundation (INDEM) on measuring corruption in Russian regions conducted in 2002.¹¹ It is a cross-sectional data set based on subjective perceptions. Both individuals (representing about 73% of the total Russian population) and entrepreneurs (mostly small and medium size enterprises; large businesses are underrepresented) are asked about their perceptions of corruption. Integral corruption perception index (integral CPI) ranges from zero to one with zero reflecting the highest corruption perceptions.¹² Unlike the CPI computed by Transparency International at the

⁹According to Federal Law #67-FZ an electoral district is determined by electoral commission on the basis of the number of registered voters on a certain territory. More populated regions typically include more than one electoral district during elections. The number of electoral districts (225) is, thus, greater than the number of Russian regions (83).

¹⁰Since the data on corruption are available for Russian regions, not for electoral districts, I assume that all electoral districts within one region have the same corruption level.

¹¹The use of data for the year 2002 for the analysis of elections in 2003 is justified, because, according to Transparency International, the CPI scores and ranking of Russia are the same in 2002 and 2003.

¹²For the purposes of comparison with results obtained using the state capture index, I transform

country level, which uses the assessments of corruption from the preceding 2-3 years for the index computation, the CPI in Russian regions used in this paper includes the assessments of corruption over one year only (Transparency International and INDEM Foundation, 2002).

The second measure of corruption is the data on state capture index, the index for “preferential treatment” of the largest firms in regions, taken from Slinko, et al. (2005) and Yakovlev and Zhuravskaya (2009). The index is constructed in the form of a Herfindahl-Hirschman index of concentration, with zero value standing for low concentration of preferential treatment of large firms (low corruption), and one for high concentration (high corruption). The authors count the number of cases when a regional government legislatively allowed the largest firms in a region to have a soft budget constraint in the form of soft taxation or soft subsidization. The five largest firms in each region are selected according to the largest volume of sales in a given year, and whether a given firm had been treated preferentially at least once. The state capture index data is a panel constructed from regions of Russia between 1992-2003.

All the descriptive statistics for the data used in the research can be found in the appendix (Tables 2-5). For estimation purposes, the shares of votes are transformed according to the methodology presented above. Each dependent variable has 225 observations for the 2003 election and 224 observations for the 1999 election, corresponding to the number of electoral districts in Russia. The data on some explanatory variables are missing: the Chechen Republic (due to the inability to collect data during a military conflict) and national territories (*nacionalnye okruga*) within larger Russian regions. Also, given the availability of the data on corruption, I reduce the number of electoral districts included in the analysis. Since the data on regional corruption perception index are not available for 1999, only the data on state capture are used for analysis of the 1999 parliamentary election.

integral CPI so that its value of one stands for high corruption, and zero for low corruption.

1.5. Results and Discussion

The results of two empirical specifications for the 2003 election are summarized in Tables 6-8. Table 6 presents the results of the model where the state capture index was used as the measure of corruption. Respectively, Table 7 presents the results of the model where the corruption perception index was used. In both tables the columns present the results for a particular party. Explanatory variables are given in rows. Table 8 presents the results when both measures of corruption are included in order to evaluate them. The results of the 1999 election are presented in Table 9. Tables 10-14 include artificial voting results for the 1999 and 2003 elections.

While analyzing the post-transition period in Russia, it is difficult to distinguish clearly between "market-oriented" and "not market-oriented" parties as is usually done in the literature on economic voting in transition countries (for instance, Rodrik, 1995; Fidrmuc, 1998; Jackson et al., 2003). Titkov (2004) proposed an elegant two-dimensional classification for Russian parties during parliamentary elections. Titkov suggests that there can be two dimensions: "reformist-conservative" and "conformist protest". The first dimension includes the "Union of Right Forces" and "Yabloko" as the reformist parties, and the Communist and Agrarian Parties as the conservatives. The second dimension includes the "conformist" party of power ("United Russia" in 2003 and "Otechestvo" in 1999) against the protest Liberal Democratic Party (LDPR). Titkov's (2004) classification has also been used by Austin et al. (2005). For simplicity in the interpretation of results, this paper considers only the second, i.e. "conformist-protest", dimension.¹³ I refer to the "party of power", or a status-quo party, as the party which is associated with the current government before the elections of new parliament. In 2003, "United Russia" played the role of the "party of power" and was used as the base party. All other parties I define as "opposition to the

¹³Titkov (2004), using the main components analysis, argues that the two dimensions explain the 50% variation in the 1999 and 2003 results. The second, "conformist-protest", dimension explains about 36% of the variation, both in the 1999 and 2003 elections, which is higher than the role of the first dimension (16% in 1999 and 14% in 2003). Moreover, Titkov (2004) points out that the role of the "conformist-protest" dimension is increasing. Thus, the choice of "conformist-protest" for closer analysis in this paper is justified.

party of power". In 1999, both "Yedinstvo" and "Otechestvo-All Russia" positioned themselves as pro-government parties, though during the election the Communist Party received the highest number of votes with "Yedinstvo" coming in second, and "Otechestvo-All Russia" third. In the analysis of 1999 elections, I use the party "Otechestvo-All Russia" as the base.

1.5.1. Corruption, Employment Status and Voting Behavior: Direct Effects

The literature reviewed above suggests some dependence between corruption and voting results. However, it should be pointed out that previous literature (Rundquist, Strom and Peters, 1977; Peters and Welch, 1980) focused the analysis on particular cases of corruption that have been revealed and their effects on the outcome of voting for particular candidates. This paper takes into account regional differences in corruption and analyzes their effects on the outcome of state level elections.

As can be seen from Tables 6-7 and 9, in most empirical specifications, regional differences in corruption do not influence voting results of most parties or of the "Against All" option. However, there are a few interesting exceptions. As compared to "United Russia", an increase in corruption increases the outcomes of the Communist and Liberal Democratic parties in the 2003 election when state capture is used, and decreases the outcome of "Rodina" in the 2003 election when integral CPI is used. Along with "United Russia", these are the three parties that were elected to the Parliament in 2003. This implies that an increase in corruption may change the distribution of parties in the Parliament not in favor of the party of power. This finding indirectly associates corruption with the activity of the Parliament.

When state capture (Table 6) is used, I find that the unemployed oppose some parties during the 2003 election: the Communist Party, "Rodina", and other parties. The results for the rest of parties are not significant. This finding can be interpreted as that the unemployed are satisfied with the activity of the current Parliament and, thus,

support the party of power. When the integral CPI is used to control for corruption in the 2003 election (Table 7), the unemployed support the "Union of Right Forces" only; for the rest the result is not significant. In contrast to findings for the 2003 election, in the earlier election of 1999 (Table 9), the unemployed support most parties. To re-iterate, previous literature argues that the unemployed oppose pro-reform parties in early transition period, since the social security net is underdeveloped, but support those parties in later transition periods (Blanchard, 1997; Fidrmuc, 1998). In our case, 1999 is in the late transition period and 2003 is in the to post-transition period, by which the social security net had been already developed to some extent.

Voters employed in the state sector oppose most parties in 1999, while employment in state sector does not affect voting behavior in 2003. This is an expected result since, as previous research suggests, state employees are likely to oppose reforms in late transition (Fidrmuc, 1998).

Voters employed in the private sector support most parties in both the 1999 and 2003 elections. The results also hold for both measures of corruption used. These results are in line with previous literature (Rodrik, 1995; Fidrmuc, 1998; Jackson et al., 2003), that suggests the employees of private sector are likely to support reforms and pro-reform parties.

Being out of the labor force does not affect voting behavior in 1999, while in 2003, voters who are out of the labor force oppose most parties. Since people who are out of the labor force are also likely to be dependent on the social security net, their behavior is similar to the voting behavior of the unemployed.

To summarize, I reject the hypothesis that when corruption is controlled for in the model, employment status does not influence the results of a given party in favor of an alternative that corruption influences the voting choice of people with different employment status. In the 1999 election, the unemployed and private employees support most non-incumbent parties. State employees oppose non-incumbent and vote for the party of power. In the 2003 election, the privately employed support most parties, the unemployed and out of the labor force oppose most parties, and

state employees do not demonstrate any specific voting behavior.

1.5.2. Corruption, Employment Status and Voting Behavior: Indirect Effects

In this section I present how corruption across regions influences the voting behavior of people with different employment status in Russia. When state capture is used in the estimation of the 2003 election, I find that corruption is likely to affect the voting behavior of all groups of workers (see the interaction terms *StateCapture * EmploymentStatus* in Table 6). When integral CPI is used, there is not much significant evidence (see the interaction terms *IntegralCPI * EmploymentStatus* in Table 7). In the 1999 election, corruption affects the voting behavior of the unemployed and state employees only (see Table 9).

In particular, the previous section demonstrated that in the presence of corruption, the unemployed are likely to oppose the Communist Party, "Rodina", and other parties in case when state capture is used. However, with the indirect effect of corruption (the sign of the coefficient at the interaction term *StateCapture * Unemployed* in Table 6) the unemployed are likely to support the Communist Party, "Rodina", and "Yabloko". In the 1999 election, the unemployed support all parties (except for "other" parties), but due to the indirect effects of corruption, they are likely to oppose most of these parties (except for "Yedinstvo" and the Communist Party).

For the state and privately employed, I find a similar picture: if the main coefficient on the variables *state employed* or *privately employed* is positive (i. e. state or private employees support some parties), then because of the indirect effect, they are likely to oppose these parties, and vice versa. For those who are out of the labor force, this result holds only when state capture is used for the analysis of the 2003 election; for all other specifications there is not much significant evidence.

While regional differences in corruption do not affect protest voting for the "Against All" option, some groups of employees tend to vote for or against this option. In par-

ticular, in the 2003 election, the privately employed vote more for the "Against All" option (when state capture is used), as compared to "United Russia", while voters out of labor force vote for it less (when either state capture or integral CPI are used). Also, with an increase in state capture, both groups may change their voting behavior regarding supporting or opposing the "Against All". To provide more insights regarding this form of protest voting, I also test whether the effect of regional differences in corruption is the same for a particular party and for the "Against All" option. In most specifications, I have no evidence to reject this hypothesis. It implies that voting for a particular party, which is not in power, is also a form of protest voting, while the "Against All" option is an extreme protest.

To summarize, I find that state capture across regions is likely to influence the voting behavior of people with different employment status. In most cases, I find that with an increase in state capture, the employees are less likely to support the party they previously supported. Such changes in the behavior of voters occur when corruption is revealed and associated with a particular candidate, according to previous research (Rundquist, Strom and Peters, 1977). While changes in state capture are associated with changes in voting behavior, corruption perceptions do not have such effect on most parties.

1.5.3. Participation in Elections

To complete the analysis of voting results, I also simultaneously analyze participation in elections, because what motivates people to participate in elections may also affect their decision to vote for a particular party. Results of the analysis of participation in the 1999 and 2003 elections are also presented in Tables 6-9.

The hypothesis that regional differences in corruption have no direct impact on voting participation is rejected when state capture is used (though for the 2003 elections only). Increase in state capture positively influences participation in elections: this result is intuitive, since with an increase in corruption voters are likely to think

that they may help to improve the situation by voting.

When integral CPI is used for the analysis of the 2003 election, I do not find enough statistical evidence to reject the hypothesis that corruption has no effect on participation in elections. This implies that perceptions of corruption at the individual level are likely to play no role in voters' decision to participate in elections, while state capture as an objective measure of possible corruption cases affects participation.

Regional differences in corruption also may have an indirect effect on the decision of some groups of employees to participate. I reject the hypothesis of no indirect effect for the unemployed when state capture is used, and for the privately employed in the 2003 election when integral CPI is used.

1.5.4. Evaluation of Hard and Perceived Measures of Corruption

Since two different measures of corruption are used in the analysis, I provide an evaluation of perceived and hard evidence about regional differences in corruption.

I use state capture index as the hard measure of corruption. However, state capture, by definition, does not necessarily mean illegal activity. Slinko et al. (2005) define state capture as legal privileges given by the regional government to the largest firms in a region, which take various forms of soft budget constraints and which give political power to these firms. To use state capture as the corruption measure, I assume that firms with high level of political power are likely to seek the reelection of the incumbent government in order to maintain preferential treatment. This would lead such firms to work to influence the voting choices of their employees. While preferential treatments themselves can be legal activity on the part of a government, the use of support by firms, which is based on the prospect of receiving preferential treatment in the case of a party's reelection or for private gain, may be illegal. However, voters may also associate increases in regional state capture not with the cases of corruption, but with the possibility of receiving more privileges. Thus, voters may

support an incumbent government, which provides these privileges.

Another measure used in this paper, the corruption perception index, is a widely used measure of corruption. It is based on the subjective responses of individuals and firms about various indicators of corruption such as perceptions of everyday corruption, perceptions of amounts and frequency of bribes in individual and business spheres, etc. Thus, corruption perceptions provide an individual evaluation of the degree of corruption in a region.

In the analysis, hard and perceived measures of corruption are positively correlated with each other, though the correlation is not very high (about 18%). As described above, in the analysis of voting results, when included separately, both corruption measures provide few significant results, with an exception for major parties (a positive effect on the Communist and Liberal Democratic parties when state capture is used, and a negative one on "Rodina" when integral CPI is used). However, both measures have a similar indirect effect on the voting behavior of people with different employment status.

In the analysis of participation in elections, state capture better explains the direct effect of corruption on participation in elections. On the other hand, the corruption perception index has more explanatory power in the analysis of participation in elections for different groups of employees.

Since the measures are not strongly correlated with each other, I may assume no perfect collinearity and include both state capture and integral corruption perception index together in the analysis of voting results (see Table 8). The estimated coefficients of the two measures are again insignificant for most of the parties, though participation is affected positively by both measures. I also test whether the estimated coefficients on two corruption measures have the same effect on the voting outcomes for different parties. I have no evidence to reject this hypothesis for most parties, excepting "Rodina". The outcome for this party is significantly negatively influenced by state capture.

Thus, both measures complement each other and provide useful information re-

garding both the voting behavior of different groups, and participation in elections. This means that Olken's (2009) argument that corruption perceptions are not always helpful in analysis due to subjectivity biases does not necessarily hold in the analysis of effects of corruption. As suggested by the findings of this paper, using different measures is likely to help investigate the effects better.

1.5.5. Artificial Voting Results

As the concluding step in the analysis of the effect of corruption on elections, I perform Monte Carlo simulations of voting results using the methodology and software CLARIFY developed by King et al. (2000) and Tomz et al. (2001, 2002). I generate predicted voting shares for each party using different values of corruption: average, maximal, and minimal. The results are summarized in Tables 10-14.

In comparison with the actual outcome of voting, different values of regional corruption suggest changes in the distribution of votes in the 1999 and 2003 elections. In 2003 with higher corruption (state capture), fewer parties would have been elected to the Parliament (received more than 5% of votes), with the Communist and Liberal Democratic Parties receiving more votes than the actual outcome. With lower corruption (state capture) in 2003, more parties would have been elected to the Parliament. When integral CPI is used, the results differ. Higher corruption perceptions would result in a higher number of parties elected to the Parliament, and lower corruption perceptions would allow the election of the same number of parties as in the actual outcome. These different distributions with two measures of corruption are intuitive. With higher regional state capture, voters are likely to seek more privileges for firms in their region from the current government and therefore tend to vote for this government. In contrast, corruption perceptions may reflect voters' preferences for reducing regional corruption by electing more parties to the Parliament.

In the artificial voting outcomes of the 1999 election, there are no substantial changes in the distribution of votes, as compared to actual and mean outcomes. How-

ever, with an increase in state capture, the pro-government parties "Otechestvo" and "Yedinstvo" receive less seats in the Parliament, while the opposition gains votes.

1.5.6. Sensitivity Analysis

To ensure that the model's specification is correct, a series of specification tests are conducted: logs vs levels specification, tests for the presence of nonlinearity and omitted variable problem. As the results indicate, the chosen model is correctly specified and has no omitted variable problem.¹⁴

To check the sensitivity of results obtained in the paper, I group the parties into four categories: *the party of power*, *anti-reform*, *pro-reform*, *protest voting*, and estimate the model for the 1999 and 2003 elections. As before, *the party of power* is used as the base in both elections. In 1999, *the party of power* includes "Yedinstvo" and "Otechestvo"; *anti-reform*, or conservative, includes the Communist Party; *pro-reform* includes the "Union of Right Forces" and "Yabloko"; and *protest voting* includes LDPR, other parties, and the "Against All" option. In 2003, *the party of power* is "United Russia"; *anti-reform* and *pro-reform* groups include the same parties as in 1999; and *protest voting* group includes LDPR, "Rodina", other parties, and the "Against All" option. Such a classification is based on a modification of Titkov's (2004) grouping and potentially corresponds to the realities of the Russian political arena.

Results of the sensitivity checks are presented in Tables 1a-4a in the Appendix. The effects of corruption on voting shares of particular groups and on the voting behavior of people with different employment status remain somewhat similar to previous findings in the paper. The lower significance of some coefficients may be explained by the aggregation of dependent variables.

¹⁴Results of the specification tests are available upon request.

1.5.7. Corruption, Employer Size and Voting Behavior: Direct and Indirect Effects

It is also interesting to analyze the impact of the size of the firm on the voting behavior of its employees, since this may differ from the impact of the sector of employment. Larger firms have greater opportunities to receive preferential treatments from the state and support the reelection of the party of power in exchange. As a result, preferentially treated firms may try to influence the choice of employees in favor of the party of power. Since small enterprises are not generally treated preferentially, their employees have more incentives to vote with less influence on the part of their employer. To account for such differences in voting behavior, I reestimate the model, including the employees of small and large enterprises rather than the employees of private and state sectors. In Tables 5a and 6a, the results for the 2003 election with different measures of corruption are presented. In Table 7a, the results for the 1999 election are presented.

As observed in Tables 5a and 6a, integral CPI has more explanatory power in explaining the voting behavior in this specification. When integral CPI is used, there are more differences in the voting behavior of the employees of small and large enterprises than when state capture is used. As compared to the party of power, voters employed by smaller enterprises support all other parties more. The employees of medium and large enterprises do not have specific voting preferences regarding the parties that participate in election apart from the party of power. Similar results are observed for the 1999 election (see Table 7a). Also, in line with the previous findings of this paper, voters who are out of the labor force oppose most parties in the 2003 election when state capture is used, and the unemployed support most parties in both elections (in the 2003 election, only when integral CPI is used).

Similarly to previous findings, regional differences in corruption do not directly affect the voting outcomes of most parties in both elections, except for the Communist and Liberal Democratic parties when state capture is used in the 2003 election, and

"Rodina" when integral CPI is used. However, in both elections, corruption has an indirect effect on the voting behavior of the unemployed and those employed at small enterprises (in the 2003 election, only when integral CPI is used). I also find that integral CPI positively affects participation in elections, though there are no indirect effects of corruption perceptions on the participation of different groups of voters. Finally, dividing employees by the sector of employment (private or state) and by the size of employer (small or large) produce similar artificial voting outcomes. Since the confidence intervals of artificial voting outcomes substantially overlap the ones from the specification with private and state sectors, I do not present the results for the specification with the division of employees by the size of the employer separately.¹⁵

1.6. Conclusion

While investigating different aspects of political support for economic reforms in different transition countries, very few studies were focused on economic voting in Russia. In this paper, using data from the Russian parliamentary elections in 1999 and 2003, I develop and estimate an econometric model to investigate whether the voting behavior of people with different employment status is affected by the level of regional corruption. The voters are divided into four groups by employment status: those employed in private and public sectors, the unemployed, and those who are out of the labor force. Also, the voting behavior of those employed at enterprises of different size is explored. Among the contributions of the paper is a combined approach which includes the analysis of voting results simultaneously with the analysis of participation in elections, the evaluation of hard and perceived measures of corruption, and simulations of artificial outcomes of elections using different values of corruption.

I find that people with different employment status are likely to vote differently, even when controlling for corruption. Corruption has direct impact on the voting results of major parties and positively influences participation in elections. Regional

¹⁵The results are available upon request.

differences in corruption are likely to have indirect effects on people's decision to participate in elections and on the voting behavior of people with different employment status. Because of corruption, voters are less likely to support those parties which they previously supported. Using two different measures of corruption produces complementary results. Artificial vote shares generated by simulations suggest that the distribution of votes changes when different values of corruption are used. The paper contributes to a better understanding of factors that influence voting outcomes in transition countries and which should be taken into account when reforms are planned and implemented.

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1.A. Appendix

1.A.1. Main Tables

Table 1: Description of Political Parties and the Results of Parliamentary Elections 1999 and 2003

Political Party	Voting Share (%)	Number of Seats	Party Leader	Year of Foundation	History	Political Orientation
IRP "Unity" ("Yedinstvo")	23.32	64	Shoigu	1999	reorganized to "United Russia" (2002)	conservative
Communist Party of the Russian Federation (CPRF)	24.29	67	Zuganov	1993		left
Liberal Democratic Party (Zhirinovskiy's block)	5.98	17	Zhirinovskiy	1989		liberal
Orechestvo-All Russia	13.33	37	Primakov	1999	reorganized to "United Russia" (2002)	democratic
Russian Democratic Party "Apple" ("Yabloko")	5.93	16	Yavlinsky	1993		democratic,
The Union of Right Forces	8.52	24	Kirienko	1999		moderate
Votes for Other Parties	15.33	0			reorganized to "Pravoe delo" (2008)	nationalistic
Votes against All Parties	3.30	0				social liberal
TOTAL	100	225				right
United Russia	37.56	120	Gryzlov	2002	founded by parties "Yedinstvo", "Orechestvo", "All Russia" (2002)	right centrist
Communist Party of the Russian Federation (CPRF)	12.61	40	Zuganov	1993		left
Liberal-Democratic Party of Russia (LDPR)	11.45	36	Zhirinovskiy	1989		liberal
"Motherland" (Rodina)	9.02	29	Rogozin	1998		democratic
Russian Democratic Party "Apple" ("Yabloko")	4.30	0	Yavlinsky	1993	reorganized to "Fair (Spravedlivaya) Russia" (2006)	moderate
Union of Right Forces	3.97	0	Nemcov	1999		nationalistic
Votes for Other Parties	16.39	0			reorganized to "Pravoe delo" (2008)	social liberal
Votes against All Parties	4.70	0				right
TOTAL	100	225				

Source: Central Electoral Commission of Russia; web pages of political parties. Notes. A party is elected to the Parliament if it receives more than 5 percent of votes. In total 26 political parties participated in 1999 elections and 23 political parties in 2003 elections. The Russian Parliament (State Duma) has 450 seats: 225 are elected by voting for particular parties and 225 are elected by voting for particular candidates. The table presents the number of seats received as a result of voting for particular parties.

Table 2: Data Description (before transformation, year 2003)

Variable	Obs	Mean	Std. Dev.	Min	Max
Corruption variables					
State capture	215	0.333	0.174	0.200	1.000
Integral CPI	164	0.591	0.220	0.000	1.000
Other explanatory variables					
Unemployed (thous. people)	224	26.553	14.229	0.500	79.100
State employed (thous. people)	224	106.845	33.092	7.900	250.700
Privately employed (thous. people)	224	147.078	43.184	2.700	258.700
Out of the labor force (thous. people)	224	26.233	7.360	0.388	43.829
Employed at Small Enterprises (thous. people)	224	33.183	25.729	0.100	113.050
Employed at Medium and Large Enterprises (thous. people)	224	259.971	74.129	11.200	475.600
Real GRP per capita (thous. rubles)	214	63.498	47.699	8.844	307.774
Students (thous. people)	221	29.115	16.571	0.000	85.300
Pensioners (thous. people)	224	169.429	44.557	4.000	281.000
Registered voters (thous. people)	225	484.028	123.902	13.258	777.959
Urban population (% of population in region)	223	0.729	0.151	0.237	1.000
Moscow	225	0.067	0.250	0.000	1.000
Voting results					
United Russia (thous. people voted)	225	101.232	56.614	3.514	420.186
Communist Party (thous. people voted)	225	33.990	15.657	0.323	90.570
Liberal Democratic Party (thous. people voted)	225	31.026	13.326	0.705	84.588
"Motherland" (Rodina)" (thous. people voted)	225	24.378	12.256	0.545	76.809
"Apple" ("Yabloko") (thous. people voted)	225	11.647	7.244	0.138	39.111
Union of Right Forces (thous. people voted)	225	10.726	7.846	0.207	50.543
Against All (thous. people voted)	225	12.674	5.362	0.332	25.869
Other parties (thous. people voted)	225	39.886	15.749	0.875	87.130
Number of voters participated (thous. people)	225	265.265	82.593	6.640	532.659

Source: Russian State Statistical Office; Central Electoral Commission of Russia; author's calculations *Notes.* Electoral district used as an unit of observation. During the 2003 parliamentary elections there were 225 electoral districts in total. Observations for the unemployed, state and private employees, out of the labor force, employed at small, medium and large enterprises, real GRP per capita, number of students, number of pensioners are missing for the Chechen Republic. Observations for real GRP per capita, number of students are missing for those electoral districts that correspond to national districts within larger Russian regions.

Table 3: Data Description (after transformation, year 2003)

Variable	Obs	Mean	Std. Dev.	Min	Max
Dependent variables (y)					
United Russia	225	0.911	0.445	-0.439	3.084
Communist Party of the Russian Federation (CPRF)	225	-0.220	0.487	-3.476	1.696
Liberal Democratic Party of Russia (LDPR)	225	-0.303	0.476	-3.430	0.583
"Motherland" (Rodina")	225	-0.587	0.642	-4.038	1.044
"Apple" ("Yabloko")	225	-1.331	0.780	-2.901	4.600
Union of Right Forces	225	-1.498	0.750	-3.223	0.332
Votes against All Parties	225	-1.188	0.505	-3.535	-0.004
Explanatory variables					
Integral CPI	164	0.409	0.220	0.000	1.000
Ln(Number Participated)	225	5.489	0.555	1.893	6.278
Ln(Unemployed)	224	3.070	0.771	-0.693	4.371
Ln(State Employed)	224	4.597	0.465	2.067	5.524
Ln(Privately Employed)	224	4.892	0.596	0.993	5.556
Ln(Out of the Labor Force)	224	3.172	0.633	-0.947	3.780
Ln(Employed at Small Enterprises)	224	3.189	0.979	-2.303	4.728
Ln(Employed at Medium and Large Enterprises)	224	5.481	0.508	2.416	6.165
Ln(Real GRP per capita)	214	3.979	0.539	2.180	5.729
Ln(Number of Students)	220	3.183	0.787	-2.303	4.446
Ln(Number of Pensioners)	224	5.046	0.564	1.386	5.638
Ln(Number of Registered Voters)	225	6.100	0.549	2.585	6.657

Source: author's calculations *Notes.* Electoral district used as an unit of observation. During the 2003 parliamentary elections there were 225 electoral districts in total. Observations for Ln(unemployed), Ln(state employed), Ln(privately employed), Ln(out of labor force), Ln(employed at small enterprises), Ln(employed at medium and large enterprises), Ln(real GRP per capita), Ln(number of students), Ln(number of pensioners) are missing for the Chechen Republic. Observations for Ln(real GRP per capita), Ln(number of students) are missing for those electoral districts that correspond to national districts within larger Russian regions.

Table 4: Data Description (before transformation, year 1999)

Variable	Obs	Mean	Std. Dev.	Min	Max
Corruption variables					
State Capture	215	0.361	0.212	0.200	1.000
Other explanatory variables					
Unemployed (thous. people)	224	41.620	17.339	0.700	120.350
State employed (thous. people)	224	108.777	32.648	7.400	245.600
Privately employed (thous. people)	224	133.163	40.625	1.800	236.900
Out of the labor force (thous. people)	224	27.138	17.985	0.579	274.829
Employed at Small Enterprises (thous. people)	224	28.883	20.804	0.300	88.060
Employed at Medium and Large Enterprises (thous. people)	224	256.778	72.688	9.500	464.600
Real GRP per capita (thous. rubles)	214	20.209	14.347	3.371	78.096
Students (thous. people)	216	18.856	11.008	0.500	60.700
Pensioners (thous. people)	224	170.799	46.436	4.000	290.000
Registered voters (thous. people)	224	482.466	124.395	12.759	782.019
Urban population (% of population in region)	223	72.831	15.178	25.400	100.000
Moscow	224	0.067	0.251	0.000	1.000
Voting results					
IRP "Unity" ("Yedinstvo") (thous. people voted)	224	69.414	33.559	0.855	172.167
Communist Party (thous. people voted)	224	72.302	35.326	0.959	219.602
Liberal-Democratic Party (Zhirinovskiy's block) (thous. people voted)	224	17.723	8.199	0.424	48.063
Otechestvo-All Russia (thous. people voted)	224	39.672	43.504	0.434	264.837
"Apple" ("Yabloko") (thous. people voted)	224	17.663	10.487	0.357	59.477
Union of Right Forces (thous. people voted)	224	25.344	14.464	0.309	75.824
Against All (thous. people voted)	224	9.815	3.807	0.269	20.810
Other parties (thous. people voted)	224	39.814	13.949	1.349	83.982
Number of voters participated (thous. people)	224	291.834	82.547	7.704	512.256

Source: Russian State Statistical Office; Central Electoral Commission of Russia; author's calculations. *Notes.* Electoral district used as an unit of observation. During the 1999 parliamentary elections there were 224 electoral districts in total. Observations for real GRP per capita, number of students, urban population are missing for those electoral districts that correspond to national districts within larger Russian regions.

Table 5: Data Description (after transformation, year 1999)

Variable	Obs	Mean	Std. Dev.	Min	Max
Dependent variables (y)					
IRP "Unity" ("Yedinstvo")	224	0.493	0.530	-1.205	2.778
Communist Party of the Russian Federation (CPRF)	224	0.515	0.538	-0.919	3.021
Liberal Democratic Party (Zhirinovskiy's block)	224	-0.863	0.394	-3.154	0.094
Otechestvo-All Russia	224	2.731	1.323	-1.677	5.488
Russian Democratic Party "Apple" ("Yabloko")	224	-0.951	0.589	-2.598	0.377
The Union of Right Forces	224	-0.577	0.534	-2.399	0.708
Votes against All Parties	224	-1.427	0.333	-2.736	-0.466
Explanatory variables					
Ln(Number Participated)	224	5.589	0.550	2.042	6.239
Ln(Unemployed)	224	3.605	0.610	-0.357	4.790
Ln(State Employed)	224	4.616	0.464	2.001	5.504
Ln(Privately Employed)	224	4.781	0.645	0.588	5.468
Ln(Out of the Labor Force)	224	3.187	0.576	-0.546	5.616
Ln(Employed at Small Enterprises)	224	3.085	0.927	-1.204	4.478
Ln(Employed at Medium and Large Enterprises)	224	5.466	0.520	2.251	6.141
Ln(Real GRP per capita)	214	2.838	0.546	1.215	4.358
Ln(Number of Students)	216	2.762	0.671	-0.693	4.106
Ln(Number of Pensioners)	224	5.052	0.567	1.386	5.670
Ln(Number of Registered Voters)	224	6.095	0.554	2.546	6.662

Source: author's calculations. *Notes.* Electoral district used as an unit of observation. During the 1999 parliamentary elections there were 224 electoral districts in total. Observations for Ln(real GRP per capita) and Ln(number of students) are missing for those electoral districts that correspond to national districts within larger Russian regions.

Table 6: SUR Estimation of the 2003 Voting Results
(State Capture Index is Used to Control for Corruption)

	Communist Party	Liberal Democratic Party	NPU "Motherland" ("Rodina")	RDP "Apple" ("Yabloko")	Union of Right Forces	Other Parties	Against All	Participation
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
State Capture	22.271*** (8.013)	29.524*** (10.462)	13.413 (10.906)	9.631 (15.562)	-15.865 (14.450)	11.978 (8.363)	11.567 (9.498)	4.803* (2.492)
Ln(Unemployed)	-0.804*** (0.294)	-0.217 (0.384)	-1.079*** (0.400)	-0.799 (0.571)	-0.540 (0.530)	-0.593* (0.307)	-0.030 (0.348)	0.154* (0.091)
Ln(State Employed)	0.435 (0.601)	-0.001 (0.785)	-0.829 (0.818)	-0.153 (1.167)	-0.406 (1.083)	0.415 (0.627)	-0.986 (0.712)	0.234 (0.187)
Ln(Privately Employed)	2.618*** (0.634)	3.988*** (0.828)	1.859** (0.863)	2.577** (1.232)	0.557 (1.144)	2.057*** (0.662)	1.911** (0.752)	-0.032 (0.197)
Ln(Out of the Labor Force)	-2.701*** (0.636)	-6.283*** (0.830)	-4.198*** (0.865)	-2.907** (1.235)	-0.627 (1.147)	-3.578*** (0.664)	-4.896*** (0.754)	0.349* (0.198)
State Capture* Ln(Unemployed)	3.037*** (1.007)	1.900 (1.314)	4.213*** (1.370)	3.468* (1.955)	0.623 (1.815)	1.414 (1.051)	0.616 (1.193)	-0.787** (0.313)
State Capture* Ln(State Employed)	-4.459** (2.146)	-3.159 (2.802)	-3.896 (2.921)	-2.071 (4.168)	2.598 (3.870)	-2.071 (2.240)	-0.757 (2.544)	0.070 (0.667)
State Capture* Ln(Privately Employed)	-5.261*** (1.952)	-10.147*** (2.549)	-4.892* (2.657)	-5.267 (3.792)	1.254 (3.521)	-4.464** (2.038)	-5.665** (2.314)	-0.792 (0.607)
State Capture* Ln(Out of the Labor Force)	4.706*** (1.647)	9.425*** (2.150)	4.441** (2.241)	4.448 (3.198)	-1.829 (2.970)	4.778*** (1.719)	5.642*** (1.952)	0.525 (0.512)
Ln (Real GRP per capita)	-0.042 (0.107)	0.382*** (0.140)	0.474*** (0.145)	0.185 (0.208)	-0.073 (0.193)	0.079 (0.112)	0.389*** (0.127)	0.005 (0.033)
Ln (Students)	0.027 (0.117)	-0.104 (0.153)	-0.141 (0.160)	-0.344 (0.228)	-0.065 (0.212)	0.075 (0.122)	-0.043 (0.139)	0.018 (0.036)
Ln (Pensioners)	-0.148 (0.385)	1.285** (0.502)	0.572 (0.524)	-2.060*** (0.747)	-3.003*** (0.694)	0.523 (0.402)	0.981** (0.456)	0.222* (0.120)
Ln (Number of Registered Voters)	1.017** (0.409)	1.610*** (0.534)	3.493*** (0.557)	3.033*** (0.795)	3.143*** (0.738)	0.865** (0.427)	2.805*** (0.485)	0.520*** (0.127)
Share of Urban Population	-1.871*** (0.356)	-1.291*** (0.465)	-0.667 (0.485)	1.983*** (0.692)	1.379** (0.642)	-1.384*** (0.372)	-0.589 (0.422)	-0.435*** (0.111)
Moscow	1.787*** (0.611)	1.611** (0.797)	3.933*** (0.831)	2.960** (1.186)	0.666 (1.101)	0.619 (0.637)	1.655** (0.724)	-0.552*** (0.190)
Constant	-8.910*** (2.613)	-16.934*** (3.412)	-14.884*** (3.557)	-11.367** (5.075)	-3.612 (4.713)	-7.113*** (2.727)	-14.371*** (3.098)	-1.220 (0.813)
Number of observations	205	205	205	205	205	205	205	205
"R-squared"	0.387	0.443	0.504	0.377	0.371	0.317	0.478	0.828
BIC	1286.297							
Hypothesis:								
$\beta_{state\ capture\ (party)} =$	can't reject	reject**	can't reject	can't reject	reject**	can't reject	-	-
$\beta_{state\ capture\ (against\ all)}$								

Source: author's calculations. Notes. Electoral district is used as an unit of observation. During the 2003 parliamentary elections there were 225 electoral districts in total. The number of observations is reduced due to the absence of data on corruption. Participation in elections and the results for parties are estimated simultaneously. Columns present the results for a particular party and for a participation in elections. Explanatory variables are given in rows. The party "United Russia" is used as a base party. Standard errors are in parentheses. *, **, and *** stand for 10, 5, and 1 percent significance levels, respectively. The choice of SUR is justified since the Breusch-Pagan test for independent equations ($\chi^2(28) = 1570.249^{***}$) rejects the null hypothesis of independence of residuals across the equations.

Table 7: SUR Estimation of the 2003 Voting Results
(Integral CPI is Used to Control for Corruption)

	Communist Party	Liberal Democratic Party	NPU "Motherland" ("Rodina")	RDP "Apple" ("Yabloko")	Union of Right Forces	Other Parties	Against All	Participation
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Integral CPI	-15.094 (10.595)	-7.906 (9.999)	-35.098** (14.747)	-3.365 (23.631)	-5.346 (19.521)	4.537 (9.639)	-17.395 (11.817)	2.468 (3.362)
Ln(Unemployed)	0.106 (0.337)	0.100 (0.318)	0.260 (0.470)	1.180 (0.752)	1.064* (0.622)	0.110 (0.307)	-0.045 (0.376)	-0.063 (0.107)
Ln(State Employed)	-0.742 (0.466)	0.213 (0.440)	-2.762*** (0.649)	-1.261 (1.040)	-0.963 (0.859)	0.311 (0.424)	-0.699 (0.520)	0.227 (0.148)
Ln(Privately Employed)	1.668*** (0.502)	1.081** (0.473)	-0.460 (0.698)	1.355 (1.119)	1.841** (0.924)	0.663 (0.456)	-0.409 (0.559)	-0.066 (0.159)
Ln(Out of the Labor Force)	-4.356*** (1.108)	-3.092*** (1.046)	-4.150*** (1.542)	-2.077 (2.471)	-6.075*** (2.041)	-2.495** (1.008)	-3.333*** (1.236)	0.552 (0.352)
Integral CPI* Ln(Unemployed)	-0.382 (0.775)	0.344 (0.732)	-1.175 (1.079)	-2.683 (1.729)	-2.931** (1.428)	-0.811 (0.705)	0.261 (0.865)	-0.097 (0.246)
Integral CPI* Ln(State Employed)	1.342 (1.218)	0.256 (1.150)	4.866*** (1.696)	3.210 (2.717)	2.669 (2.446)	-0.502 (1.108)	1.121 (1.359)	-0.291 (0.387)
Integral CPI* Ln(Privately Employed)	-1.669* (1.013)	-0.229 (0.956)	2.694* (1.410)	-1.331 (2.259)	-1.509 (1.866)	-0.435 (0.921)	1.420 (1.130)	-0.668** (0.321)
Integral CPI* Ln(Out of the Labor Force)	5.498*** (1.981)	2.037 (1.870)	0.900 (2.757)	1.174 (4.419)	3.113 (3.650)	0.939 (1.802)	1.189 (2.210)	0.811 (0.629)
Ln (Real GRP per capita)	-0.402*** (0.136)	-0.396*** (0.128)	-0.582*** (0.189)	-0.556* (0.303)	-0.561** (0.250)	-0.364*** (0.124)	-0.284* (0.151)	0.097** (0.043)
Ln (Number of Students)	0.306*** (0.101)	0.041 (0.096)	0.154 (0.141)	-0.298 (0.226)	-0.013 (0.187)	0.149 (0.092)	0.191* (0.113)	-0.020 (0.032)
Ln (Number of Pensioners)	-0.527 (0.523)	-0.693 (0.493)	-0.828 (0.727)	-2.646** (1.166)	-2.850*** (0.963)	-0.535 (0.475)	0.022 (0.583)	0.389** (0.166)
Ln (Number of Registered Voters)	0.989** (0.477)	0.814* (0.450)	3.512*** (0.664)	3.473*** (1.064)	4.758*** (0.879)	1.076** (0.434)	2.356*** (0.532)	0.589*** (0.151)
Share of Urban Population	-1.882*** (0.432)	-0.692* (0.408)	-0.724 (0.601)	3.170*** (0.963)	1.281 (0.796)	-1.269*** (0.393)	-0.342 (0.482)	-0.373*** (0.137)
Moscow	0.589* (0.344)	0.860*** (0.325)	2.194*** (0.479)	1.746** (0.768)	2.337*** (0.635)	0.423 (0.313)	1.566*** (0.384)	-0.276** (0.109)
Constant	6.760 (4.516)	2.851 (4.263)	11.227* (6.287)	-7.223 (10.074)	-4.258 (8.322)	0.022 (4.109)	0.508 (5.038)	-2.517* (1.433)
Number of observations	157	157	157	157	157	157	157	157
"R-squared"	0.492	0.425	0.442	0.308	0.483	0.350	0.304	0.694
BIC	710.960							
Hypothesis:								
β integral CPI (party) =	can't reject	can't reject	reject*	can't reject	can't reject	reject**	-	-
β integral CPI (against all)								

Source: author's calculations. Notes. Electoral district is used as an unit of observation. During the 2003 parliamentary elections there were 225 electoral districts in total. The number of observations is reduced due to the absence of data on corruption. Participation in elections and the results for parties are estimated simultaneously. Columns present the results for a particular party and for a participation in elections. Explanatory variables are given in rows. The party "United Russia" is used as a base party. Standard errors are in parentheses. *, **, and *** stand for 10, 5, and 1 percent significance levels, respectively. The choice of SUR is justified since the Breusch-Pagan test for independent equations ($\chi^2(28) = 1280.953^{***}$) rejects the null hypothesis of independence of residuals across the equations.

Table 8: SUR Estimation of the 2003 Voting Results
(Both State Capture Index and Integral CPI are Included)

	Communist Party	Liberal Democratic Party	NPU "Motherland" ("Rodina")	RDP "Apple" ("Yabloko")	Union of Right Forces	Other Parties	Against All	Participation
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
State Capture	-0.361 (0.319)	-0.054 (0.295)	-1.503*** (0.433)	-0.731 (0.703)	-0.584 (0.585)	-0.051 (0.288)	-0.675* (0.344)	0.171* (0.099)
Integral CPI	-0.022 (0.147)	0.081 (0.136)	0.321 (0.200)	0.283 (0.325)	0.471* (0.270)	0.465*** (0.133)	-0.236 (0.158)	0.171*** (0.046)
Ln(Unemployed)	-0.010 (0.131)	0.280** (0.121)	0.034 (0.177)	0.238 (0.288)	-0.070 (0.240)	-0.275** (0.118)	0.183 (0.141)	-0.117*** (0.041)
Ln(State Employed)	-0.114 (0.295)	0.343 (0.273)	-1.415*** (0.400)	-0.081 (0.650)	0.073 (0.541)	0.224 (0.266)	-0.406 (0.318)	0.201** (0.092)
Ln(Privately Employed)	1.120*** (0.300)	1.058*** (0.277)	0.782* (0.406)	1.273* (0.661)	1.625*** (0.550)	0.636** (0.270)	0.354 (0.323)	-0.286*** (0.094)
Ln(Out of the Labor Force)	-1.689*** (0.495)	-2.164*** (0.457)	-3.383*** (0.670)	-1.174 (1.089)	-4.250*** (0.906)	-1.994*** (0.446)	-2.730*** (0.533)	0.916*** (0.155)
Ln (Real GRP per capita)	-0.415*** (0.143)	-0.361*** (0.132)	-0.024 (0.193)	-0.484 (0.314)	-0.620** (0.262)	-0.465*** (0.129)	0.007 (0.154)	0.012 (0.045)
Ln (Number of Students)	0.125 (0.131)	-0.119 (0.121)	-0.065 (0.178)	-0.405 (0.289)	-0.027 (0.241)	0.191 (0.118)	-0.081 (0.141)	-0.041 (0.041)
Ln (Number of Pensioners)	-1.180** (0.519)	-0.960** (0.480)	-1.008 (0.703)	-3.483*** (1.143)	-3.678*** (0.951)	-0.720 (0.468)	-0.193 (0.559)	0.219 (0.162)
Ln (Number of Registered Voters)	0.933* (0.485)	0.881** (0.448)	3.531*** (0.657)	3.024*** (1.067)	4.323*** (0.888)	0.964** (0.437)	2.487*** (0.522)	0.552*** (0.152)
Share of Urban Population	-1.868*** (0.421)	-0.620 (0.389)	-0.798 (0.570)	3.089*** (0.927)	1.304* (0.771)	-1.175*** (0.379)	-0.247 (0.453)	-0.332** (0.132)
Moscow	0.645** (0.325)	0.992*** (0.300)	2.265*** (0.440)	1.657** (0.715)	2.041*** (0.595)	0.238 (0.292)	1.757*** (0.350)	-0.278*** (0.101)
Constant	2.528 (2.189)	-0.008 (2.023)	-3.213 (2.965)	-4.771 (4.820)	-2.936 (4.011)	2.021 (1.972)	-7.244*** (2.358)	-0.904 (0.685)
Number of observations	154	154	154	154	154	154	154	154
"R-squared"	0.462	0.424	0.448	0.294	0.465	0.333	0.312	0.676
BIC	664.356							
Hypothesis:								
$\beta_{statecapture} =$	can't reject	can't reject	reject***	can't reject	can't reject	can't reject	can't reject	can't reject
$\beta_{integral CPI}$								

Source: author's calculations. Notes. Electoral district is used as an unit of observation. During the 2003 parliamentary elections there were 225 electoral districts in total. The number of observations is reduced due to the absence of data on corruption. Participation in elections and the results for parties are estimated simultaneously. Columns present the results for a particular party and for a participation in elections. Explanatory variables are given in rows. The party "United Russia" is used as a base party. Standard errors are in parentheses. *, **, and *** stand for 10, 5, and 1 percent significance levels, respectively. The choice of SUR is justified since the Breusch-Pagan test for independent equations ($\chi^2(28) = 1177.431^{***}$) rejects the null hypothesis of independence of residuals across the equations.

Table 9: SUR Estimation of the 1999 Voting Results
(State Capture Index is Used to Control for Corruption)

	IRP "Unity" ("Yedinstvo")	Communist Party	Liberal Democratic Party	RDP "Apple" ("Yabloko")	Union of Right Forces	Other Parties	Against All	Participation
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
State Capture	-1.531 (6.446)	2.443 (5.399)	-5.046 (6.904)	-5.587 (5.582)	-5.897 (5.453)	-6.076 (5.351)	-4.183 (5.170)	-0.072 (0.687)
Ln(Unemployed)	1.437** (0.636)	1.260** (0.532)	1.702** (0.681)	2.039*** (0.550)	1.756*** (0.538)	0.850 (0.528)	1.565*** (0.510)	-0.189*** (0.068)
Ln(State Employed)	-1.399 (0.852)	-1.304* (0.713)	-1.398 (0.912)	-2.177 *** (0.737)	-1.928*** (0.720)	-1.009 (0.707)	-1.286* (0.683)	0.329*** (0.091)
Ln(Privately Employed)	1.264** (0.593)	0.812 (0.497)	1.396** (0.635)	1.578*** (0.514)	1.013** (0.502)	1.158** (0.492)	1.427*** (0.478)	-0.086 (0.063)
Ln(Out of the Labor Force)	1.135 (1.291)	0.652 (1.081)	0.786 (1.383)	-0.565 (1.118)	0.491 (1.092)	0.324 (1.072)	-0.268 (1.036)	0.149 (0.138)
State Capture* Ln(Unemployed)	-1.547 (1.444)	-1.800 (1.209)	-3.336** (1.547)	-4.104*** (1.250)	-4.112*** (1.222)	-1.355 (1.199)	-3.463*** (1.158)	0.428*** (0.154)
State Capture* Ln(State Employed)	2.825 (2.295)	1.179 (1.922)	4.767* (2.458)	5.404*** (1.987)	4.172** (1.941)	1.877 (1.905)	3.517** (1.841)	-0.229 (0.245)
State Capture* Ln(Privately Employed)	0.010 (1.623)	0.183 (1.360)	-0.108 (1.739)	-1.389 (1.406)	0.780 (1.373)	0.686 (1.348)	-0.265 (1.302)	0.081 (0.173)
State Capture* Ln(Out of the Labor Force)	-1.835 (2.250)	-0.635 (1.884)	-1.354 (2.410)	0.745 (1.948)	-0.600 (1.903)	-0.362 (1.868)	0.524 (1.805)	-0.280 (0.240)
Ln (Real GRP per capita)	0.105 (0.200)	0.065 (0.167)	0.338 (0.214)	0.356** (0.173)	0.508*** (0.169)	0.381** (0.166)	0.311* (0.160)	-0.006 (0.021)
Ln (Students)	-0.459** (0.213)	-0.377** (0.179)	-0.945*** (0.228)	-0.424** (0.185)	-0.383** (0.180)	-0.551*** (0.177)	-0.710*** (0.171)	0.040* (0.023)
Ln (Pensioners)	-1.615** (0.659)	-0.674 (0.552)	-1.776** (0.706)	-1.077* (0.571)	-1.382** (0.557)	-1.458*** (0.547)	-1.341** (0.529)	0.751*** (0.070)
Ln (Number of Registered Voters)	-0.015 (0.123)	-0.032 (0.103)	-0.038 (0.132)	-0.020 (0.107)	-0.023 (0.104)	-0.020 (0.102)	-0.030 (0.099)	0.013 (0.013)
Share of Urban Population	-0.182 (0.694)	-1.309** (0.581)	0.732 (0.743)	2.216*** (0.601)	2.178*** (0.587)	0.650 (0.576)	1.621*** (0.556)	-0.345*** (0.074)
Moscow	-1.665*** (0.515)	-0.883** (0.432)	-1.452*** (0.552)	-0.844* (0.446)	-1.522*** (0.436)	-1.826*** (0.428)	-1.178*** (0.413)	0.067 (0.055)
Constant	1.890 (3.156)	1.836 (2.643)	1.074 (3.380)	0.496 (2.733)	1.167 (2.669)	3.059 (2.620)	0.289 (2.531)	0.998*** (0.337)
Number of observations	205	205	205	205	205	205	205	205
"R-squared"	0.492	0.389	0.506	0.319	0.374	0.405	0.372	0.859
BIC	1063.03							
Hypothesis:								
β state capture (party) =	can't reject	can't reject	reject**	can't reject	can't reject	can't reject	-	-
β state capture (against all)								

Source: author's calculations. Notes. Electoral district is used as an unit of observation. During the 1999 parliamentary elections there were 224 electoral districts in total. The number of observations is reduced due to the absence of data on corruption. Participation in elections and the results for parties are estimated simultaneously. Columns present the results for a particular party and for a participation in elections. Explanatory variables are given in rows. The party "Otechestvo" is used as a base party. Standard errors are in parentheses. *, **, and *** stand for 10, 5, and 1 percent significance levels, respectively. The choice of SUR is justified since the Breusch-Pagan test for independent equations ($\chi^2(28) = 3258.442^{***}$) rejects the null hypothesis of independence of residuals across the equations.

*Table 10: Artificial Outcomes of the 2003 Elections
for Different Values of State Capture*

Political party	Mean	St. error	95% Confidence Interval	
State Capture at mean, All other explanatory variables at their mean				
Communist Party of the Russian Federation (CPRF)	0.1262	0.0306	0.0731	0.1943
Liberal Democratic Party of Russia (LDPR)	0.1031	0.0341	0.0516	0.1817
National-Patriotic Union "Motherland" ("Rodina")	0.0978	0.0336	0.0455	0.1778
Russian Democratic Party "Apple" ("Yabloko")	0.0499	0.0288	0.0133	0.1236
The Union of Right Forces	0.0448	0.0255	0.0134	0.1055
Other Parties	0.1473	0.0325	0.0907	0.2158
Votes against All Parties	0.0462	0.0124	0.0259	0.0740
State Capture at max, All other explanatory variables at their mean				
Communist Party of the Russian Federation (CPRF)	0.1625	0.0532	0.0786	0.2920
Liberal Democratic Party of Russia (LDPR)	0.2451	0.0869	0.1038	0.4353
National-Patriotic Union "Motherland" ("Rodina")	0.0376	0.0189	0.0128	0.0861
Russian Democratic Party "Apple" ("Yabloko")	0.0279	0.0251	0.0445	0.0954
The Union of Right Forces	0.0114	0.0101	0.0018	0.0380
Other Parties	0.1482	0.0441	0.0721	0.2467
Votes against All Parties	0.0492	0.0194	0.0215	0.0977
State Capture at min, All other explanatory variables at their mean				
Communist Party of the Russian Federation (CPRF)	0.1374	0.0341	0.0810	0.2150
Liberal Democratic Party of Russia (LDPR)	0.1091	0.0363	0.0548	0.1963
National-Patriotic Union "Motherland" ("Rodina")	0.1176	0.0398	0.0560	0.2107
Russian Democratic Party "Apple" ("Yabloko")	0.0552	0.0331	0.0149	0.1381
The Union of Right Forces	0.0411	0.0231	0.0120	0.0996
Other Parties	0.1480	0.0344	0.0880	0.2203
Votes against All Parties	0.0451	0.0123	0.0243	0.0728

Source: author's calculations. *Notes.* The party "United Russia" is used as a base party. Simulations have been done using CLARIFY software. First, SUR system has been estimated and 1000 sets of simulated coefficients has been drawn. Predicted shares of votes for each party have been calculated based on sets of simulated coefficients and different values of corruption measure and the means of other explanatory variables.

*Table 11: Artificial Outcomes of the 2003 Elections
for Different Values of Integral CPI*

Political party	Mean	St. error	95% Confidence Interval	
Integral CPI at mean, All other explanatory variables at their mean				
Communist Party of the Russian Federation (CPRF)	0.1174	0.0254	0.0765	0.1688
Liberal Democratic Party of Russia (LDPR)	0.1179	0.0236	0.0758	0.1720
National-Patriotic Union "Motherland" ("Rodina")	0.1071	0.0357	0.0520	0.1905
Russian Democratic Party "Apple" ("Yabloko")	0.0520	0.0343	0.0112	0.1450
The Union of Right Forces	0.0365	0.0183	0.0126	0.0852
Other Parties	0.1461	0.0284	0.0991	0.2099
Votes against All Parties	0.0550	0.0126	0.0335	0.0830
Integral CPI at max, All other explanatory variables at their mean				
Communist Party of the Russian Federation (CPRF)	0.0652	0.0218	0.0316	0.1190
Liberal Democratic Party of Russia (LDPR)	0.0941	0.0278	0.0502	0.1555
National-Patriotic Union "Motherland" ("Rodina")	0.0656	0.0315	0.0199	0.1413
Russian Democratic Party "Apple" ("Yabloko")	0.0712	0.0627	0.0080	0.2531
The Union of Right Forces	0.0492	0.0350	0.0089	0.1372
Other Parties	0.2277	0.0539	0.1318	0.3414
Votes against All Parties	0.0306	0.0107	0.0140	0.0558
Integral CPI at min, All other explanatory variables at their mean				
Communist Party of the Russian Federation (CPRF)	0.1405	0.0317	0.0883	0.2099
Liberal Democratic Party of Russia (LDPR)	0.1263	0.0258	0.0830	0.1816
National-Patriotic Union "Motherland" ("Rodina")	0.0823	0.0277	0.0376	0.1519
Russian Democratic Party "Apple" ("Yabloko")	0.0440	0.0291	0.0094	0.1176
The Union of Right Forces	0.0300	0.0159	0.0091	0.0709
Other Parties	0.1273	0.0236	0.0856	0.1767
Votes against All Parties	0.0618	0.0152	0.0370	0.0955

Source: author's calculations. *Notes.* The party "United Russia" is used as a base party. Simulations have been done using CLARIFY software. First, SUR system has been estimated and 1000 sets of simulated coefficients has been drawn. Predicted shares of votes for each party have been calculated based on sets of simulated coefficients and different values of corruption measure and the means of other explanatory variables.

Table 12: Aggregate Results of Simulations for the 2003 Elections for Different Values of Corruption

Political Party	Actual Outcome		Artificial Outcomes											
	share of votes, %	# of seats	State Capture			Integral CPI								
			share of votes, %	# of seats	mean	share of votes, %	# of seats	max	share of votes, %	# of seats	min			
United Russia	37.56	120	38.47	121	31.81	99	34.65	102	36.80	117	39.64	129	38.78	118
Communist Party of the Russian Federation (CPRF)	12.61	40	12.62	40	16.25	50	13.74	40	11.74	37	6.52	21	14.05	43
Liberal Democratic Party of Russia (LDPR)	11.45	36	10.31	33	24.51	76	10.91	32	11.79	37	9.41	31	12.63	39
National-Patriotic Union "Motherland" ("Rodina")	9.02	29	9.78	31	3.76	0	11.76	35	10.71	34	6.56	21	8.23	25
Russian Democratic Party "Apple" ("Yabloko")	4.30	0	4.99	0	2.79	0	5.52	16	5.20	0	7.12	23	4.40	0
The Union of Right Forces	3.97	0	4.48	0	1.14	0	4.11	0	3.65	0	4.92	0	3.00	0
Votes for Other Parties	16.39	0	14.73	0	14.82	0	14.8	0	14.61	0	22.77	0	12.73	0
Votes against All Parties	4.70	0	4.62	0	4.92	0	4.51	0	5.50	0	3.06	0	6.18	0
TOTAL	100	225	100	225	100	225	100	225	100	225	100	225	100	225

Source: Actual outcomes are from the Central Election Commission of the Russian Federation, the results of simulations are author's calculations. Notes. Simulations have been done using CLARIFY software. First, SUR system has been estimated and 1000 sets of simulated coefficients has been drawn. Predicted shares of votes for each party have been calculated based on sets of simulated coefficients and different values of corruption measure and the means of other explanatory variables. Artificial outcomes are the means of predicted shares of votes and corresponding numbers of seats. It is assumed that "Against All" cannot be elected to Parliament even if its share of votes exceeds 5 percent.

*Table 13: Artificial Outcomes of the 1999 Elections
for Different Values of State Capture*

Political party	Mean	St. error	95% Confidence Interval	
State Capture at mean, All other explanatory variables at their mean				
IRP "Unity" ("Yedinstvo")	0.2367	0.0689	0.1167	0.3889
Liberal Democratic Party (Zhirinovskiy's block)	0.0645	0.0225	0.0288	0.1142
Communist Party of the Russian Federation (CPRF)	0.2550	0.0632	0.1442	0.3893
Russian Democratic Party "Apple" ("Yabloko")	0.0639	0.0329	0.0208	0.1454
The Union of Right Forces	0.0898	0.0355	0.0380	0.1749
Other Parties	0.1374	0.0291	0.0834	0.1979
Votes against All Parties	0.0355	0.0086	0.0200	0.0554
State Capture at max, All other explanatory variables at their mean				
IRP "Unity" ("Yedinstvo")	0.2364	0.0700	0.1106	0.3843
Liberal Democratic Party (Zhirinovskiy's block)	0.0636	0.0232	0.0255	0.1115
Communist Party of the Russian Federation (CPRF)	0.2756	0.0667	0.1580	0.4191
Russian Democratic Party "Apple" ("Yabloko")	0.0697	0.0352	0.0230	0.1571
The Union of Right Forces	0.1013	0.0377	0.0431	0.1918
Other Parties	0.1133	0.0253	0.0698	0.1693
Votes against All Parties	0.0319	0.0082	0.0184	0.0504
State Capture at min, All other explanatory variables at their mean				
IRP "Unity" ("Yedinstvo")	0.2429	0.0691	0.1242	0.3855
Liberal Democratic Party (Zhirinovskiy's block)	0.0643	0.0230	0.0274	0.1151
Communist Party of the Russian Federation (CPRF)	0.2520	0.0597	0.1449	0.3755
Russian Democratic Party "Apple" ("Yabloko")	0.0604	0.0301	0.0198	0.1368
The Union of Right Forces	0.0857	0.0329	0.0360	0.1602
Other Parties	0.1423	0.0301	0.0897	0.2101
Votes against All Parties	0.0362	0.0089	0.0214	0.0554

Source: author's calculations. *Notes.* The party "Otechestvo" is used as a base party. Simulations have been done using CLARIFY software. First, SUR system has been estimated and 1000 sets of simulated coefficients has been drawn. Predicted shares of votes for each party have been calculated based on sets of simulated coefficients and different values of corruption measure and the means of other explanatory variables.

Table 14: Aggregate Results of Simulations for the 1999 Elections for Different Values of Corruption

Political Party	Actual Outcome		Artificial Outcomes for Different Values of State Capture					
	share of votes, %	# of seats	mean		max		min	
	share of votes, %	# of seats	share of votes, %	# of seats	share of votes, %	# of seats	share of votes, %	# of seats
IRP "Unity" ("Yedinstvo")	23.32	64	23.67	64	23.04	62	24.29	66
Communist Party of the Russian Federation (CPRF)	24.29	67	25.50	69	27.56	73	25.20	69
Liberal Democratic Party (Zhirinovskiy's block)	5.98	17	6.45	18	6.36	17	6.43	18
Otechestvo-All Russia	13.33	37	11.72	32	10.82	28	11.62	32
Russian Democratic Party "Apple" ("Yabloko")	5.93	16	6.39	17	6.97	18	6.04	17
The Union of Right Forces	8.52	24	8.98	25	10.13	27	8.57	23
Votes for Other Parties	15.33	0	13.74	0	11.33	0	14.23	0
Votes against All Parties	3.30	0	3.55	0	3.19	0	3.62	0
TOTAL	100	225	100	225	100	225	100	225

Source: Actual outcomes are from the Central Election Commission of the Russian Federation, the results of simulations are author's calculations. Notes. Simulations have been done using CLARIFY software. First, SUR system has been estimated and 1000 sets of simulated coefficients has been drawn. Predicted shares of votes for each party have been calculated based on sets of simulated coefficients and different values of corruption measure and the means of other explanatory variables. Artificial outcomes are the means of predicted shares of votes and corresponding numbers of seats.

1.A.2. Supplementary Tables

*Table 1a: Sensitivity Check for the Estimation Results from the 2003
(State Capture Index is Used to Control for Corruption)*

	Anti-Reform	Pro-Reform	Protest Voting	Participation
	(1)	(2)	(3)	(4)
State Capture	11.257 (12.002)	59.188*** (22.220)	-1.982 (15.245)	4.637 (3.850)
Ln(Unemployed)	-1.026*** (0.347)	-1.858*** (0.642)	-0.850* (0.440)	0.175 (0.111)
Ln(State Employed)	0.277 (1.331)	6.316** (2.464)	-1.539 (1.691)	0.614 (0.427)
Ln(Privately Employed)	0.323 (0.916)	4.316** (1.695)	-1.242 (1.163)	0.328 (0.294)
Ln(Out of the Labor Force)	1.967 (2.059)	-8.200** (3.811)	5.220** (2.615)	-1.406** (0.660)
State Capture*Ln(Unemployed)	4.032*** (1.244)	6.988*** (2.302)	3.918** (1.580)	-0.935** (0.399)
State Capture*Ln(State Employed)	-6.311 (5.062)	-26.980*** (9.371)	-2.372 (6.429)	-0.597 (1.624)
State Capture*Ln(Privately Employed)	-0.853 (2.824)	-14.250*** (5.227)	0.966 (3.586)	-1.200 (0.906)
State Capture*Ln(Out of the Labor Force)	2.903 (6.682)	36.284*** (12.371)	-1.660 (8.487)	2.335 (2.144)
Ln (Real GRP per capita)	-0.193 (0.123)	0.159 (0.229)	0.145 (0.157)	0.039 (0.040)
Ln (Students)	-0.292*** (0.112)	-0.421** (0.207)	-0.815*** (0.142)	0.129*** (0.036)
Ln (Pensioners)	-1.517*** (0.453)	-3.441*** (0.839)	-1.839*** (0.576)	0.638*** (0.145)
Ln (Number of Registered Voters)	0.179 (0.378)	2.213*** (0.696)	0.495 (0.477)	0.816*** (0.121)
Share of Urban Population	-1.411*** (0.337)	2.058*** (0.623)	0.321 (0.427)	-0.572*** (0.108)
Moscow	1.733*** (0.628)	1.700 (1.162)	2.211*** (0.798)	-0.522*** (0.201)
Constant	2.621 (4.008)	-17.258** (7.420)	7.660 (5.091)	-3.595*** (1.286)
Number of observations	205	205	205	205
"R-squared"	0.361	0.356	0.319	0.808
BIC	585.768			
Hypothesis:				
β^{\wedge} state capture (party) =	can't reject	reject**	-	-
β^{\wedge} state capture (protest)				

Source: author's calculations. *Notes.* Electoral district is used as an unit of observation. During the 2003 parliamentary elections there were 225 electoral districts in total. The number of observations is reduced due to the absence of data on corruption. Participation in elections and the results for parties are estimated simultaneously. Columns present the results for a particular party and for a participation in elections. Explanatory variables are given in rows. The party of power ("United Russia") is used as a base party. Standard errors are in parentheses. *, **, and *** stand for 10, 5, and 1 percent significance levels, respectively. The choice of SUR is justified since the Breusch-Pagan test for independent equations ($\chi^2(6) = 313.906^{***}$) rejects the null hypothesis of independence of residuals across the equations.

Table 2a: Sensitivity Check for the Estimation Results from the 2003
(Integral CPI is Used to Control for Corruption)

	Anti-Reform	Pro-Reform	Protest Voting	Participation
	(1)	(2)	(3)	(4)
Integral CPI	20.087 (13.584)	-11.158 (28.298)	-8.386 (14.080)	10.929** (4.536)
Ln(Unemployed)	-0.908** (0.375)	1.129 (0.781)	-0.496 (0.389)	-0.145 (0.125)
Ln(State Employed)	1.756 (1.620)	-3.711 (3.374)	0.174 (1.679)	1.044* (0.541)
Ln(Privately Employed)	3.199* (1.682)	-0.696 (3.504)	0.531 (1.743)	0.846 (0.562)
Ln(Out of the Labor Force)	-3.088 (3.146)	6.390 (6.553)	-0.679 (3.260)	-1.854* (1.050)
Integral CPI*Ln(Unemployed)	1.937** (0.932)	-3.309* (1.941)	0.960 (0.966)	0.217 (0.311)
Integral CPI*Ln(State Employed)	-4.780 (3.784)	10.525 (7.882)	-0.739 (3.921)	-2.038 (1.263)
Integral CPI*Ln(Privately Employed)	-5.177 (3.491)	4.774 (7.273)	-0.071 (3.619)	-2.242* (1.166)
Integral CPI*Ln(Out of the Labor Force)	6.781 (6.361)	-15.907 (13.250)	2.878 (6.593)	2.877 (2.124)
Ln (Real GRP per capita)	-0.464*** (0.159)	-0.844** (0.332)	-0.513*** (0.165)	0.147*** (0.053)
Ln (Number of Students)	0.227** (0.109)	-0.548** (0.227)	-0.092 (0.113)	0.081** (0.036)
Ln (Number of Pensioners)	-1.250** (0.594)	-4.059*** (1.238)	-1.667*** (0.616)	0.808*** (0.198)
Ln (Number of Registered Voters)	0.257 (0.472)	3.044*** (0.984)	0.855* (0.489)	0.927*** (0.158)
Share of Urban Population	-0.990** (0.450)	4.026*** (0.938)	0.368 (0.467)	-0.595*** (0.150)
Moscow	-0.447* (0.270)	0.738 (0.563)	0.145 (0.280)	0.120 (0.090)
Constant	-5.632 (7.284)	-0.751 (15.175)	5.344 (7.550)	-7.505*** (2.432)
Number of observations	157	157	157	157
"R-squared"	0.337	0.437	0.155	0.624
BIC	332.094			
Hypothesis:				
$\hat{\beta}$ integral CPI (party) =	reject**	can't reject	-	-
$\hat{\beta}$ integral CPI (protest)				

Source: author's calculations. Notes. Electoral district is used as an unit of observation. During the 2003 parliamentary elections there were 225 electoral districts in total. The number of observations is reduced due to the absence of data on corruption. Participation in elections and the results for parties are estimated simultaneously. Columns present the results for a particular party and for a participation in elections. Explanatory variables are given in rows. The party of power ("United Russia") is used as a base party. Standard errors are in parentheses. **, *, and *** stand for 10, 5, and 1 percent significance levels, respectively. The choice of SUR is justified since the Breusch-Pagan test for independent equations ($\chi^2(6) = 299.273***$) rejects the null hypothesis of independence of residuals across the equations.

Table 3a: Sensitivity Check for the Estimation Results from the 2003
(Both State Capture Index and Integral CPI are Included)

	Anti-Reform	Pro-Reform	Protest Voting	Participation
	(1)	(2)	(3)	(4)
State Capture	-0.377 (0.330)	-0.612 (0.695)	-0.742** (0.338)	0.194* (0.111)
Integral CPI	0.044 (0.154)	0.423 (0.324)	0.170 (0.158)	0.153*** (0.052)
Ln(Unemployed)	-0.058 (0.142)	0.114 (0.299)	-0.008 (0.146)	-0.053 (0.048)
Ln(State Employed)	-0.389 (0.535)	-0.427 (1.125)	-0.146 (0.548)	0.045 (0.179)
Ln(Privately Employed)	0.700 (0.461)	1.113 (0.970)	0.682 (0.472)	-0.293* (0.155)
Ln(Out of the Labor Force)	1.142 (1.061)	1.924 (2.230)	0.297 (1.085)	0.109 (0.356)
Ln (Real GRP per capita)	-0.440*** (0.147)	-0.636** (0.310)	0.213 (0.151)	0.028 (0.049)
Ln (Number of Students)	-0.082 (0.141)	-0.686** (0.295)	-0.346** (0.144)	0.032 (0.047)
Ln (Number of Pensioners)	-1.932*** (0.577)	-4.992*** (1.213)	-1.724*** (0.591)	0.450** (0.193)
Ln (Number of Registered Voters)	0.303 (0.463)	2.427** (0.973)	1.044** (0.474)	0.895*** (0.155)
Share of Urban Population	-1.364*** (0.410)	3.404*** (0.861)	0.376 (0.419)	-0.693*** (0.137)
Moscow	-0.125 (0.260)	0.740 (0.547)	0.448* (0.267)	0.106 (0.087)
Constant	5.056* (2.869)	1.362 (6.031)	0.340 (2.936)	-1.056 (0.962)
Number of observations	154	154	154	154
"R-squared"	0.320	0.426	0.170	0.602
BIC	302.352			
Hypothesis:				
$\beta^{\text{statecapture}}$ =	can't reject	can't reject	reject**	can't reject
$\beta^{\text{integral CPI}}$				

Source: author's calculations. Notes. Electoral district is used as an unit of observation. During the 2003 parliamentary elections there were 225 electoral districts in total. The number of observations is reduced due to the absence of data on corruption. Participation in elections and the results for parties are estimated simultaneously. Columns present the results for a particular party and for a participation in elections. Explanatory variables are given in rows. The party of power ("United Russia") is used as a base party. Standard errors are in parentheses. *, **, and *** stand for 10, 5, and 1 percent significance levels, respectively. The choice of SUR is justified since the Breusch-Pagan test for independent equations ($\chi^2(6) = 273.269^{***}$) rejects the null hypothesis of independence of residuals across the equations.

Table 4a: Sensitivity Check for the Estimation Results from the 1999
(State Capture Index is Used to Control for Corruption)

	Anti-Reform	Pro-Reform	Protest Voting	Participation
	(1)	(2)	(3)	(4)
State Capture	0.639 (2.280)	-7.975** (3.906)	-7.773*** (2.873)	0.461 (0.667)
Ln(Unemployed)	0.448* (0.233)	0.995** (0.399)	0.832*** (0.293)	-0.177*** (0.068)
Ln(State Employed)	-1.270*** (0.439)	-1.908** (0.752)	-1.567*** (0.553)	0.421*** (0.128)
Ln(Privately Employed)	-0.150 (0.230)	0.237 (0.395)	0.351 (0.290)	-0.028 (0.067)
Ln(Out of the Labor Force)	1.676** (0.676)	0.920 (1.158)	1.947** (0.852)	-0.083 (0.198)
State Capture*Ln(Unemployed)	-1.028* (0.536)	-3.225*** (0.917)	-2.603*** (0.675)	0.409*** (0.157)
State Capture*Ln(State Employed)	0.024 (1.071)	3.598* (1.835)	3.893*** (1.350)	-0.402 (0.313)
State Capture*Ln(Privately Employed)	0.123 (0.545)	0.259 (0.934)	0.159 (0.687)	-0.067 (0.159)
State Capture*Ln(Out of the Labor Force)	0.853 (1.099)	0.659 (1.882)	-0.532 (1.384)	0.056 (0.321)
Ln(Real GRP per capita)	-0.198** (0.080)	0.259* (0.137)	0.059 (0.101)	-0.001 (0.023)
Ln(Students)	-0.138* (0.081)	-0.114 (0.138)	-0.601*** (0.102)	0.043* (0.024)
Ln(Pensioners)	-0.647** (0.298)	-1.012** (0.511)	-1.708*** (0.376)	0.808*** (0.087)
Ln(Number of Registered Voters)	-0.010 (0.045)	-0.003 (0.077)	-0.014 (0.057)	0.013 (0.013)
Share of Urban Population	-1.282*** (0.250)	2.390*** (0.428)	1.265*** (0.314)	-0.352*** (0.073)
Moscow	-0.462** (0.190)	-0.799** (0.325)	-0.907*** (0.239)	0.074 (0.055)
Constant	4.606*** (1.469)	3.276 (2.516)	4.671** (1.851)	0.680 (0.429)
Number of observations	205	205	205	205
"R-squared"	0.394	0.593	0.414	0.858
BIC	379.799			
Hypothesis:				
β state capture (party) =	reject***	can't reject	-	-
β state capture (protest)				

Source: author's calculations. Notes. Electoral district is used as an unit of observation. During the 1999 parliamentary elections there were 224 electoral districts in total. The number of observations is reduced due to the absence of data on corruption. Participation in elections and the results for parties are estimated simultaneously. Columns present the results for a particular party and for a participation in elections. Explanatory variables are given in rows. The parties positioned as parties of power ("Otechestvo" and "Yedinstvo") are used as a base party. Standard errors are in parentheses. *, **, and *** stand for 10, 5, and 1 percent significance levels, respectively. The choice of SUR is justified since the Breusch-Pagan test for independent equations ($\chi^2(6) = 166.154^{***}$) rejects the null hypothesis of independence of residuals across the equations.

Table 5a: SUR Estimation of the 2003 Voting Results by Size
(State Capture Index is Used to Control for Corruption)

	Communist Party	Liberal Democratic Party	NPU "Motherland" ("Rodina")	RDP "Apple" ("Yabloko")	Union of Right Forces	Other Parties	Against All	Participation
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
State Capture	19.997** (9.977)	18.935* (11.035)	8.097 (12.271)	-4.974 (18.545)	-20.266 (17.141)	4.211 (9.612)	-1.625 (11.124)	3.734 (2.901)
Ln(Unemployed)	-0.728** (0.357)	0.480 (0.395)	-0.272 (0.439)	-0.634 (0.664)	-1.141* (0.613)	-0.424 (0.344)	0.471 (0.398)	0.039 (0.104)
Ln(Employed at Small Enterprise)	0.199 (0.339)	1.731*** (0.375)	0.881** (0.417)	0.153 (0.630)	-1.070* (0.582)	0.385 (0.326)	1.129*** (0.378)	-0.061 (0.099)
Ln(Employed at Medium or Large Enterprise)	2.090** (0.876)	2.339** (0.969)	-0.865 (1.078)	0.752 (1.629)	0.234 (1.505)	1.614* (0.844)	-0.180 (0.977)	0.227 (0.255)
Ln(Out of the Labor Force)	-1.445** (0.571)	-4.132*** (0.631)	-2.746*** (0.702)	-1.072 (1.061)	-0.152 (0.980)	-2.424*** (0.550)	-3.196*** (0.636)	0.283* (0.166)
State Capture* Ln(Unemployed)	2.562** (1.168)	-0.364 (1.292)	1.557 (1.437)	2.891 (2.171)	2.829 (2.010)	0.956 (1.125)	-1.356 (1.302)	-0.448 (0.340)
State Capture* Ln(Employed at Small Enterprise)	0.841 (1.210)	-3.154** (1.338)	-1.014 (1.488)	1.319 (2.249)	4.520** (2.078)	0.239 (1.166)	-2.411* (1.349)	-0.348 (0.352)
State Capture* Ln(Employed at Medium or Large Enterprise)	-6.991** (3.133)	-4.238 (3.465)	-3.172 (3.854)	-1.907 (5.823)	0.883 (5.382)	-2.777 (3.018)	1.223 (3.493)	-0.314 (0.911)
State Capture* Ln(Out of the Labor Force)	2.556*** (1.449)	5.293*** (1.603)	2.249 (1.782)	0.360 (2.693)	-3.109 (2.489)	2.291 (1.396)	2.216 (1.616)	0.210 (0.421)
Included:	Ln (Real GRP per capita); Ln (Students); Ln (Pensioners); Ln (Number of Registered Voters); Share of Urban Population; Moscow; Constant							
Number of observations	205	205	205	205	205	205	205	205
"R-squared"	0.332	0.564	0.559	0.379	0.378	0.366	0.497	0.837
BIC	1228.835							
Hypothesis:								
β state capture (party) =	reject**	reject**	can't reject	can't reject	can't reject	can't reject	-	-
β state capture (against all)								

Source: author's calculations. Notes. Electoral district is used as an unit of observation. During the 2003 parliamentary elections there were 225 electoral districts in total. The number of observations is reduced due to the absence of data on corruption. Participation in elections and the results for parties are estimated simultaneously. Columns present the results for a particular party and for a participation in elections. Explanatory variables are given in rows. The party "United Russia" is used as a base party. Standard errors are in parentheses. *, **, and *** stand for 10, 5, and 1 percent significance levels, respectively. The choice of SUR is justified since the Breusch-Pagan test for independent equations ($\chi^2(28) = 1526.315^{***}$) rejects the null hypothesis of independence of residuals across the equations.

Table 6a: SUR Estimation of the 2003 Voting Results by Size
(Integral CPI is Used to Control for Corruption)

	Communist Party	Liberal Democratic Party	NPU "Motherland" ("Rodina")	RDP "Apple" ("Yabloko")	Union of Right Forces	Other Parties	Against All	Participation
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Integral CPI	-9.522 (10.653)	-1.741 (8.448)	-36.556*** (14.074)	37.810* (22.908)	12.569 (19.369)	11.910 (9.315)	-6.282 (11.401)	5.965* (3.154)
Ln(Unemployed)	0.922*** (0.339)	1.247*** (0.269)	0.751* (0.448)	2.560*** (0.729)	2.244*** (0.616)	0.802*** (0.296)	0.835** (0.363)	-0.180* (0.100)
Ln(Employed at Small Enterprise)	1.372*** (0.336)	2.107*** (0.266)	0.966** (0.444)	3.037*** (0.722)	2.150*** (0.611)	1.207*** (0.294)	1.210*** (0.359)	-0.216** (0.099)
Ln(Employed at Medium and Large Enterprise)	-0.665 (0.601)	0.104 (0.477)	-4.433*** (0.795)	-1.385 (1.293)	-1.103 (1.093)	0.293 (0.526)	-1.779*** (0.644)	0.325** (0.178)
Ln(Out of the Labor Force)	-3.443*** (0.941)	-2.854*** (0.746)	-3.279*** (1.243)	-0.123 (2.023)	-4.655*** (1.711)	-2.490*** (0.823)	-3.273*** (1.007)	0.624** (0.279)
Integral CPI* Ln(Unemployed)	-2.085*** (0.746)	-2.153*** (0.591)	-1.888* (0.985)	-5.404*** (1.604)	-5.319*** (1.356)	-2.342*** (0.652)	-1.945** (0.798)	0.099 (0.221)
Integral CPI* Ln(Employed at Small Enterprise)	-2.464*** (0.817)	-3.738*** (0.648)	-0.933 (1.079)	-6.530*** (1.757)	-4.208*** (1.486)	-2.338*** (0.714)	-3.140*** (0.874)	-0.095 (0.242)
Integral CPI* Ln(Employed at Medium and Large Enterprise)	1.431 (1.582)	1.591 (1.255)	8.209*** (2.091)	0.028 (3.403)	2.223 (2.877)	-0.384 (1.384)	2.712 (1.693)	-1.402*** (0.468)
Integral CPI* Ln(Out of the Labor Force)	4.945*** (1.669)	2.682** (1.323)	0.035 (2.205)	0.508 (3.588)	2.056 (3.034)	1.857 (1.459)	2.291 (1.786)	0.621 (0.494)
Included:	Ln (Real GRP per capita); Ln (Students); Ln (Pensioners); Ln (Number of Registered Voters); Share of Urban Population; Moscow; Constant							
Number of observations	157	157	157	157	157	157	157	157
"R-squared"	0.501	0.600	0.506	0.367	0.505	0.409	0.370	0.738
BIC	534.772							
Hypothesis:								
$\beta_{\text{integral CPI (party)}}$ =	can't reject	can't reject	reject***	reject**	can't reject	reject*	-	-
$\beta_{\text{integral CPI (against all)}}$								

Source: author's calculations. Notes. Electoral district is used as an unit of observation. During the 2003 parliamentary elections there were 225 electoral districts in total. The number of observations is reduced due to the absence of data on corruption. Participation in elections and the results for parties are estimated simultaneously. Columns present the results for a particular party and for a participation in elections. Explanatory variables are given in rows. The party "United Russia" is used as a base party. Standard errors are in parentheses. *, **, and *** stand for 10, 5, and 1 percent significance levels, respectively. The choice of SUR is justified since the Breusch-Pagan test for independent equations ($\chi^2(28) = 1236.342^{***}$) rejects the null hypothesis of independence of residuals across the equations.

Table 7a: SUR Estimation of the 1999 Voting Results by Size
(State Capture Index is Used to Control for Corruption)

	IRP "Unity" ("Yedinstvo")	Communist Party	Liberal Democratic Party	RDP "Apple" ("Yabloko")	Union of Right Forces	Other Parties	Against All	Participation
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
State Capture	4.342 (10.983)	1.658 (9.355)	-2.830 (11.758)	-9.190 (9.777)	-0.700 (5.299)	1.030 (9.469)	1.288 (8.810)	-1.454 (1.283)
Ln(Unemployed)	1.444** (0.619)	1.178** (0.527)	1.810*** (0.663)	1.866*** (0.551)	1.560*** (0.524)	1.029* (0.534)	1.712*** (0.497)	-0.185** (0.072)
Ln(Employed at Small Enterprise)	2.482*** (0.470)	1.845*** (0.400)	2.615*** (0.503)	2.050*** (0.418)	2.286*** (0.398)	1.923*** (0.405)	2.446*** (0.377)	-0.081 (0.055)
Ln(Employed at Medium or Large Enterprise)	1.031 (1.586)	0.083 (1.351)	0.177 (1.698)	-2.491* (1.412)	-0.142 (1.343)	0.586 (1.368)	-0.023 (1.272)	0.185 (0.185)
Ln(Out of the Labor Force)	0.872 (1.825)	1.061 (1.555)	1.479 (1.954)	1.663 (1.625)	0.215 (1.545)	-0.072 (1.574)	0.102 (1.464)	0.258 (0.213)
State Capture* Ln(Unemployed)	-3.189** (1.429)	-3.220*** (1.217)	-5.168*** (1.530)	-4.678*** (1.272)	-4.834*** (1.210)	-2.980** (1.232)	-5.085*** (1.147)	0.502*** (0.167)
State Capture* Ln(Employed at Small Enterprise)	-4.346*** (1.108)	-3.090*** (0.944)	-5.029*** (1.186)	-3.607*** (0.986)	-3.558*** (0.938)	-3.309*** (0.955)	-4.484*** (0.889)	0.159 (0.129)
State Capture* Ln(Employed at Medium or Large Enterprise)	4.837 (3.880)	4.656 (3.305)	8.525** (4.153)	8.911** (3.454)	5.666* (3.285)	3.616 (3.347)	5.892* (3.112)	0.093 (0.453)
State Capture* Ln(Out of the Labor Force)	-1.797 (3.278)	-1.813 (2.792)	-2.981 (3.506)	-3.536 (2.918)	-0.460 (2.776)	0.061 (2.827)	-0.403 (2.630)	-0.461 (0.383)
Included:	Ln (Real GRP per capita); Ln (Students); Ln (Pensioners); Ln (Number of Registered Voters); Share of Urban Population; Moscow; Constant							
Number of observations	205	205	205	205	205	205	205	205
"R-squared"	0.525	0.428	0.522	0.326	0.413	0.400	0.412	0.841
BIC	1079.402							
Hypothesis:								
$\beta_{state\ capture\ (party)} =$	can't reject	can't reject	can't reject	reject**	can't reject	can't reject	-	-
$\beta_{state\ capture\ (against\ all)}$								

Source: author's calculations. Notes. Electoral district is used as an unit of observation. During the 1999 parliamentary elections there were 224 electoral districts in total. The number of observations is reduced due to the absence of data on corruption. Participation in elections and the results for parties are estimated simultaneously. Columns present the results for a particular party and for a participation in elections. Explanatory variables are given in rows. The party "Otechestvo" is used as a base party. Standard errors are in parentheses. **, * and *** stand for 10, 5, and 1 percent significance levels, respectively. The choice of SUR is justified since the Breusch-Pagan test for independent equations ($\chi^2(28) = 3288.041^{***}$) rejects the null hypothesis of independence of residuals across the equations.

Chapter 2

Can Religion Insure against Aggregate Shocks to Happiness? The Case of Transition Countries

Abstract

This paper focuses on the effects of reforms and religion on happiness in transition economies. Previous literature suggests that religiousness insures happiness against various individual stressful life events. This phenomenon is well-explored in developed countries but rarely studied in Post-Communist countries where religion was officially suppressed for a long period. These countries have undergone significant economic transformations over the past two decades. Using cross-sectional Life in Transition Survey data and historical data on religions, I examine if religion insures against aggregate shocks to happiness during the transition period. Additionally, the endogeneity of religion is taken into account. The findings suggest that economic reforms may have both positive and negative effects on happiness. Religiousness indeed insures happiness against positive and negative effects of economic reforms during the transition period. Also, religiousness affects perceptions of economic and political situations in these countries positively.

Keywords: happiness, life satisfaction, religion, reforms, transition

JEL Classification: C21, I31, P20, Z12

2.1. Introduction¹

It is accepted that religiousness affects happiness positively (see Ellison, 1991; Clark and Lelkes, 2006 and 2009, among others). Previous literature also suggests that religiousness insures happiness against various individual stressful life events. These idiosyncratic shocks such as changes in individual income, employment or social status decrease a person's happiness, and religious people are likely to recover from such shocks faster because of different values, attitudes, and norms in their life (see Clark and Lelkes, 2006; Dehejia et al., 2007, among others). This phenomenon is well-explored in developed countries but rarely studied in Post-Communist countries where religion was officially suppressed for a long period. The role of religion on happiness in these countries is yet underexplored.²

Transition countries have undergone significant economic transformations over the past two decades. Nowadays individuals in these economies still report lower levels of life satisfaction than people from developed market economies (see Table 1 and Sanfey and Teksoz, 2007; Easterlin, 2009; among others). This suggests that although transition economies demonstrate stable economic growth and progress in the market reform process (EBRD, 2006), the adaptation of people to the transition period and to the new conditions of a market economy is not yet complete. The reasons for a decrease in life satisfaction during the transition period have not been studied extensively in previous literature. Existing studies relate the decrease with high inflation, income inequality and poor quality of governance (Sanfey and Teksoz, 2007), the fall in real GDP per capita during transition (Easterlin, 2009), high macroeconomic instability, insufficient provision of public goods, and human capital depreciation in transition countries (Guriev and Zhuravskaya, 2009). The research on developed countries also

¹The terms "life satisfaction" and "happiness" are used in the paper interchangeably. Throughout the paper I refer to the definition of happiness as given by Veenhoven in the World Database of Happiness: "*happiness is the degree to which an individual judges the overall quality of her/his life as-a-whole favorably*" (<http://worlddatabaseofhappiness.eur.nl>; Bibliography, Ch.2).

²One of the few studies, which examine the effects of religion on happiness in transition is Lelkes (2006), who uses data from Hungary and argues that. freedom in ideology does not affect the happiness of religious people.

underlines the idea that life satisfaction is negatively affected by economic instability. For example, high unemployment, income inequality and inflation tend to have negative effects on life satisfaction (see Clark and Oswald, 1994; Di Tella et al., 2001, among others).

Using cross-sectional Life in Transition Survey data and historical data on religions, I examine if religion insures happiness against the aggregate shocks. In this paper, under aggregate shocks I understand the reforms during the transition period such as privatization, price liberalization, enterprise restructuring and others. To overcome the problem of potential endogeneity in the relationship between happiness and religion, I use historical religious propensity as an instrumental variable for religion. The potential endogeneity problem in the relationship between happiness and religion has been discussed in recent studies, for instance, by Dehejia et al. (2007), Clark and Lelkes (2009), but not yet addressed in research. Thus, major contribution of this paper is twofold: (i) the endogeneity of religion is addressed and controlled for; (ii) the insurance effect of religion in case of aggregate shocks is explored.

The findings suggest that economic reforms may have both positive and negative effects on happiness. However, religiousness insures happiness against these effects. Also, religiousness affects perceptions of the current economic and political situation in these countries positively. Different responses of religious and non-religious people to aggregate happiness shocks may imply their different attitudes toward reforms. This may cause differences in the implementation of reforms between countries with different religious propensity. The analysis of this paper sheds light on the differences in happiness levels between developed market economies and transition countries, and differences in the speed of reform implementation in transition countries.

The rest of the paper is organized as follows. The next section presents a review of relevant literature. In further sections I describe the methodology and identification strategy, data and discuss estimation results.

2.2. Literature

Traditionally, economists have not given much weight to self-reported individual well-being, leaving this area for philosophical, psychological, and sociological research. Data on self-reported happiness were used for the first time in economic research by Easterlin (1974, 1995) who investigated the relationship between income, economic growth, and well-being. The economics of happiness as a discipline began to develop rapidly after Kahnemann's (1997) paper, which underlined the usefulness of data on self-reported happiness for measuring individual experienced utility. Nowadays, happiness data are widely used in empirical economic research as a measure of individual utility, which was previously investigated mostly from a theoretical standpoint.

To date, different aspects of life satisfaction and its determinants in developed countries have been investigated within economics. The most prominent research analyzes happiness and relative income, income inequality, religiousness, unemployment, the role of democracy, crime, health, education, urbanization, inflation, GDP and GDP growth; climate changes and environmental pollution.³ According to existing literature, socio-demographic and economic determinants of happiness are typically the same for transition as for developed countries: among other determinants, happiness is found to have a U-shape in age; women and wealthier, educated, employed, married people are likely to be happier.⁴

The first theoretical model of religious participation was by Azzi and Ehrenberg (1975), who constructed a multi-period utility maximization problem where a household (both wife and husband) makes decisions about work, leisure, and a non-market

³For details about the mentioned effects, see Alesina et al., 2004; Clark and Oswald, 1994; Di Tella et al, 2001 and 2003; Dynan and Ravina, 2007; Easterlin, 1995 and 2001; Ellison, 1991; Ferrer-i Carbonell, 2005; Frey and Stutzer, 2000; Gerdtham and Johannesson, 2001; Hadaway, 1978; Luttmer, 2005; Michalos and Zumbo, 2000; Morawetz et al., 1977; Powdthavee, 2005; Rehdanz and Maddison, 2005; Welsch, 2007; Winkelmann and Winkelmann, 1998, among others.

⁴The determinants of happiness during economic transition in a cross-country setting are explored by Hayo and Seifert (2003), Hayo (2007), Sanfey and Teksoz (2007), Easterlin (2009), and Guriev and Zhuravskaya (2009). The determinants of happiness to be similar to developed countries are found by studies that use a single transition country for the analysis (for instance, Russia by Veenhoven, 2001 and Graham et al., 2004; Kyrgyzstan by Namazie and Sanfey, 2001; Hungary in Lelkes, 2006; Kazakhstan by Kalyuzhnova and Kambhampati, 2008; among others).

activity such as participation in religious activities. The authors also discuss the determinants of religious participation and reasons for becoming religious. First, as the authors point out, an individual believes that participation in religious activities today brings him/her additional after-life satisfaction. Second, an individual may enjoy socializing with people who attend religious organizations. Religious participation in this case brings him/her additional life satisfaction today. Third, an individual may attend a religious organization because of social pressure from the community in which he/she lives. In this case it is not determined what effect religious participation has on today's happiness.

After a theoretical paper by Azzi and Ehrenberg (1975), researchers began empirical investigation of the link between happiness and religiousness. One of the earliest empirical studies is from Ellison (1991), who tests different aspects of religious activity. The author finds that the effect of church attendance on happiness is indirect. Church attendance strengthens religious belief, which directly influences happiness. Religiousness also decreases a loss in happiness during negative life events. This finding was further tested by scholars (Clark and Lelkes, 2006; Dehejia et al., 2007; among others), and Clark and Lelkes (2006) defined it as the "insurance effect" of religiousness. As Clark and Lelkes (2006) argue, religiousness insures against idiosyncratic life events such as unemployment or marital separation, though the strength of insurance effect of religiousness on happiness may differ across different religious denominations. The authors explain the insurance role of religion by arguing that during stressful life events, the support that a person receives from a religious organization, or from religious belief itself, is a substitute for social support. Dehejia et al. (2007) discuss the insurance effects of religion further. The authors using U.S. data argue that religious participation, particularly contributions to religious organizations and church attendance, partially helps to insure consumption and happiness against changes in individual income. The authors underline that this has an important policy implication for public social insurance: in regions with high religious participation, people may need less public insurance. Again the insurance effect of religion is found to be

effective for idiosyncratic shocks to happiness only.

Recent empirical studies address various aspects of the relationship between religion, happiness and economic indicators. For instance, Guiso et al. (2003) find a positive correlation between religiousness and attitudes towards economic growth. Mookerjee and Beron (2005), using data on happiness across 60 countries (both developed and developing), find that greater religious diversity in a country decreases average happiness in a country. This implies that mono-religious countries report on average higher happiness levels than poli-religious countries.

One of the studies on the relationship between religion and happiness in transition is Lelkes (2006) who uses data from a Hungarian survey. As the author argues, more economic freedom increases the happiness of entrepreneurs, but more freedom in ideology does not affect the happiness of religious people. Another finding of this paper is that religious people are, on average, happier than those who are not religious, and the religious are less affected by changes in their individual income because income is not as highly placed among the main sources of their happiness. Clark and Lelkes (2009), while discussing the relationship between religiosity and life satisfaction, take into account both individual religiosity (churchgoing, praying, self-identification with some religious denomination) and average religiosity in a region (percentage of religious people in a region). The authors find positive correlation not only between individual religiosity and individual life satisfaction, but also between average religiosity in a region and individual life satisfaction. As Clark and Lelkes (2009) point out, both religious people and atheists are likely to be happier in more religious regions.

However, a potential endogeneity problem exists in the relationship between happiness and religion that has not yet been closely investigated in the literature. Indeed, being religious includes socialization and the support of the religious community (as pointed out by Azzi and Ehrenberg, 1975), some time constant personal unobservable characteristics, including, for instance, optimism or pessimism, love for socializing activities, trustfulness, and other characteristics that may influence personal happiness

are likely to be correlated with personal religiousness too. There is also a potential temporal endogeneity: when facing tragic life events that reduce individual happiness, people are likely to become religious in an effort to support themselves during these events. There are few studies that address the religion endogeneity problem in a context different from studying the relationship between happiness and religion. For instance, Gruber (2005) studies the relationship between religious participation and various economic and social indicators, such as education, income, disability, marriage, and divorce, and uses the ancestral density in a given region as an instrument for religious density, which is the number of people in a given area who share the same religious denomination with the respondent. This instrument predicts religious density well: predicted religious density is strongly correlated with religious participation. Therefore, this instrument is valid for the estimation of the effects of religious participation on economic outcomes. Recently Bettendorf and Dijkgraaf (2010) also employed a simultaneous equations approach to correct for endogeneity of religion in studying the effect of religion on income. The potential endogeneity problem in the relationship between happiness and religion has been discussed in recent studies, for instance, by Dehejia et al. (2007), Clark and Lelkes (2009), but not yet addressed in research.

2.3. Methodology

2.3.1. Features of Subjective Data

The analysis of previous research underlines several potential econometric problems than should be taken into account while conducting this research. Some scholars doubt the use of subjective data for analysis due to possible measurement errors and, thus, biased estimates. Frey and Stutzer (2002a,b) suggest the following main criteria for happiness data that should be used in research: reliability, validity, consistency, and possibility of comparisons across nations. Reliability stands for stable correla-

tion between different measurements of happiness. As shown by previous studies, different measures of happiness (life satisfaction) are correlated well with each other (Di Tella et al., 2003; Blanchflower and Oswald, 2004; Konow and Earley, 2007). Self-reported subjective well-being very closely approximates individuals' experienced utility (Kahnemann, 1997). That is, happiness measures are valid because a person is able to identify and compare his or her own happiness without errors. Consistency in happiness implies that not only does a person judge him/herself as happy, but social interactions confirm it. Happiness can be compared across nations (Di Tella and MacCulloch, 2006). Previous research has shown that all the criteria are satisfied for the self-reported data on happiness (for review and details, see Frey and Stutzer, 2002a,b).

Happiness and life satisfaction is usually assessed by these types of questions: 'Taking all things together, would you say you are very happy, quite happy, not very happy, or not at all happy?'; 'All things considered, how satisfied are you with your life as a whole these days on the ten-point scale: 1 = dissatisfied, and 10 = satisfied; percent 'satisfied'. Thus, true individual happiness is not observed; it is a latent variable. Instead, we observe a discrete categorical variable which is measured on a ranking scale. For such cases, ordered probit or ordered logit estimation techniques are applied (Maddala, 1983). In the LiTS data used for this research, the question about happiness is as follows: 'To what extent do you agree with the following statement: All things considered, I am satisfied with my life now, Strongly disagree = 1, Disagree=2, Neither disagree nor agree =3, Agree=4, Strongly agree=5'.

The other concern is that happiness can not be compared across individuals because everyone judges his or her own happiness according to his or her own valuation scale (for instance, 8 out of 10 points on a happiness scale for one individual may have a different value for another individual). However, most happiness studies, including this research, tend to investigate various determinants of happiness, but do not seek to express the absolute value of individual happiness. Frey and Stutzer (2002b) point

out that for such a purpose, self-reported data on individual happiness are suitable.⁵ Moreover, as described above, a growing body of literature suggests meaningful relationships between happiness and major individual and country level factors.

2.3.2. Model

In this research I am interested in the effects of reforms and religion on happiness and perceptions of economic and political situations. The system of structural equations in which happiness and religion are considered as latent variables is formulated similarly to Bettendorf and Dijkgraaf (2010). In contrast to Bettendorf and Dijkgraaf (2010), I include happiness, not income, as one of the endogenous variables. The resulting system of structural equations expressed using the matrix notation (as in Kmenta, 1997) is

$$\mathbf{B}\mathbf{y}_{itc} + \mathbf{\Gamma}\mathbf{x}_{itc} = \mathbf{u}_{itc}, \quad (2.1)$$

where subscript i stands for individual, subscript t stands for time, and subscript c stands for country. \mathbf{B} is a $G \times G$ matrix of coefficients on endogenous variables; \mathbf{y}_{itc} is a $G \times 1$ vector of endogenous variables; $\mathbf{\Gamma}$ is a $G \times K$ matrix of coefficients on exogenous variables; \mathbf{x}_{itc} is a $K \times 1$ vector of exogenous variables; and \mathbf{u}_{itc} is a $G \times 1$ vector of stochastic disturbances. A detailed representation of the system is included in the Appendix. There are $G = 11$ endogenous variables and $K = 34$ exogenous variables. The vector \mathbf{y}_{itc} includes $happiness_{itc}$ which is self-reported individual life satisfaction; $religion_i$ which is self-reported individual religiousness; and 9 interaction terms $religion_i \times reform_{tc}$. The vector \mathbf{x}_{itc} includes 9 variables $reform_{tc}$ accounting for aggregate shocks in transition, including large scale privatization, small scale privatization, enterprise restructuring, price liberalization, trade and foreign exchange

⁵Clark et al. (2008) question homogeneity in the effect of income on financial satisfaction. The authors model intercept and slope heterogeneity in this relationship and suggest that marginal utility of income is different across individuals. However, accounting for both intercept and slope heterogeneity and distinguishing between them is yet technically difficult in the analysis of the determinants of happiness and is left for future research.

system reform, competition policy reform, banking reform and interest rate liberalization, securities markets and non-bank financial institutions, and overall infrastructure reform; $histrelig_c$ which is historical religious propensity in country c ; 9 interaction terms $histrelig_c \times reform_{tc}$; and observable individual socioeconomic characteristics, such as age, gender, education, marital and employment status, etc.

True variable $happiness_{itc}^*$ is latent and its ordered alternatives are observed: with low $happiness_{itc}^*$ a person is not satisfied with life; with $happiness_{itc}^* > \mu_1$ a person is more satisfied with life; with $happiness_{itc}^* > \mu_2$ a person is even more satisfied with life, and so on. Thresholds μ_j are increasing and unknown:

$$happiness_{itc} = j \text{ if } \mu_{j-1} < happiness_{itc}^* \leq \mu_j; \mu_0 = -\infty \text{ and } \mu_m = \infty, j = 1..J \quad (2.2)$$

The observed choice of being religious, $religion_i$, is a discrete variable, while true religiousness, $religion_i^*$, is latent:

$$religion_i = \begin{cases} 1 & \text{if } religion_i^* > 0 \\ 0, & \text{otherwise} \end{cases} \quad (2.3)$$

To study the direct effects of reforms and religion, I include variables $reform_{tc}$ and $religion_i$ into the equation for happiness. The interaction terms between $religion_i$ and $reform_{tc}$ are introduced to study indirect or insurance effects of religion and to test whether religion insures individuals against aggregate shocks. This approach is similar to the one suggested by Clark and Lelkes (2006) and Dehejia et al. (2007) for studying the insurance effect of religion in the case of idiosyncratic shocks. If the direct effect of a particular aggregate shock, i.e., the coefficient on $reform_{tc}$, is negative, then a positive sign on the respective interaction term implies an insurance effect of religion; if the direct effect of the event is positive, then, symmetrically, the sign on its interaction term with religion should be negative. Three specifications are used to account for three different dependent variables: life satisfaction, perception of current economic situation, and perception of current political situation.

To receive the system of reduced form equations, I solve the structural form equations for the values of endogenous variables (Kmenta, 1997). The resulting system is

$$\mathbf{y}_{itc} = \mathbf{\Pi}\mathbf{x}_{itc} + \boldsymbol{\nu}_{itc}, \quad (2.4)$$

where $\mathbf{\Pi}$ is a $G \times K$ matrix of reduced form coefficients and $\boldsymbol{\nu}_{itc}$ is a $G \times 1$ vector of reduced form disturbances.

2.3.3. Estimation Strategy

The estimation of the happiness equation, which is the first one in the system of the structural equation without controlling for the endogeneity of $religion_i$ and interaction terms $religion_i * reform_{tc}$, may result in biased and inconsistent estimators. The main source of this potential bias is in simultaneity and unobserved individual heterogeneity. As found in previous literature, religiousness affects happiness. But there is also a potential temporal effect of happiness on religiousness: unhappy people are likely to become religious, especially during stressful life events. Thus, reverse causality has a negative impact and the estimates, without controlling for endogeneity, are biased downwards. Some of the individual unobservable time constant characteristics captured by the error term u_{itc} may also bias the estimators due to a correlation with $religion_i$ and thus with interaction terms $religion_i * reform_{tc}$. Intuitively, this correlation may be positive (e.g., a more trustful person is likely to be religious) leading to estimators being biased downwards. However, a variety of individual psychological characteristics may affect both religiousness and happiness at the same time to different degrees. These characteristics may also affect differently the propensity to belong to a particular religious denomination. Therefore, the sign of correlation and thus the direction of bias may be ambiguous. For example, it is hard to determine who (pessimists or optimists, less sociable or more sociable persons) are likely to become religious and whether or not these characteristics affect different religious denomina-

tions differently.

The approach to the estimation of the model is as follows. First, the Hausman (1978) endogeneity test is performed to check whether $religion_i$ and, thus, interaction terms $religion_i * reform_{tc}$ are indeed endogenous. I separately estimate the "reduced form" for $religion_i$ and every interaction term $religion_i * reform_{tc}$ by regressing it on all exogenous variables, obtain the residuals, and then include the vector of obtained residuals into the happiness equation and test for significance. I perform the test for joint significance of residuals with the null hypothesis that religion and all interaction terms with it are exogenous, and with the alternative hypothesis that at least one suspected variable is endogenous. I also separately test the significance of each residual term included in the structural equation. If the coefficients on residuals are significant, then the null hypothesis of respective variable exogeneity is rejected.

To solve the problem of $religion_i$ endogeneity, an appropriate measure for religiousness that is not person specific is needed. As an instrument for individual religiousness $religion_i$, I propose historical religious propensity in a given country, $histrelig_c$, which is the number of people of a given religion in a given country at the beginning of the 20th century. As IVs for the interaction terms I use the interaction terms of the mentioned IV for $religion_i$ and the variables $reform_{tc}$, i.e., $histrelig_c * reform_{tc}$. A valid instrument should be correlated with personal religiousness, i.e., $cov(religion_i, histrelig_c) \neq 0$, but not correlated with unobservable happiness characteristics, i.e., $cov(histrelig_c, u_{itc}) = 0$.

The historical religious propensity is likely to be correctly excluded from the happiness equation. According to the psychological study by Lyubomirsky et al. (2005), personal happiness depends on genetics, individual activities and life circumstances, including current demographic and environmental factors, life status and personal life history. Thus, current happiness is not altered by historical environmental characteristics, such as historical religious propensity in our case. Historical presence of religious people in a region is also unlikely to be correlated with unobservable current

individual happiness characteristics.⁶ Since it is not possible to test for IV validity in an exactly identified case (see, e.g., Cameron and Trivedi, 2005), I assume that chosen IVs are valid by construction. Tomka (1994) and Need and Evans (2001) point out that personal religiousness in post-communist countries was suppressed by communism to a lesser extent than the functioning of religious institutions. Thus, historical and current religious propensity are likely to be correlated and the instruments are not weak.⁷ To insure that instrumental variables are chosen correctly, I also check that partial correlations of chosen instruments and endogenous variables are non-zero and perform the first stage F-test for weak IV as proposed by Stock and Yogo (2005).

Given that proposed instruments are not weak and valid, in the first stage I estimate the system of reduced form equations to get the predicted value of $religion_i$, $\hat{religion}_i$ and the predicted values for each of the 9 interaction terms $religion_i * reform_{tc}$. In the second stage, I use $\hat{religion}_i$ and all the $\hat{religion}_i * reform_{tc}$ to estimate the structural form of happiness equation by ordered logit (as described by, e.g., Cameron and Trivedi, 2005) bootstrapping standard errors to correct them for using $\hat{religion}_i$ and $\hat{religion}_i * reform_{tc}$ instead of $religion_i$ and $religion_i * reform_{tc}$.

In a cross-country analysis, the variance of the error term is never the same across different countries due to the different effects of explanatory variables, i.e., the homoskedasticity assumption fails (Wooldridge, 2002). To account for this, I use heteroskedasticity robust standard errors. Standard errors are also clustered by region to account for possible similarities in the characteristics of people living in the same region. This results in 60 clusters according to the number of regions in the data which

⁶It could be expected that the repression of religion under communism or transfers of people from religious to non-religious regions made formerly religious regions less happy. In this case the fall of communism could potentially bring extra happiness to formerly religious regions. Thus, historical religious propensity may not be correctly excluded from equation (1) in this case or be endogenous as is personal religiousness. However, as pointed out by Easterlin (2009), all transition countries experienced a similar decline in happiness after the fall of communism. Therefore, the potential depressive effect of communism on happiness in formerly religious regions and happiness recovery after the fall of communism may be neglected.

⁷As Putnam (1993) shows, trust across Italian regions today is perfectly explained by trust centuries ago. This argument may also explain the correlation between current and historical religious propensity since the propensity to trust and the propensity to be religious are likely to be related to each other.

is large enough (more than 50) to have no inference problem (Donald and Lang, 2007).

First, all the models are estimated without interaction terms, then interaction terms are added. It should be noted, however, that dropping interaction terms out of the model could result in biased and inconsistent estimators due to misspecification. Also, the model without interaction terms has a different interpretation of coefficients on the main effects (Ozer-Balli and Sorensen, 2010). To check the robustness of the results to the choice of estimation method, I redefine the dependent variable into a zero/one (all dissatisfied/all satisfied) scale and estimate the linear probability model (LPM) with the same IVs. In a correctly specified LPM with interaction terms, the coefficients on the main effects of reforms are the partial derivatives of the respective variable evaluated when religion is equal to zero, while in a model without the interaction terms the partial derivatives are evaluated when religion is equal to its mean.

2.4. Data

The main dataset used in this research is the Life in Transition Survey (LiTS). It was jointly conducted in 2006 by the EBRD and World Bank and covers all 29 transition countries.⁹ The survey is based on nationally representative samples with 1000 respondents selected randomly from each transition country and contains information on attitudes, values and socioeconomic characteristics of respondents. A further advantage of this survey is the possibility to treat it as a panel because the information is collected in such a way that individuals are asked about their past experiences and attitudes, about their lives before, throughout, and after the transition. The survey initially contains 29000 observations. I exclude Tajikistan from research since the sample for Tajikistan in LiTS contains 70 percent of Christians, which is not consis-

⁹In line with general classification the transition countries are Albania, Armenia, Azerbaijan, Belarus, Bosnia and Herzegovina, Bulgaria, Croatia, the Czech Republic, Estonia, FYR Macedonia, Georgia, Hungary, Kazakhstan, the Kyrgyz Republic, Latvia, Lithuania, Moldova, Mongolia, Montenegro, Poland, Romania, Russia, Serbia, the Slovak Republic, Slovenia, Tajikistan, Turkey, Ukraine, and Uzbekistan.

tent with the WCD data, which shows that the major denomination in Tajikistan is Muslim. I also exclude Turkey from the initial sample due to the unavailability of EBRD transition indicators for this country. Finally, I exclude observations where a respondent refused to answer the question or where values for major variables are missing (mainly, for the variables that serve as dependent in my specifications). Finally, the sample used in this study is made up of approximately 19 to 27 thousand observations, depending on specification and dependent variable used.

The data on historical IV for religion are from the World Christian Database (WCD), which provides statistical information on all world religions. Particularly, the variables of interest are the number of adherents of a given religion in a given country in the year 1900, and the adherents of a given religion in a given country in 1900 as a per cent of total population. The data are collected on the basis of church statistics, government censuses, United Nations statistics, and the estimates of informed experts and published by Brill, Netherlands.

I also use the EBRD transition indicators as the data on reforms (aggregate shocks) in transition countries. The EBRD transition indicators have the range from 1 to 4.3 (4+) where a higher index reflects greater progress in the corresponding area of reforms, including large scale privatization, small scale privatization, enterprise restructuring, price liberalization, reforms of trade and foreign exchange system, a reform of competition policy, banking reform and interest rate liberalization, reforms of securities markets and non-bank financial institutions, and overall infrastructure reform.

All the summary statistics for the data and detailed description of variables used for analysis are presented in Tables 2-4. Table 2 describes all the variables used for the estimation. Dependent variables are life satisfaction, perception of economic situation and perception of political situation. Explanatory variables are a respondent's religion (or its IV, the number of people of a given religion in a given country in 1900), EBRD transition indicators, a respondent's age and age squared divided by 100, gender, variables for education, number of children, variables accounting for idiosyncratic

shocks (adopted children, marriage and divorce during the transition period 1990-2006), household size, household consumption expenditures, and employment status. Table 3 presents descriptive statistics for the data. Table 4 gives the distribution of answers for the dependent variables. For all dependent variables more than 7 percent of respondents answer that they are strongly satisfied with life or the economic and political situation in their country, 27 to 36 percent are satisfied, 15 to 23 percent are neither dissatisfied nor satisfied, 21 to 29 percent are not satisfied, 10 to 20 percent are not satisfied at all. In the case when dependent variables are redefined into a zero/one scale, 41 to 57 percent are satisfied.

2.5. Results and Discussion

This section discusses the direct and indirect effects of religion and reforms on life satisfaction, perceptions of the economic and political situation, and the robustness check of obtained results. The main results for all three specifications are presented in Tables 5 to 10. Table 5 presents estimation results when life satisfaction has been used as a dependent variable. Tables 6 and 7 present the results for perceptions of the current economic and political situation as dependent variables, respectively. For each specification I present the estimation results of ordered logit without instruments for religion and interaction terms and ordered logit with instruments to account for endogeneity of religion and interaction terms. As the robustness check, Tables 8 to 10 include the results of three specifications estimated by a linear probability model with and without IVs.

Since the results of endogeneity tests (see Table A1 in the Appendix) reject the exogeneity hypothesis of religion and interaction terms in all three specifications, ordered logit estimation without instruments produces biased and inconsistent results due to the endogeneity problem. Notably, the results of joint endogeneity tests hold for both ordered logit and LPM. For this reason I do not discuss in detail the estimation results without instruments. According to the results of the first stage F-test, the

proposed instruments are also not weak (see Table A2 in the Appendix). Thus, the results of the ordered logit and LPM with instruments are unbiased and consistent.

In Tables A3 to A5 in the Appendix, the changes in predicted probabilities of different replies to questions about life satisfaction and perceptions of economic and political situations for different values of religiousness are presented.

The positive coefficient's estimates in the ordered logit imply that with an increase in the respective regressor, the probability of the lowest category ("strongly disagree") decreases and the probability of the highest category ("strongly agree") increases. The signs of the ordered logit coefficient's estimates are inconclusive regarding the effects of regressors on the predicted probabilities of middle categories (Greene, 2003; Hayo, 2007). To understand the effects of the explanatory variables on the predicted probabilities of middle categories, I also compute the marginal effects of the explanatory variables. The marginal effects for the ordered logit without controlling for endogeneity of religion and interaction terms are presented in Tables A6a to A8a in the Appendix. The marginal effects for the ordered logit with the use of instruments to control for endogeneity of religion and interaction terms are presented in Tables A6b to A8b in the Appendix.

2.5.1. Religion, Reforms and Life Satisfaction: Direct Effects

The estimation of the model without interaction terms produces biased and inconsistent estimators due to the misspecification of model. Particularly, in all the specifications without interaction terms, the coefficient on religion is significantly biased downwards and the effect of religion on life satisfaction and perceptions of the economic and political situation is negative. As shown in Tables 5 to 7, while controlling for endogeneity of religion and interaction terms, the effect of religion is positive in all three specifications: life satisfaction, and perceptions of economic and political situations. As described above, a positive effect of religion on life satisfaction has been found in previous literature, but without controlling for endogeneity (see Elli-

son, 1991; Clark and Lelkes, 2006 and 2009; Lelkes, 2006, among others). Higher religiousness increases the predicted probabilities of being satisfied and strongly satisfied (see Tables A3 to A5 in the Appendix). As such, a hypothetical move from 0 to 100 percent religious increases the probability of being satisfied and strongly satisfied, on average, by 3 and 2 percentage points, respectively. This result is even stronger for perceptions of the political situation: higher religiousness implies about a 6 percent increase in satisfaction with the political situation. The increase in religiousness by 1 standard deviation increases the probability of being strongly satisfied with life by 8.9% and satisfied with life by 25.1%. The marginal effects of religion in other specifications are less than in the case of life satisfaction, but still sound: 7.7% and 21.8% for perceptions of the economic situation and 5.3% and 14.6% for perceptions of the political situation (see Tables A6b to A8b in the Appendix).

Previous literature suggests negative effects of some macroeconomic variables (e.g., unemployment, income inequality or inflation) on happiness (see Clark and Oswald, 1994; Di Tella et al., 2001, among others). The effects of economic reforms on life satisfaction have not been yet investigated in previous studies. Since transition period reforms affected various dimensions of economic, political and social life in transition countries and life satisfaction is affected by macroeconomic instabilities, I expect that reforms in transition countries are likely to affect life satisfaction too. Such expectation is also in line with the data and arguments of previous research (for instance, Sanfey and Teksoz, 2005; Lelkes, 2006, Easterlin, 2009) that in the transition period life satisfaction decreased.

As the results of this study indicate, while life satisfaction and perceptions of economic and political situations are negatively affected by large scale privatization and positively by price liberalization (the effect of price liberalization is not significant in the case of life satisfaction), other reforms differ in their effects on life satisfaction and perceptions of economic and political situations. Life satisfaction is negatively affected by competition policy reform and infrastructure reform and positively by small scale privatization, governance reform and enterprise restructuring. Perceptions

of the economic situation are negatively affected by small scale privatization and positively by trade and foreign exchange system reform, competition policy reform and infrastructure reform. Perceptions of the political situation are negatively affected by trade and foreign exchange system reform and the results are not significant for the remaining reforms.

Consistently with most findings in happiness literature, I find that life satisfaction has an U-shape in age; life satisfaction increases with the degree of education; household size positively affects life satisfaction; divorce decreases life satisfaction and marriage increases it (this result is not significant for perceptions of the economic and political situation); and the unemployed are less satisfied than those who are employed.

2.5.2. Religion, Reforms and Life Satisfaction: Interaction Effects

As highlighted above, some reforms may have negative effects on life satisfaction and perceptions of economic and political situations and others may have positive effects. As expected, most interaction effects are positive if the direct effect of reform is negative, and negative if the direct effect of reform is positive. It implies that religion can insure life satisfaction against negative effects of large scale privatization, competition policy reform and overall infrastructure reform. Perceptions of economic and political situations can be insured against the negative effect of small scale privatization.

However, the effect holds in opposite direction as well. In the case of life satisfaction, the interaction effects of small scale privatization, governance reform and enterprise restructuring are negative, while the direct effects of these reforms are positive. In the case of perceptions of the economic situation, significant negative interaction effects are found for trade and foreign exchange system reform, competition policy reform, and overall infrastructure reform. In the case of perceptions of the political situation, significant negative interaction effects are found for price liberal-

ization and competition policy reform. For other reforms, the sign of the interaction term is typically opposite the sign of the direct effect but is not significant.

Thus, the main finding of this paper is that religion indeed insures against some aggregate shocks: religious people experience lesser decreases in life satisfaction and perceptions than those who are not religious people. The effect holds in the opposite direction as well. If the main effect of reform is positive, the life satisfaction and perceptions of religious persons tend to benefit less than non-religious. Therefore, when aggregate shocks occur, religion generally tends to reduce the vulnerability of life satisfaction and perceptions.

2.5.3. Robustness Check

To demonstrate that the results are not driven by the choice of estimation method, I also present the results obtained by using the linear probability model. Redefining the dependent variables into a zero/one scale (all dissatisfied/all satisfied) reduces the variation in life satisfaction and perceptions of economic and political situations, but allows the robustness of results obtained by using ordered logit to be checked. The coefficients of the linear probability model are comparable to the joint marginal effects obtained by using ordered logit for the categories. However, given the aggregation of the dependent variable, one would expect noisier and lower coefficient estimates obtained by using the linear probability model in comparison to ordered logit.

As shown in Tables 8 to 10, the results obtained by using the linear probability model are in fact less significant than in the case of ordered logit, especially in the specifications for perceptions of economic and political situations. The magnitude of coefficient estimates from the LPM for most variables is lower than the marginal effects of explanatory variables on the probabilities of being satisfied and strongly satisfied when summed up. In the case when instrumental variables are used, the size of this difference between LPM and ordered logit is typically comparable with the marginal effect on the middle category "neither disagree, nor agree". The observations on this

category are excluded when a dependent variable for LPM is constructed (see Tables A6b to A8b in the Appendix). Thus, the magnitudes of the effects of explanatory variables on dependent variables are robust to the estimation method used.

As the results indicate, in all three specifications the signs of estimated coefficients obtained by using the linear probability model are the same as the signs of marginal effects obtained by using ordered logit for the categories "agree" and "strongly agree" with a few exceptions, where, nonetheless, the coefficients are not significant in either methods. Thus, the insurance effect of religion against aggregate shocks to life satisfaction and perceptions of economic and political situations is also found when the linear probability model is used.

2.5.4. Effects of Controlling for Endogeneity

The estimation of the model without controlling for endogeneity of religion and interaction terms produces biased and inconsistent estimators. As shown in Tables 5 and 8, the estimation of ordered logit and LPM without controlling for endogeneity produces the estimate of the coefficient on religion which is, as expected, biased downwards in the specification for life satisfaction. Also, in the specifications for perceptions of economic and political situations, marginal effects of religion become greater after controlling for endogeneity. Thus, without controlling for endogeneity, the estimate of the coefficient on religion is biased downwards. It implies that the source of endogeneity may not solely be in the time constant unobservables that may affect both happiness and religiousness, as described above, but also in simultaneity between happiness and religion. There may also be a temporal reaction: unhappy people are more likely to become religious during stressful life events. Thus, when endogeneity is not controlled for (in both ordered logit and LPM), this negative reverse causality between happiness and religiousness biases the coefficients downwards.

The interaction coefficients in all specifications also change after controlling for endogeneity. For most interaction terms, the absolute value of coefficients increases

in all specifications in both ordered logit and LPM. Thus, controlling for endogeneity makes the insurance effects stronger. This is an expected change since direct effects of religion also increase.

Controlling for endogeneity of religion and interaction terms changes the estimated coefficients in LPM and marginal effects in ordered logit in the same direction, though the size of the change for some variables is less when LPM is used. This difference may again be because of the aggregation of the dependent variable.

2.6. Conclusion

Religiousness insures happiness against individual stressful life events and, therefore, religious people are likely to adapt more easily to idiosyncratic shocks and to feel happier in periods of change (Clark and Lelkes, 2006; Lelkes, 2006; Dehejia et al., 2007). This paper accounts for the endogeneity of religion in the happiness equation and considers major economic reforms in transition countries as aggregate shocks to happiness. As underlined in the paper, the insurance effect of religion found in previous literature for idiosyncratic shocks is also applicable to overcoming the effects of aggregate shocks. I argue that religion may also help to insure against negative aggregate shocks to life satisfaction and perceptions of economic and political situations. Religion also helps to reduce the vulnerability of life satisfaction and perceptions in the case of positive shocks. This result is robust to the choice of estimation method and holds in all three specifications in the paper.

As this paper argues, individuals in more religious countries are likely to be generally more satisfied with life, and with the economic and political situation. Higher religiousness is associated with a strong increase in the probability of being satisfied or strongly satisfied: an increase in religiousness by 1 standard deviation increases the probability of being strongly satisfied with life by 8.9% and satisfied with life by 25.1%. In a hypothetical case, in which the entire population of a country shifts from 0 to 100 percent religious, the share of satisfied and strongly satisfied individuals would

increase, on average, by 3 and 2 percentage points, respectively. Thus, the happiness ranking of countries in which more people are religious is likely to be higher.

A decrease in happiness observed in transition countries over the transition period may be due to the negative effects of reforms, e.g., large scale privatization and overall infrastructure reform. Because of the insurance effect of religion found in this paper, life satisfaction and perceptions of economic and political situations in transition countries with higher shares of religious people are likely to be less vulnerable as a result of reforms. This may also imply that reforms in more religious countries have a higher likelihood of gaining popular support and of faster implementation than in less religious countries.

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2.A. Appendix

2.A.1. Model Details

The system of structural equations is

$$\begin{aligned}
 & \mathbf{B}\mathbf{y}_{itc} + \mathbf{\Gamma}\mathbf{x}_{itc} = \mathbf{u}_{itc}, \text{ where} \\
 \mathbf{y}_{itc} = & \begin{bmatrix} happiness_{itc}^* \\ religion_i^* \\ religion_i^* \times reform1_{tc} \\ \vdots \\ religion_i^* \times reform9_{tc} \end{bmatrix}, \quad \mathbf{x}_{itc} = \begin{bmatrix} reform1_{tc} \\ \vdots \\ reform9_{tc} \\ histrelig_c \\ histrelig_c \times reform1_{tc} \\ \vdots \\ histrelig_c \times reform9_{tc} \\ socecon1_{itc} \\ \vdots \\ socecon15_{itc} \end{bmatrix}, \quad \mathbf{u}_{itc} = \begin{bmatrix} u_{1itc} \\ u_{2itc} \\ u_{3itc} \\ \vdots \\ u_{11itc} \end{bmatrix} \\
 & \quad \quad \quad (11 \times 1) \quad \quad \quad (34 \times 1) \quad \quad \quad (11 \times 1) \\
 \mathbf{B} = & \begin{bmatrix} 1 & -\beta_{12} & -\beta_{13} & \cdots & -\beta_{1 \ 11} \\ -\beta_{21} & 1 & 0 & \cdots & 0 \\ -\beta_{31} & 0 & 1 & & \vdots \\ \vdots & \vdots & & \ddots & 0 \\ -\beta_{11 \ 1} & 0 & \cdots & 0 & 1 \end{bmatrix}, \\
 & \quad \quad \quad (11 \times 11) \\
 \mathbf{\Gamma} = & \begin{bmatrix} -\gamma_{11} & \cdots & -\gamma_{19} & 0 & \cdots & 0 & -\gamma_{1 \ 20} & \cdots & -\gamma_{1 \ 34} \\ 0 & \cdots & 0 & -\gamma_{2 \ 10} & \cdots & -\gamma_{2 \ 19} & -\gamma_{2 \ 20} & \cdots & -\gamma_{2 \ 34} \\ 0 & \cdots & 0 & -\gamma_{3 \ 10} & \cdots & -\gamma_{3 \ 19} & -\gamma_{3 \ 20} & \cdots & -\gamma_{3 \ 34} \\ \vdots & & \vdots & \vdots & & \vdots & \vdots & & \vdots \\ 0 & \cdots & 0 & -\gamma_{11 \ 10} & \cdots & -\gamma_{11 \ 19} & -\gamma_{11 \ 20} & \cdots & -\gamma_{11 \ 34} \end{bmatrix} \\
 & \quad \quad \quad (11 \times 34)
 \end{aligned}$$

The system of reduced form equations is

$$\begin{aligned}
 & \mathbf{y}_{itc} = \mathbf{\Pi}\mathbf{x}_{itc} + \mathbf{\nu}_{itc}, \text{ where} \\
 \mathbf{\Pi} = & \begin{bmatrix} \pi_{11} & \pi_{12} & \cdots & \pi_{1 \ 34} \\ \pi_{21} & \pi_{22} & \cdots & \pi_{2 \ 34} \\ \vdots & \vdots & & \vdots \\ \pi_{11 \ 1} & \pi_{11 \ 2} & \cdots & \pi_{11 \ 34} \end{bmatrix}, \quad \mathbf{\nu}_{itc} = \begin{bmatrix} \nu_{1itc} \\ \nu_{2itc} \\ \vdots \\ \nu_{11itc} \end{bmatrix} \\
 & \quad \quad \quad (11 \times 34) \quad \quad \quad (11 \times 1)
 \end{aligned}$$

2.A.2. Main Tables

Table 1: World Happiness

Country	Very Happy (%)	Satisfied (%)	Country	Very Happy (%)	Satisfied (%)
Denmark	44.9	90.8	Japan	27.8	51.4
Finland	24.1	88.3	Peru	30.8	49.8
Colombia	47.1	88.1	Republic of Korea	9.6	46.3
Iceland	46.6	86.7	Poland	17.4	45.6
Puerto Rico	53.3	85.2	Viet Nam	48.6	44.1
Switzerland	39.9	84.8	Egypt	18.1	43.4
Netherlands	45.9	84.2	Portugal	18.0	43.4
Northern Ireland	46.1	84.0	Algeria	16.1	43.3
Sweden	36.6	82.1	South Africa	38.5	42.0
Austria	35.4	81.7	Hungary	16.7	41.8
Canada	44.0	80.7	Slovakia	8.0	41.7
Belgium	42.4	80.4	Estonia	6.5	41.6
Germany West	18.9	79.6	Turkey	34.5	40.6
Ireland	42.0	79.0	Romania	3.6	40.2
Luxembourg	35.4	78.9	Montenegro	8.1	39.7
United States	39.0	78.7	Serbia	12.0	39.4
Norway	30.0	78.4	Morocco	30.8	38.4
Germany East	20.3	78.0	Bosnia and Herzegovina	21.7	37.9
Mexico	56.5	77.7	Jordan	12.8	37.0
Australia	42.9	76.9	Uganda	26.2	35.9
New Zealand	33.3	75.9	Latvia	6.6	34.8
Great Britain	32.5	75.7	Bangladesh	14.8	31.9
Spain	20.1	74.7	Azerbaijan	11.3	31.2
Italy	18.2	74.6	Iraq	13.2	30.9
Malta	31.1	72.5	Lithuania	3.8	30.9
Singapore	28.7	70.6	Macedonia	19.1	30.7
Venezuela	56.8	69.9	Armenia	6.3	28.5
Slovenia	15.2	68.7	Russian Federation	6.0	28.0
Argentina	33.0	68.4	Georgia	11.7	24.6
France	31.3	65.1	Ukraine	5.8	23.7
Israel	27.2	65.0	Belarus	4.9	23.4
Saudi Arabia	44.3	64.5	Tanzania	56.2	20.6
Nigeria	66.8	63.7	Moldova	6.0	18.5
Chile	36.0	62.6	Zimbabwe	19.9	18.0
Brazil	22.0	62.5	Bulgaria	7.8	16.8
Greece	18.2	62.3	Pakistan	19.6	8.3
Indonesia	20.4	60.9	Albania	9.7	n/a
Czech Republic	10.9	53.7	<i>Sources:</i> World Values Survey (2005), World Database of Happiness (2005). <i>Notes:</i> Countries are ranked according to the percentage of those satisfied with life. Transition countries are shaded. Happiness measure: ‘Taking all things together, would you say you are very happy, quite happy, not very happy, or not at all happy?’ Life satisfaction measure: ‘All things considered, how satisfied are you with your life as a whole these days?’ Ten-point scale: 1 = dissatisfied, and 10 = satisfied; percent ‘satisfied’-scores 7-10.		
Philippines	38.4	53.5			
Croatia	12.8	53.5			
China	11.5	52.9			
India	25.3	52.8			
Kyrgyzstan	19.8	52.5			
Iran	23.0	51.5			

Table 2: Variables Description

Variable	Detailed Description
Life Satisfaction	To what extent do you agree with the following statement: All things considered, I am satisfied with my life now, Strongly disagree = 1, Disagree=2, Neither disagree nor agree =3, Agree=4, Strongly agree=5. Source: LiTS
Perception of Current Economic Situation	To what extent do you agree with the following statement: The economic situation in this country is better today than around 1989, Strongly disagree = 1, Disagree=2, Neither disagree nor agree =3, Agree=4, Strongly agree=5. Source: LiTS
Perception of Current Political Situation	To what extent do you agree with the following statement: The political situation in this country is better today than around 1989, Strongly disagree = 1, Disagree=2, Neither disagree nor agree =3, Agree=4, Strongly agree=5. Source: LiTS
Life Satisfaction, redefined into 0/1	Dummy variable =1 if the respondent answered Agree=4, Strongly agree=5 on the question about life satisfaction, and 0 if the answer was Strongly disagree = 1, Disagree=2. Observations with the answer Neither disagree nor agree=3 are dropped. Source: author's calculations
Perception of Current Economic Situation, redefined into 0/1	Dummy variable =1 if the respondent answered Agree=4, Strongly agree=5 on the question about the perception of current economic situation, and 0 if the answer was Strongly disagree = 1, Disagree=2. Observations with the answer Neither disagree nor agree=3 are dropped. Source: author's calculations
Perception of Current Political Situation, redefined into 0/1	Dummy variable =1 if the respondent answered Agree=4, Strongly agree=5 on the question about the perception of current political situation, and 0 if the answer was Strongly disagree = 1, Disagree=2. Observations with the answer Neither disagree nor agree=3 are dropped. Source: author's calculations
Ln (Number of people of given religion in a given country in 1900)	Data based on church statistics, government censuses, United Nations statistics, and estimates of informed experts. Source: WCD, author's calculations.
Religion	Dummy variable =1 if the respondent answered Buddhist, Jewish, Christian, Muslim, Other to the question "What is your religion?", and 0 if the answer was Atheistic/Agnostic/None. Source: LiTS, author's calculations
Large, Small Scale Privatization, Enterprise Restructuring, Price Liberalization, Trade and Foreign Exchange System, Competition Policy, Banking Reform and Interest Rate Liberalization, Securities Market and Non-Bank Financial Institutions, Overall Infrastructure Reform	Change in corresponding EBRD transition index calculated as a difference between index score in 2006 and index score in 1989 for each transition country. EBRD transition indices have the range from 1 to 4.3 (4+) where the higher the index reflects higher progress in corresponding area of reforms (large scale privatization, small scale privatization, enterprise restructuring, price liberalization, trade and foreign exchange system, competition policy, banking reform and interest rate liberalization, securities markets and non-bank financial institutions, overall infrastructure reform). Source: EBRD transition indicators, author's calculations
Age	Age of respondent. Source: LiTS
Age Squared/100	Source: LiTS, author's calculations
Male	Dummy for the gender of respondent: Male 1, Female 0. Source: LiTS
Basic School	Dummy variable =1 if the highest degree that respondent obtained is basic education, and 0, otherwise. Source: LiTS
Secondary School	Dummy variable =1 if the highest degree that respondent obtained is secondary education, and 0, otherwise. Source: LiTS
Vocational/Professional School	Dummy variable =1 if the highest degree that respondent obtained is professional, vocational school/training, and 0, otherwise. Source: LiTS
Higher Degree (University, College)	Dummy variable =1 if the highest degree that respondent obtained is higher professional degree (university, college), and 0, otherwise. Source: LiTS
Postgraduate Degree	Dummy variable =1 if the highest degree that respondent obtained is postgraduate degree, and 0, otherwise. Source: LiTS
Children	Number of children less than 14 years old. Source: LiTS
Children Born/Adopted 1990-2006	Dummy variable =1 if respondent had a child (birth or adoption) during 1990-2006, and 0, otherwise. Source: LiTS, author's calculations
Married 1990-2006	Dummy variable=1 if respondent got married (lived in a couple) during 1990-2006, and 0, otherwise. Source: LiTS, author's calculations
Divorced 1990-2006	Dummy variable = 1 if respondent divorced during 1990-2006, and 0, otherwise. Source: LiTS, author's calculations
Household Size	Source: LiTS
Household Consumption Expenditures Equalized Using the Modified OECD Scales	Household consumption per month in USD. OECD-modified scales assign to each household a value in proportion to needs of every member: a value of 1 to the household head, of 0.5 to each additional adult member and of 0.3 to each child. Source: LiTS
Employment	Dummy variable =1 if respondent worked at least one hour during last 7 days, and 0, otherwise. Source: LiTS

Table 3: Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Life Satisfaction	27381	3.101	1.148	1	5
Perception of Current Economic Situation	25136	2.737	1.268	1	5
Perception of Current Political Situation	24312	2.811	1.227	1	5
Life Satisfaction, redefined into 0/1	20995	0.579	0.494	0	1
Perception of Current Economic Situation, redefined into 0/1	21187	0.416	0.493	0	1
Perception of Current Political Situation, redefined into 0/1	19157	0.445	0.497	0	1
Religion	27392	0.898	0.302	0	1
Ln (Number of people of given religion in a given country in 1900)	26403	14.018	2.209	3.912	17.9353
Large Scale Privatization	27392	2.179	0.786	0	3.000
Small Scale Privatization	27392	2.406	1.026	0	3.330
Governance and Enterprise Restructuring	27392	1.469	0.723	0	2.670
Price Liberalization	27392	2.510	0.957	0	3.330
Trade and Foreign Exchange System	27392	2.629	0.892	0	3.330
Competition Policy	27392	1.349	0.676	0	2.670
Banking Reform and Interest Rate Liberalization	27392	1.994	0.734	0	3.000
Securities Markets and Non-Bank Financial Institutions	27392	1.458	0.727	0	3.000
Overall Infrastructure Reform	27392	1.504	0.640	0	2.340
Age	27390	46.906	17.720	17	97
Age Squared/100	27390	25.142	17.655	2.890	94.090
Male	27392	0.416	0.493	0	1
Basic School	27392	0.185	0.389	0	1
Secondary School	27392	0.264	0.441	0	1
Vocational/Professional School	27392	0.304	0.460	0	1
Higher Professional Degree (University, College)	27392	0.184	0.387	0	1
Postgraduate Degree	27392	0.009	0.092	0	1
Number of children	27392	0.513	0.912	0	9
Children Born/Adopted between 1990-2006	27392	0.310	0.462	0	1
Married between 1990-2006	27392	0.246	0.431	0	1
Divorced between 1990-2006	27392	0.046	0.210	0	1
Household Size	27392	1.987	0.775	1	6.5
Household Consumption Expenditures Equalized Using the Modified OECD Scales	27329	7.529	0.894	0.9808	10.2519
Employment	27392	0.484	0.500	0	1

Source: LiTS, EBRD transition indicators, WCD, author's calculations. *Notes:* LiTS database initially contains 29000 observations from 29 countries. Observations with missing or uncertain answers to the questions about Life Satisfaction, Perception of Current Economic Situation, and Perception of Current Political Situation were removed from the database. Observations for Tajikistan were removed from the database due to inconsistency in religion data with WCD. Observations for Turkey were removed from the database due to absence of EBRD transition indicators. The number of observations slightly differs for different variables due to missing values.

Table 4: Distribution of answers for dependent variables

Answer	Frequency (obs.)	Percent	Cumulative
Life Satisfaction			
To what extent do you agree with the following statement:			
All things considered, I am satisfied with my life now			
(1) Strongly disagree	2836	10.36	10.36
(2) Disagree	6003	21.92	32.28
(3) Neither disagree nor agree	6386	23.32	55.60
(4) Agree	9876	36.07	91.67
(5) Strongly agree	2280	8.33	100
Total	27381	100	
Life Satisfaction, redefined			
(0) Strongly disagree and Disagree	8839	42.10	42.10
(1) Agree and Strongly agree	12156	57.90	100
Total	20995	100	
Perception of Current Economic Situation			
To what extent do you agree with the following statement:			
The economic situation in this country is better today than around 1989			
(1) Strongly disagree	5032	20.02	20.02
(2) Disagree	7335	29.18	49.20
(3) Neither disagree nor agree	3949	15.71	64.91
(4) Agree	6863	27.30	92.21
(5) Strongly agree	1957	7.79	100
Total	25136	100	
Perception of Current Economic Situation, redefined			
(0) Strongly disagree and Disagree	12367	58.37	58.37
(1) Agree and Strongly agree	8820	41.63	100
Total	21187	100	
Perception of Current Political Situation			
To what extent do you agree with the following statement:			
The political situation in this country is better today than around 1989			
(1) Strongly disagree	4310	17.73	17.73
(2) Disagree	6314	25.97	43.70
(3) Neither disagree nor agree	5155	21.20	64.90
(4) Agree	6736	27.71	92.61
(5) Strongly agree	1797	7.39	100
Total	24312	100	
Perception of Current Political Situation, redefined			
(0) Strongly disagree and Disagree	10624	55.46	55.46
(1) Agree and Strongly agree	8533	44.54	100
Total	19157	100	

Table 5: Religion and Life Satisfaction

	Dependent Variable: Life Satisfaction				
	[1]	[2]	[3]	[4]	[5]
Religion			0.808 ** (0.059)	-0.138 * (0.354)	1.381 *** (0.073)
Large Scale Privatization		-0.273 *** (0.088)	-0.988 *** (0.271)	-0.263 *** (0.095)	-2.593 *** (0.584)
Small Scale Privatization		0.026 (0.113)	-0.239 (0.187)	0.028 (0.112)	3.199 *** (1.005)
Governance and Enterprise Restructuring		-0.218 (0.145)	0.537 *** (0.193)	-0.215 (0.154)	3.107 *** (1.111)
Price Liberalization		0.191 (0.177)	0.184 (0.235)	0.210 (0.164)	0.340 (0.885)
Trade and Foreign Exchange System		-0.056 (0.066)	0.689 ** (0.314)	-0.063 (0.066)	-0.690 (1.530)
Competition Policy		0.345 *** (0.104)	0.340 (0.241)	0.310 *** (0.088)	-1.819 * (0.952)
Banking Reform and Interest Rate Liberalization		-0.328 *** (0.091)	-0.011 (0.151)	-0.327 *** (0.099)	-0.040 (0.844)
Securities Markets and Non-bank Institutions		0.639 *** (0.098)	0.150 (0.189)	0.672 *** (0.101)	0.862 (0.983)
Overall Infrastructure Reform		-0.223 ** (0.115)	-0.172 (0.190)	-0.253 ** (0.111)	-2.374 *** (0.859)
Religion*Large Scale Privatization		-	0.742 ** (0.298)	-	2.372 *** (0.622)
Religion*Small Scale Privatization		-	0.271 * (0.167)	-	-3.194 *** (1.012)
Religion*Governance and Enterprise Restructuring		-	-0.839 *** (0.233)	-	-3.433 *** (1.133)
Religion*Price Liberalization		-	-0.002 (0.221)	-	-0.253 (0.879)
Religion*Trade and Foreign Exchange System		-	-0.729 ** (0.318)	-	0.731 (1.558)
Religion*Competition Policy		-	-0.059 (0.282)	-	2.200 ** (0.988)
Religion*Banking Reform and Interest Rate Liberalization		-	-0.363 ** (0.158)	-	-0.235 (0.859)
Religion*Securities Markets and Non-Bank Financial Institutions		-	0.605 *** (0.203)	-	-0.292 (1.029)
Religion*Overall Infrastructure Reform		-	-0.039 (0.195)	-	2.134 ** (0.897)
Age Squared/100		-0.049 *** (0.004)	-0.064 *** (0.004)	-0.061 *** (0.004)	-0.063 *** (0.004)
Male		0.053 *** (0.004)	0.065 *** (0.004)	0.063 *** (0.004)	0.065 *** (0.004)
Basic School		-0.002 (0.026)	-0.015 (0.027)	-0.011 (0.028)	-0.034 (0.030)
Secondary School		0.012 (0.107)	0.123 (0.106)	0.109 (0.095)	0.124 (0.094)
Vocational/Professional School		0.318 *** (0.124)	0.408 *** (0.123)	0.391 *** (0.115)	0.425 *** (0.120)
Higher Professional Degree (University, College)		0.074 * (0.110)	0.198 * (0.108)	0.171 * (0.101)	0.194 * (0.106)
Postgraduate Degree		0.373 *** (0.116)	0.496 *** (0.114)	0.469 *** (0.113)	0.503 *** (0.117)
Number of Children		0.729 *** (0.130)	0.850 *** (0.130)	0.738 *** (0.123)	0.794 *** (0.136)
Children Born/Adopted between 1990-2006		0.066 (0.032)	0.019 (0.033)	0.026 (0.031)	0.026 (0.030)
Married between 1990-2006		-0.025 (0.051)	-0.020 (0.049)	-0.020 (0.050)	-0.012 (0.054)
Divorced between 1990-2006		0.115 *** (0.039)	0.134 *** (0.040)	0.122 *** (0.046)	0.123 *** (0.051)
Household Size		-0.438 *** (0.058)	-0.445 *** (0.054)	-0.436 *** (0.055)	-0.450 *** (0.054)
Household Consumption Expenditures Equalized Using the Modified OECD Scales		0.207 *** (0.030)	0.201 *** (0.030)	0.203 *** (0.030)	0.212 *** (0.031)
Employment		0.528 *** (0.034)	0.478 *** (0.033)	0.478 *** (0.042)	0.469 *** (0.039)
Number of Observations		27316	27316	26329	26329

Source: author's calculations. Notes: Estimated coefficients are reported in columns. In columns [2] and [3] no instruments are used; in column [4] religion is instrumented; in column [5] religion and all interaction terms are instrumented. The natural logarithm of the number of people of a given religious domination in a given country in 1900 is used as the IV for religion; interactions of respective variables with the IV for religion are used as IVs for interaction terms. Robust standard errors clustered by region are in parentheses; for ordered logit with IV, standard errors are bootstrapped. *, **, and *** stand for 10, 5, and 1 percent significance levels, respectively.

Table 6: Religion and Perception of Current Economic Situation

Dependent Variable: Perception of Economic Situation	Ordered Logit			Ordered Logit with IV		
	[1]	[2]	[3]	[4]	[5]	
Religion		-0.232 *** (0.064)	1.350 *** (0.377)	-0.254 *** (0.067)	1.339 *** (0.459)	
Large Scale Privatization		-0.974 *** (0.072)	-1.548 *** (0.352)	-0.967 *** (0.061)	-1.524 ** (0.620)	
Small Scale Privatization		0.339 *** (0.132)	-0.200 (0.224)	0.349 *** (0.129)	-0.897 *** (0.290)	
Governance and Enterprise Restructuring		-0.034 (0.097)	0.294 (0.405)	-0.050 (0.082)	-0.673 (0.554)	
Price Liberalization		0.552 *** (0.193)	0.339 * (0.203)	0.552 *** (0.184)	0.717 ** (0.285)	
Trade and Foreign Exchange System		-0.132 (0.108)	1.375 *** (0.351)	-0.155 (0.126)	0.663 (0.452)	
Competition Policy		0.348 *** (0.111)	0.572 (0.425)	0.339 *** (0.092)	1.529 *** (0.483)	
Banking Reform and Interest Rate Liberalization		-0.486 *** (0.108)	-0.848 *** (0.251)	-0.464 *** (0.109)	-0.566 (0.516)	
Securities Markets and Non-bank Institutions		0.319 *** (0.136)	0.841 *** (0.226)	0.301 *** (0.119)	0.219 (0.393)	
Overall Infrastructure Reform		0.433 *** (0.106)	0.168 (0.283)	0.448 *** (0.111)	2.083 *** (0.719)	
Religion*Large Scale Privatization		-	0.587 * (0.350)	-	0.575 (0.616)	
Religion*Small Scale Privatization		-	0.581 *** (0.203)	-	1.294 *** (0.268)	
Religion*Governance and Enterprise Restructuring		-	-0.400 (0.412)	-	0.546 (0.566)	
Religion*Price Liberalization		-	0.178 (0.177)	-	-0.229 (0.311)	
Religion*Trade and Foreign Exchange system		-	-1.529 *** (0.354)	-	-0.797 * (0.478)	
Religion*Competition Policy		-	-0.250 (0.415)	-	-1.216 *** (0.479)	
Religion*Banking Reform and Interest Rate Liberalization		-	0.378 (0.276)	-	0.084 (0.555)	
Religion*Securities Markets and Non-Bank Financial Institutions		-	-0.521 * (0.291)	-	0.103 (0.407)	
Religion*Overall Infrastructure Reform		-	0.306 (0.301)	-	-1.614 ** (0.690)	
Age		-0.041 *** (0.006)	-0.042 *** (0.006)	-0.040 *** (0.006)	-0.042 *** (0.006)	
Age Squared/100		0.040 *** (0.006)	0.042 *** (0.005)	0.040 *** (0.006)	0.042 *** (0.006)	
Male		-0.022 (0.023)	-0.024 (0.022)	-0.030 (0.020)	-0.028 (0.020)	
Basic School		-0.094 (0.091)	-0.086 (0.093)	-0.095 (0.094)	-0.092 (0.097)	
Secondary School		0.047 (0.101)	0.055 (0.104)	0.044 (0.102)	0.050 (0.105)	
Vocational/Professional School		-0.159 * (0.097)	-0.144 (0.101)	-0.161 * (0.096)	-0.148 (0.098)	
Higher Professional Degree (University, College)		0.108 (0.098)	0.125 (0.098)	0.102 (0.112)	0.120 (0.109)	
Postgraduate Degree		0.466 ** (0.214)	0.487 ** (0.210)	0.378 * (0.209)	0.397 * (0.213)	
Number of Children		0.016 (0.022)	0.011 (0.022)	0.011 (0.024)	0.003 (0.024)	
Children Born/Adopted between 1990-2006		0.102 *** (0.033)	0.099 *** (0.034)	0.107 *** (0.037)	0.102 *** (0.038)	
Married between 1990-2006		0.012 (0.030)	0.014 (0.031)	0.006 (0.028)	0.008 (0.030)	
Divorced between 1990-2006		-0.204 *** (0.053)	-0.206 *** (0.052)	-0.205 *** (0.052)	-0.202 *** (0.053)	
Household Size		0.152 *** (0.023)	0.151 *** (0.022)	0.156 *** (0.022)	0.152 *** (0.021)	
Household Consumption Expenditures Equalized Using the Modified OECD Scales		0.287 *** (0.028)	0.283 *** (0.027)	0.289 *** (0.033)	0.285 *** (0.032)	
Employment		0.165 *** (0.042)	0.160 *** (0.041)	0.162 *** (0.039)	0.161 *** (0.039)	
Number of Observations		25078	25078	24185	24185	24185

Source: author's calculations. Notes: Estimated coefficients are reported in columns. In columns [2] and [3] no instruments are used; in column [4] religion is instrumented; in column [5] religion and all interaction terms are instrumented. The natural logarithm of the number of people of a given religious domination in a given country in 1990 is used as the IV for religion; interactions of respective variables with the IV for religion are used as IVs for interaction terms. Robust standard errors clustered by region are in parentheses; for ordered logit with IV, standard errors are bootstrapped. *, **, and *** stand for 10, 5, and 1 percent significance levels, respectively.

Table 7: Religion and Perception of Current Political Situation

Dependent Variable: Perception of Current Political Situation	Ordered Logit			Ordered Logit with IV	
	[1]	[2]	[3]	[4]	[5]
Religion			0.732 ** (0.076)	-0.088 (0.081)	0.888 * (0.483)
Large Scale Privatization		-0.923 *** (0.064)	-1.063 *** (0.230)	-0.917 *** (0.066)	-0.844 *** (0.311)
Small Scale Privatization		0.404 *** (0.148)	-0.147 (0.205)	0.408 *** (0.146)	-0.466 (0.323)
Governance and Enterprise Restructuring		0.292 *** (0.087)	0.446 * (0.254)	0.284 *** (0.092)	0.012 (0.349)
Price Liberalization		0.543 *** (0.198)	0.629 ** (0.250)	0.554 *** (0.195)	1.307 *** (0.287)
Trade and Foreign Exchange System		-0.374 *** (0.109)	0.244 (0.313)	-0.389 *** (0.138)	-1.028 *** (0.411)
Competition Policy		-0.111 (0.113)	0.166 (0.234)	-0.139 (0.117)	0.481 (0.350)
Banking Reform and Interest Rate Liberalization		-0.046 (0.135)	-0.184 (0.149)	-0.034 (0.139)	0.467 (0.359)
Securities Markets and Non-bank Institutions		-0.013 (0.119)	0.525 *** (0.191)	-0.008 (0.101)	-0.159 (0.393)
Overall Infrastructure Reform		0.344 *** (0.115)	-0.137 (0.293)	0.349 *** (0.120)	1.061 (0.881)
Religion*Large Scale Privatization		-	0.151 (0.253)	-	-0.063 (0.316)
Religion*Small Scale Privatization		-	0.587 *** (0.186)	-	0.914 *** (0.290)
Religion*Governance and Enterprise Restructuring		-	-0.210 (0.246)	-	0.209 (0.357)
Religion*Price Liberalization		-	-0.131 (0.190)	-	-0.819 *** (0.271)
Religion*Trade and Foreign Exchange system		-	-0.606 ** (0.292)	-	0.677 (0.453)
Religion*Competition Policy		-	-0.295 (0.275)	-	-0.628 * (0.373)
Religion*Banking Reform and Interest Rate Liberalization		-	0.134 (0.215)	-	-0.527 (0.415)
Religion*Securities Markets and Non-Bank Financial Institutions		-	-0.548 ** (0.246)	-	0.154 (0.430)
Religion*Overall Infrastructure Reform		-	0.520 * (0.285)	-	-0.684 (0.890)
Age		-0.027 *** (0.005)	-0.028 *** (0.005)	-0.027 *** (0.006)	-0.028 *** (0.006)
Age Squared/100		0.027 *** (0.005)	0.028 *** (0.005)	0.027 *** (0.005)	0.028 *** (0.005)
Male		0.013 (0.018)	0.012 (0.017)	0.012 (0.022)	0.012 (0.022)
Basic School		0.006 (0.103)	0.010 (0.104)	0.006 (0.105)	0.006 (0.107)
Secondary School		0.206 ** (0.106)	0.208 ** (0.104)	0.198 ** (0.099)	0.203 ** (0.098)
Vocational/Professional School		-0.008 (0.103)	-0.002 (0.103)	-0.007 (0.100)	0.002 (0.100)
Higher Professional Degree (University, College)		0.326 *** (0.111)	0.332 *** (0.110)	0.322 *** (0.119)	0.335 *** (0.118)
Postgraduate Degree		0.833 *** (0.184)	0.838 *** (0.173)	0.830 *** (0.156)	0.843 *** (0.145)
Number of Children		0.021 (0.020)	0.018 (0.020)	0.018 (0.021)	0.012 (0.021)
Children Born/Adopted between 1990-2006		0.057 (0.036)	0.056 (0.037)	0.066 ** (0.033)	0.063 ** (0.034)
Married between 1990-2006		0.013 (0.037)	0.013 (0.038)	0.006 (0.031)	0.008 (0.032)
Divorced between 1990-2006		-0.153 ** (0.071)	-0.154 ** (0.069)	-0.152 ** (0.068)	-0.152 ** (0.066)
Household Size		0.180 *** (0.019)	0.179 *** (0.018)	0.179 *** (0.021)	0.176 *** (0.020)
Household Consumption Expenditures Equalized Using the Modified OECD Scales		0.164 *** (0.023)	0.161 *** (0.023)	0.165 *** (0.027)	0.163 *** (0.027)
Employment		0.130 *** (0.042)	0.130 *** (0.041)	0.130 *** (0.037)	0.131 *** (0.037)
Number of Observations		24255	24255	23406	23406

Source: author's calculations. Notes: Estimated coefficients are reported in columns. In columns [2] and [3] no instruments are used; in column [4] religion is instrumented; in column [5] religion and all interaction terms are instrumented. The natural logarithm of the number of people of a given religious domination in a given country in 1900 is used as the IV for religion; interactions of respective variables with the IV for religion are used as IVs for interaction terms. Robust standard errors clustered by region are in parentheses; for ordered logit with IV, standard errors are bootstrapped. *, **, and *** stand for 10, 5, and 1 percent significance levels, respectively.

Table 8: Religion and Life Satisfaction, Linear Probability Model

Dependent Variable: Life Satisfaction (zero/one)	LPM			LPM with IV		
	[2]	[3]	[4]	[5]	[6]	[7]
Religion	-0.036 ** (0.014)	0.009 (0.065)	-0.144 *** (0.027)	0.291 (0.409)		
Large Scale Privatization	-0.082 *** (0.025)	-0.315 *** (0.063)	-0.069 *** (0.025)	-0.597 *** (0.186)		
Small Scale Privatization	0.002 (0.031)	-0.035 (0.046)	0.010 (0.030)	0.831 *** (0.250)		
Governance and Enterprise Restructuring	-0.042 (0.043)	0.316 *** (0.057)	-0.067 (0.042)	0.777 *** (0.174)		
Price Liberalization	0.048 (0.046)	0.087 (0.060)	0.025 (0.044)	-0.019 (0.258)		
Trade and Foreign Exchange System	-0.010 (0.019)	0.088 (0.060)	0.008 (0.019)	-0.084 (0.361)		
Competition Policy	0.086 *** (0.031)	-0.005 (0.070)	0.093 *** (0.032)	-0.551 *** (0.195)		
Banking Reform and Interest Rate Liberalization	-0.092 *** (0.022)	-0.016 (0.042)	-0.098 *** (0.023)	-0.044 (0.238)		
Securities Markets and Non-bank Institutions	0.189 *** (0.026)	0.034 (0.039)	0.180 *** (0.026)	0.272 (0.258)		
Overall Infrastructure Reform	-0.074 ** (0.034)	-0.105 *** (0.031)	-0.076 ** (0.033)	-0.638 *** (0.200)		
Religion*Large Scale Privatization	-	0.240 *** (0.071)	-	0.533 *** (0.191)		
Religion*Small Scale Privatization	-	0.035 (0.044)	-	-0.835 *** (0.251)		
Religion*Governance and Enterprise Restructuring	-	-0.383 *** (0.080)	-	-0.861 *** (0.165)		
Religion*Price Liberalization	-	-0.040 (0.062)	-	0.043 (0.243)		
Religion*Trade and Foreign Exchange system	-	-0.093 (0.066)	-	0.098 (0.365)		
Religion*Competition Policy	-	0.077 (0.078)	-	0.658 *** (0.203)		
Religion*Banking Reform and Interest Rate Liberalization	-	-0.086 * (0.049)	-	-0.034 (0.242)		
Religion*Securities Markets and Non-Bank Financial Institutions	-	0.189 *** (0.049)	-	-0.103 (0.266)		
Religion*Overall Infrastructure Reform	-	0.035 (0.048)	-	0.556 *** (0.201)		
Age	-0.019 *** (0.001)	-0.020 *** (0.001)	-0.018 *** (0.001)	-0.018 *** (0.001)		
Age Squared/100	0.019 *** (0.001)	0.020 *** (0.001)	0.018 *** (0.001)	0.018 *** (0.001)		
Male	-0.006 (0.008)	-0.005 (0.008)	-0.011 (0.009)	-0.012 (0.009)		
Basic School	0.027 (0.026)	0.024 (0.026)	0.036 (0.026)	0.042 (0.027)		
Secondary School	0.109 *** (0.032)	0.102 *** (0.032)	0.115 *** (0.034)	0.123 *** (0.032)		
Vocational/Professional School	0.058 ** (0.028)	0.054 ** (0.027)	0.063 ** (0.029)	0.069 ** (0.028)		
Higher Professional Degree (University, College)	0.142 *** (0.031)	0.138 *** (0.031)	0.144 *** (0.033)	0.154 *** (0.029)		
Postgraduate Degree	0.191 *** (0.038)	0.190 *** (0.038)	0.180 *** (0.037)	0.199 *** (0.037)		
Number of Children	0.009 (0.008)	0.008 (0.008)	0.008 (0.008)	0.009 (0.008)		
Children Born/Adopted between 1990-2006	0.002 (0.014)	0.003 (0.014)	0.002 (0.015)	0.000 (0.017)		
Married between 1990-2006	0.028 ** (0.012)	0.027 ** (0.012)	0.033 ** (0.013)	0.033 ** (0.014)		
Divorced between 1990-2006	-0.121 *** (0.016)	-0.121 *** (0.015)	-0.124 *** (0.014)	-0.126 *** (0.015)		
Household Size	0.042 *** (0.008)	0.040 *** (0.008)	0.049 *** (0.009)	0.050 *** (0.008)		
Household Consumption Expenditures Equalized Using the Modified OECD Scales	0.116 *** (0.007)	0.112 *** (0.008)	0.122 *** (0.007)	0.122 *** (0.009)		
Employment	0.080 *** (0.009)	0.078 *** (0.009)	0.076 *** (0.009)	0.076 *** (0.008)		
Number of Observations	20940	20940	20192	20192		20192

Source: author's calculations. Notes: Life satisfaction redefined into zero (all dissatisfied)/one (all satisfied) scale is used as dependent variable. The natural logarithm of the number of people of a given religious domination in a given country in 1900 is used as the IV for religion; interactions of respective variables with the IV for religion are used as IVs for interaction terms. Robust standard errors clustered by region are in parentheses; *, **, and *** stand for 10, 5, and 1 percent significance levels, respectively.

Table 9: Religion and Perception of Current Economic Situation, Linear Probability Model

Dependent Variable: Perception of Economic Situation (zero/one)	LPM					LPM with IV				
	[1]	[2]	[3]	[4]	[5]	[1]	[2]	[3]	[4]	[5]
Religion		-0.057 *** (0.016)	0.093 (0.123)	-0.249 *** (0.024)	-0.092 (0.068)					
Large Scale Privatization		-0.268 *** (0.020)	-0.347 *** (0.106)	-0.251 *** (0.019)	0.207 (0.301)					
Small Scale Privatization		0.079 *** (0.024)	-0.053 (0.069)	0.063 *** (0.022)	0.606 *** (0.222)					
Governance and Enterprise Restructuring		-0.004 (0.032)	0.155 (0.116)	-0.053 *** (0.027)	-0.082 (0.333)					
Price Liberalization		0.142 *** (0.038)	0.100 * (0.101)	0.097 *** (0.034)	0.151 (0.280)					
Trade and Foreign Exchange System		-0.029 (0.029)	0.242 *** (0.220)	-0.002 (0.028)	-0.490 (0.465)					
Competition Policy		0.069 ** (0.032)	0.086 (0.100)	0.096 *** (0.031)	-0.089 (0.264)					
Banking Reform and Interest Rate Liberalization		-0.112 *** (0.033)	-0.206 *** (0.142)	-0.115 *** (0.033)	-0.261 (0.240)					
Securities Markets and Non-bank Institutions		0.086 *** (0.032)	0.188 *** (0.158)	0.050 (0.033)	-0.179 (0.180)					
Overall Infrastructure Reform		0.113 *** (0.029)	-0.026 (0.116)	0.131 *** (0.029)	0.133 (0.294)					
Religion*Large Scale Privatization		-	0.079 (0.104)	-	-0.474 (0.314)					
Religion*Small Scale Privatization		-	0.140 *** (0.092)	-	-0.524 ** (0.216)					
Religion*Governance and Enterprise Restructuring		-	-0.176 (0.128)	-	0.035 (0.339)					
Religion*Price Liberalization		-	0.037 (0.090)	-	-0.062 (0.278)					
Religion*Trade and Foreign Exchange system		-	-0.279 *** (0.206)	-	0.498 (0.481)					
Religion*Competition Policy		-	-0.025 (0.106)	-	0.199 (0.282)					
Religion*Banking Reform and Interest Rate Liberalization		-	0.098 (0.141)	-	0.180 (0.226)					
Religion*Securities Markets and Non-Bank Financial Institutions		-	-0.098 ** (0.199)	-	0.214 (0.185)					
Religion*Overall Infrastructure Reform		-	0.156 (0.149)	-	-0.020 (0.306)					
Age		-0.011 *** (0.002)	-0.013 *** (0.003)	-0.008 *** (0.002)	-0.010 *** (0.002)					
Age Squared/100		0.011 *** (0.002)	0.012 *** (0.002)	0.009 *** (0.002)	0.010 *** (0.002)					
Male		-0.003 (0.006)	-0.004 (0.011)	-0.014 * (0.008)	-0.018 ** (0.008)					
Basic School		-0.029 (0.021)	-0.038 * (0.046)	-0.011 (0.022)	-0.017 (0.022)					
Secondary School		0.013 (0.023)	0.004 (0.048)	0.030 (0.023)	0.027 (0.022)					
Vocational/Professional School		-0.028 (0.023)	-0.032 (0.048)	-0.014 (0.024)	-0.016 (0.023)					
Higher Professional Degree (University, College)		0.039 (0.025)	0.036 (0.036)	0.047 * (0.026)	0.048 * (0.026)					
Postgraduate Degree		0.104 ** (0.051)	0.105 ** (0.093)	0.091 * (0.048)	0.119 ** (0.051)					
Number of Children		0.004 (0.006)	0.004 (0.009)	0.001 (0.006)	0.003 (0.006)					
Children Born/Adopted between 1990-2006		0.023 ** (0.009)	0.024 * (0.024)	0.024 ** (0.010)	0.027 *** (0.009)					
Married between 1990-2006		0.006 (0.008)	0.002 (0.020)	0.015 * (0.008)	0.009 (0.009)					
Divorced between 1990-2006		-0.041 *** (0.015)	-0.040 *** (0.022)	-0.049 *** (0.014)	-0.053 *** (0.015)					
Household Size		0.045 *** (0.007)	0.041 *** (0.013)	0.057 *** (0.008)	0.054 *** (0.008)					
Household Consumption Expenditures Equalized Using the Modified OECD Scales		0.075 *** (0.005)	0.065 *** (0.011)	0.089 *** (0.005)	0.077 *** (0.007)					
Employment		0.038 *** (0.010)	0.038 *** (0.013)	0.030 *** (0.010)	0.034 *** (0.010)					
Number of Observations		21135	21135	20397	20397					20397

Source: author's calculations. Notes: Perception of economic situation redefined into zero (all dissatisfied)/one (all satisfied) scale is used as dependent variable. The natural logarithm of the number of people of a given religious domination in a given country in 1900 is used as the IV for religion; interactions of respective variables with the IV for religion are used as IVs for interaction terms. Robust standard errors clustered by region are in parentheses; *, **, and *** stand for 10, 5, and 1 percent significance levels, respectively.

Table 10: Religion and Perception of Current Political Situation, Linear Probability Model

Dependent Variable: Perception of Political Situation (zero/one)	LPM			LPM with IV		
	[1]	[2]	[3]	[4]	[5]	
Religion		-0.004 (0.019)	0.183 *** (0.064)	-0.144 *** (0.064)	0.111 ** (0.054)	
Large Scale Privatization		-0.266 *** (0.016)	-0.300 *** (0.064)	-0.253 *** (0.016)	0.381 (0.411)	
Small Scale Privatization		0.111 *** (0.030)	-0.038 (0.051)	0.122 *** (0.030)	1.094 *** (0.357)	
Governance and Enterprise Restructuring		0.069 ** (0.027)	0.167 ** (0.083)	0.034 (0.024)	0.302 (0.432)	
Price Liberalization		0.152 *** (0.046)	0.208 *** (0.062)	0.120 *** (0.047)	0.360 (0.324)	
Trade and Foreign Exchange System		-0.112 *** (0.032)	-0.004 (0.071)	-0.091 *** (0.034)	-1.335 ** (0.575)	
Competition Policy		-0.048 (0.037)	0.000 (0.064)	-0.033 (0.034)	-0.539 (0.408)	
Banking Reform and Interest Rate Liberalization		0.002 (0.041)	0.014 (0.043)	-0.001 (0.042)	0.416 (0.343)	
Securities Markets and Non-bank Institutions		-0.010 (0.028)	0.080 * (0.043)	-0.032 (0.028)	-0.386 (0.279)	
Overall Infrastructure Reform		0.117 *** (0.035)	-0.026 (0.077)	0.128 *** (0.035)	-0.494 (0.331)	
Religion*Large Scale Privatization		-	0.035 (0.068)	-	-0.658 (0.418)	
Religion*Small Scale Privatization		-	0.159 *** (0.047)	-	-0.991 *** (0.348)	
Religion*Governance and Enterprise Restructuring		-	-0.112 (0.082)	-	-0.256 (0.433)	
Religion*Price Liberalization		-	-0.074 (0.052)	-	-0.250 (0.316)	
Religion*Trade and Foreign Exchange system		-	-0.104 * (0.064)	-	1.269 ** (0.594)	
Religion*Competition Policy		-	-0.054 (0.075)	-	0.508 (0.410)	
Religion*Banking Reform and Interest Rate Liberalization		-	-0.017 (0.054)	-	-0.405 (0.332)	
Religion*Securities Markets and Non-Bank Financial Institutions		-	-0.092 * (0.052)	-	0.342 (0.280)	
Religion*Overall Infrastructure Reform		-	0.161 ** (0.070)	-	0.629 * (0.346)	
Age		-0.005 *** (0.002)	-0.008 *** (0.001)	-0.003 ** (0.002)	-0.007 *** (0.002)	
Age Squared/100		0.005 *** (0.001)	0.007 *** (0.001)	0.004 *** (0.001)	0.007 *** (0.002)	
Male		0.006 (0.006)	0.005 (0.006)	0.001 (0.006)	-0.004 (0.007)	
Basic School		0.016 (0.025)	0.005 (0.026)	0.031 (0.026)	0.014 (0.025)	
Secondary School		0.079 *** (0.027)	0.069 ** (0.027)	0.091 *** (0.027)	0.079 *** (0.027)	
Vocational/Professional School		0.024 (0.027)	0.017 (0.028)	0.036 (0.027)	0.024 (0.028)	
Higher Professional Degree (University, College)		0.117 *** (0.031)	0.112 *** (0.031)	0.122 *** (0.031)	0.116 *** (0.032)	
Postgraduate Degree		0.206 *** (0.040)	0.204 *** (0.039)	0.210 *** (0.039)	0.231 *** (0.043)	
Number of Children		0.003 (0.005)	0.002 (0.005)	0.001 (0.005)	0.003 (0.005)	
Children Born/Adopted between 1990-2006		0.016 (0.010)	0.017 * (0.010)	0.020 ** (0.010)	0.024 *** (0.009)	
Married between 1990-2006		0.008 (0.009)	0.003 (0.010)	0.011 (0.009)	0.002 (0.009)	
Divorced between 1990-2006		-0.048 ** (0.020)	-0.047 ** (0.019)	-0.050 *** (0.017)	-0.061 *** (0.018)	
Household Size		0.060 *** (0.006)	0.054 *** (0.004)	0.067 *** (0.007)	0.060 *** (0.007)	
Household Consumption Expenditures Equalized Using the Modified OECD Scales		0.052 *** (0.004)	0.040 *** (0.006)	0.062 *** (0.005)	0.044 *** (0.006)	
Employment		0.028 ** (0.012)	0.030 *** (0.011)	0.022 * (0.012)	0.027 ** (0.011)	
Number of Observations		19106	19106	18448	18448	18448

Source: author's calculations. Notes: Perception of political situation redefined into zero (all dissatisfied)/one (all satisfied) scale is used as dependent variable. The natural logarithm of the number of people of a given religious domination in a given country in 1900 is used as the IV for religion; interactions of respective variables with the IV for religion are used as IVs for interaction terms. Robust standard errors clustered by region are in parentheses; *, **, and *** stand for 10, 5, and 1 percent significance levels, respectively.

2.A.3. Supplementary Tables

Table A1: Testing for Endogeneity of Religion and Interaction Terms

Dependent Variable:	Life Satisfaction		Perception of Economic Situation		Perception of Political Situation	
	Ordered Logit	LPM	Ordered Logit	LPM	Ordered Logit	LPM
	[2]	[3]	[4]	[5]	[6]	[7]
Religion Residuals	0.808** (0.354)	0.331*** (0.085)	1.350*** (0.377)	0.354*** (0.093)	0.732** (0.337)	0.225** (0.092)
Residuals (Religion*Large Scale Privatization)	0.742** (0.298)	0.214*** (0.069)	0.587* (0.350)	0.044 (0.079)	0.151 (0.253)	0.030 (0.066)
Residuals (Religion*Small Scale Privatization)	0.271* (0.167)	0.048 (0.040)	0.581*** (0.203)	0.146*** (0.038)	0.587*** (0.186)	0.160*** (0.046)
Residuals (Religion*Governance and Enterprise Restructuring)	-0.839*** (0.233)	-0.266*** (0.073)	-0.400 (0.412)	-0.080 (0.110)	-0.210 (0.246)	-0.097 (0.077)
Residuals (Religion*Price Liberalization)	-0.002 (0.221)	-0.009 (0.060)	0.178 (0.177)	0.063 (0.048)	-0.131 (0.190)	-0.071 (0.054)
Residuals (Religion*Trade and Foreign Exchange system)	-0.729** (0.318)	-0.202*** (0.073)	-1.529*** (0.354)	-0.357*** (0.094)	-0.606** (0.292)	-0.116 (0.073)
Residuals (Religion*Competition Policy)	-0.059 (0.282)	0.076 (0.069)	-0.250 (0.415)	-0.027 (0.099)	-0.295 (0.275)	-0.054 (0.075)
Residuals (Religion*Banking Reform and Interest Rate Liberalization)	-0.363** (0.158)	-0.167*** (0.047)	0.378 (0.276)	0.035 (0.071)	0.134 (0.215)	-0.027 (0.057)
Residuals (Religion*Securities Markets and Non-Bank Financial Institutions)	0.605*** (0.203)	0.164*** (0.047)	-0.521* (0.291)	-0.110* (0.066)	-0.548*** (0.246)	-0.093* (0.053)
Residuals (Religion*Overall Infrastructure Reform)	-0.039 (0.195)	0.024 (0.053)	0.306 (0.301)	0.142 (0.099)	0.520* (0.285)	0.159** (0.069)
Joint Significance Test Statistics, chi2(10)	106.87***	16.48***	252.85***	19.97***	94.96***	24.19***
Number of Observations	27316	20940	25078	21135	24255	19106

Source: author's calculations. Notes: Regressions contain the whole set of explanatory variables. Robust standard errors clustered by region are in parentheses. **, *, and *** stand for 10, 5, and 1 percent significance levels, respectively. Residuals are obtained from separate OLS regressions of each respective variable on the whole set of explanatory variables. Residuals for religion and interaction terms with religion are jointly significant for all three model specifications for both ordered logit and LPM; therefore, the null hypothesis of exogeneity is rejected.

Table A2: Testing for Weak IV

First Stage Dependent Variable	First Stage F-statistics for Joint Significance of Instruments	Partial Correlation of Endogenous Variable with its IV
[1]	[2]	[3]
Religion	2458.29*** (0.000)	0.554
Religion*Large Scale Privatization	2380.81*** (0.000)	0.732
Religion*Small Scale Privatization	2230.73*** (0.000)	0.769
Religion*Governance and Enterprise Restructuring	2569.69*** (0.000)	0.797
Religion*Price Liberalization	2211.39*** (0.000)	0.732
Religion*Trade and Foreign Exchange system	2283.63*** (0.000)	0.706
Religion*Competition Policy	2644.81*** (0.000)	0.818
Religion*Banking Reform and Interest Rate Liberalization	2433.43*** (0.000)	0.720
Religion*Securities Markets and Non-Bank Financial Institutions	2368.71*** (0.000)	0.790
Religion*Overall Infrastructure Reform	2308.03*** (0.000)	0.739

Source: author's calculations. Notes: each first stage regression contains the whole set of instrumental variables (one for religion and 9 for interaction terms with religion) and explanatory variables. The natural logarithm of the number of people of a given religious domination in a given country in 1900 is used as the IV for religion; interactions of respective variables with the IV for religion are used as IVs for interaction terms. P-values are in parentheses. *, **, and *** stand for 10, 5, and 1 percent significance levels, respectively. Weak Instrument Test proposed by Stock and Yogo (2005) has been used. First stage F-statistics are significant for all 10 first stages; therefore, the null hypothesis of the weak IV is rejected. Partial correlations also suggest a nonzero correlation between the proposed instrument and respective endogenous variable.

Table A3: Life Satisfaction, Predicted Probabilities of Giving Different Replies

	Mean	Std. Err.	[95% Conf. Interval]	
Religion and All Other Variables at Mean				
Pr(strongly disagree)	0.090	0.005	0.081	0.100
Pr(disagree)	0.220	0.007	0.208	0.233
Pr(neither disagree nor agree)	0.254	0.005	0.243	0.265
Pr(agree)	0.366	0.009	0.349	0.384
Pr(strongly agree)	0.070	0.002	0.066	0.075
Religion at Min, All Other Variables at Mean				
Pr(strongly disagree)	0.101	0.014	0.075	0.132
Pr(disagree)	0.235	0.021	0.195	0.278
Pr(neither disagree nor agree)	0.256	0.007	0.238	0.269
Pr(agree)	0.345	0.029	0.286	0.401
Pr(strongly agree)	0.064	0.011	0.044	0.087
Religion at Max, All Other Variables at Mean				
Pr(strongly disagree)	0.081	0.007	0.068	0.095
Pr(disagree)	0.205	0.011	0.183	0.227
Pr(neither disagree nor agree)	0.249	0.005	0.240	0.259
Pr(agree)	0.387	0.015	0.358	0.416
Pr(strongly agree)	0.078	0.004	0.070	0.087

Source: author's calculations. Notes: Simulations are performed using CLARIFY software. First, the model is estimated by ordered logit, controlling for endogeneity and 1000 sets of simulated coefficients are drawn. Predicted probabilities of different replies are calculated based on the sets of simulated coefficients and different values of religion and means of other explanatory variables.

*Table A4: Perceptions of Economic Situation,
Predicted Probabilities of Giving Different Replies*

	Mean	Std. Err.	[95% Conf. Interval]	
Religion and All Other Variables at Mean				
Pr(strongly disagree)	0.174	0.008	0.157	0.190
Pr(disagree)	0.321	0.007	0.307	0.334
Pr(neither disagree nor agree)	0.177	0.005	0.167	0.188
Pr(agree)	0.267	0.008	0.251	0.283
Pr(strongly agree)	0.061	0.003	0.057	0.066
Religion at Min, All Other Variables at Mean				
Pr(strongly disagree)	0.184	0.029	0.135	0.249
Pr(disagree)	0.325	0.022	0.280	0.365
Pr(neither disagree nor agree)	0.174	0.007	0.158	0.184
Pr(agree)	0.258	0.034	0.189	0.324
Pr(strongly agree)	0.059	0.012	0.039	0.085
Religion at Max, All Other Variables at Mean				
Pr(strongly disagree)	0.158	0.010	0.138	0.179
Pr(disagree)	0.307	0.008	0.293	0.322
Pr(neither disagree nor agree)	0.180	0.006	0.168	0.191
Pr(agree)	0.286	0.010	0.269	0.306
Pr(strongly agree)	0.068	0.004	0.061	0.077

Source: author's calculations. *Notes:* Simulations are performed using CLARIFY software. First, the model is estimated by ordered logit, controlling for endogeneity and 1000 sets of simulated coefficients are drawn. Predicted probabilities of different replies are calculated based on the sets of simulated coefficients and different values of religion and means of other explanatory variables.

*Table A5: Perceptions of Political Situation,
Predicted Probabilities of Giving Different Replies*

	Mean	Std. Err.	[95% Conf. Interval]	
Religion and All Other Variables at Mean				
Pr(strongly disagree)	0.174	0.008	0.157	0.190
Pr(disagree)	0.321	0.007	0.307	0.334
Pr(neither disagree nor agree)	0.177	0.005	0.167	0.188
Pr(agree)	0.267	0.008	0.251	0.283
Pr(strongly agree)	0.061	0.003	0.057	0.066
Religion at Min, All Other Variables at Mean				
Pr(strongly disagree)	0.184	0.029	0.135	0.249
Pr(disagree)	0.325	0.022	0.280	0.365
Pr(neither disagree nor agree)	0.174	0.007	0.158	0.184
Pr(agree)	0.258	0.034	0.189	0.324
Pr(strongly agree)	0.059	0.012	0.039	0.085
Religion at Max, All Other Variables at Mean				
Pr(strongly disagree)	0.158	0.010	0.138	0.179
Pr(disagree)	0.307	0.008	0.293	0.322
Pr(neither disagree nor agree)	0.180	0.006	0.168	0.191
Pr(agree)	0.286	0.010	0.269	0.306
Pr(strongly agree)	0.068	0.004	0.061	0.077

Source: author's calculations. *Notes:* Simulations are performed using CLARIFY software. First, the model is estimated by ordered logit, controlling for endogeneity and 1000 sets of simulated coefficients are drawn. Predicted probabilities of different replies are calculated based on the sets of simulated coefficients and different values of religion and means of other explanatory variables.

Table A6a: Marginal Effects of Ordered Logit Model for Explaining Life Satisfaction (without IVs)

Dependent Variable: Life Satisfaction	Strongly Disagree		Disagree		Neither Disagree nor Agree		Agree		Strongly Agree	
	1	2	3	4	5	6	5	6	5	6
Religion	-0.085 *	(0.045)	-0.103 **	(0.041)	0.004	(0.013)	0.144 **	(0.059)	0.041 ***	(0.014)
Large Scale Privatization	0.080 ***	(0.021)	0.130 ***	(0.036)	0.033 ***	(0.012)	-0.178 ***	(0.049)	-0.065 ***	(0.018)
Small Scale Privatization	0.019	(0.015)	0.031	(0.025)	0.008	(0.006)	-0.043	(0.034)	-0.016	(0.013)
Governance and Enterprise Restructuring	-0.043 ***	(0.016)	-0.071 ***	(0.025)	-0.018 ***	(0.006)	0.097 ***	(0.035)	0.035 ***	(0.012)
Price Liberalization	-0.015	(0.019)	-0.024	(0.031)	-0.006	(0.008)	0.033	(0.042)	0.012	(0.016)
Trade and Foreign Exchange System	-0.056 **	(0.025)	-0.091 **	(0.041)	-0.023 *	(0.012)	0.124 **	(0.057)	0.045 **	(0.021)
Competition Policy	-0.027	(0.020)	-0.045	(0.032)	-0.011	(0.008)	0.061	(0.043)	0.022	(0.016)
Banking Reform and Interest Rate Liberalization	0.001	(0.012)	0.001	(0.020)	0.000	(0.005)	-0.002	(0.027)	-0.001	(0.010)
Securities Markets and Non-bank Institutions	-0.012	(0.016)	-0.020	(0.025)	-0.005	(0.007)	0.027	(0.034)	0.010	(0.013)
Overall Infrastructure Reform	0.014	(0.019)	0.023	(0.025)	0.006	(0.006)	-0.031	(0.034)	-0.011	(0.012)
Religion*Large Scale Privatization	-0.060 ***	(0.023)	-0.098 **	(0.039)	-0.025 **	(0.012)	0.134 **	(0.054)	0.049 ***	(0.020)
Religion*Small Scale Privatization	-0.022 *	(0.013)	-0.036 **	(0.022)	-0.009	(0.006)	0.049 *	(0.030)	0.018	(0.011)
Religion*Governance and Enterprise Restructuring	0.068 ***	(0.019)	0.111 ***	(0.031)	0.028 ***	(0.009)	-0.151 ***	(0.042)	-0.055 ***	(0.015)
Religion*Price Liberalization	0.000	(0.018)	0.000	(0.029)	0.000	(0.007)	0.000	(0.040)	0.000	(0.015)
Religion*Trade and Foreign Exchange System	0.059 **	(0.025)	0.096 **	(0.042)	0.024 **	(0.012)	-0.132 **	(0.058)	-0.048 **	(0.021)
Religion*Competition Policy	0.005	(0.023)	0.008	(0.037)	0.002	(0.009)	-0.011	(0.051)	-0.004	(0.019)
Religion*Banking Reform and Interest Rate Liberalization	0.029 **	(0.013)	0.048 **	(0.021)	0.012 **	(0.005)	-0.065 **	(0.029)	-0.024 **	(0.010)
Religion*Securities Markets and Non-Bank Financial Institutions	-0.049 ***	(0.018)	-0.080 ***	(0.027)	-0.020 ***	(0.005)	0.109 ***	(0.037)	0.040 ***	(0.013)
Religion*Overall Infrastructure Reform	0.003	(0.016)	0.005	(0.026)	0.001	(0.007)	-0.007	(0.035)	-0.003	(0.013)
Age	0.005 ***	(0.000)	0.008 ***	(0.000)	0.002 ***	(0.000)	-0.011 ***	(0.000)	-0.004 ***	(0.000)
Age Squared/100	-0.005 ***	(0.000)	-0.009 ***	(0.000)	-0.002 ***	(0.000)	0.012 ***	(0.000)	0.004 ***	(0.000)
Male	0.001	(0.002)	0.002	(0.004)	0.000	(0.001)	-0.003	(0.005)	-0.001	(0.002)
Basic School	-0.010	(0.008)	-0.016	(0.014)	-0.005	(0.004)	0.022	(0.019)	0.008	(0.007)
Secondary School	-0.031 ***	(0.009)	-0.053 ***	(0.015)	-0.018 ***	(0.006)	0.072 ***	(0.021)	0.029 ***	(0.009)
Vocational/Professional School	-0.015 *	(0.009)	-0.026 *	(0.014)	-0.007 *	(0.004)	0.035 *	(0.019)	0.013 *	(0.007)
Higher Professional Degree (University, College)	-0.035 ***	(0.008)	-0.063 ***	(0.014)	-0.025 ***	(0.007)	0.080 ***	(0.019)	0.038 ***	(0.009)
Postgraduate Degree	-0.049 ***	(0.006)	-0.099 ***	(0.012)	-0.060 ***	(0.013)	0.128 ***	(0.015)	0.080 ***	(0.016)
Number of Children	-0.001	(0.003)	-0.002	(0.004)	-0.001	(0.001)	0.003	(0.006)	0.001	(0.002)
Children Born/Adopted between 1990-2006	0.002	(0.004)	0.003	(0.006)	0.001	(0.002)	-0.004	(0.009)	-0.001	(0.003)
Married between 1990-2006	-0.011 ***	(0.003)	-0.018 ***	(0.005)	-0.005 ***	(0.002)	0.024 ***	(0.007)	0.009 ***	(0.003)
Divorced between 1990-2006	0.042 ***	(0.006)	0.059 ***	(0.007)	0.004 **	(0.002)	-0.081 ***	(0.010)	-0.025 ***	(0.003)
Household Size	-0.016 ***	(0.002)	-0.027 ***	(0.004)	-0.007 ***	(0.002)	0.036 ***	(0.005)	0.013 ***	(0.002)
Household Consumption Expenditures Equalized Using the Modified OECD Scales	-0.039 ***	(0.003)	-0.063 ***	(0.005)	-0.016 ***	(0.002)	0.086 ***	(0.006)	0.032 ***	(0.003)
Employment	-0.020 ***	(0.002)	-0.033 ***	(0.004)	-0.008 ***	(0.002)	0.045 ***	(0.005)	0.017 ***	(0.002)
Frequency in % (actual/predicted)	10.36/10.31		21.92/21.92		23.32/23.34		36.07/36.10		8.33/8.33	

Source: author's calculations. Notes: Marginal effects evaluated at the sample mean of the other variables are reported in columns. For dummy variables the effects of change from zero to one are presented. Bootstrapped standard errors are in parentheses. *, **, and *** stand for 10, 5, and 1 percent significance levels, respectively.

Table A6b: Marginal Effects of Ordered Logit Model
for Explaining Life Satisfaction (with IVs)

Dependent Variable: Life Satisfaction	[1]	[2]	[3]	[4]	[5]	[6]
	Strongly Disagree	Disagree	Neither Disagree nor Agree	Agree	Strongly Agree	
Religion	-0.111 *** (0.021)	-0.183 *** (0.038)	-0.045 *** (0.025)	0.251 *** (0.052)	0.089 *** (0.019)	
Large Scale Privatization	0.209 *** (0.046)	0.078 *** (0.078)	0.085 *** (0.017)	-0.471 *** (0.107)	-0.167 *** (0.037)	
Small Scale Privatization	-0.258 *** (0.027)	0.132 *** (0.132)	-0.104 ** (0.010)	0.581 *** (0.184)	0.206 *** (0.064)	
Governance and Enterprise Restructuring	-0.251 *** (0.022)	0.147 *** (0.147)	-0.101 *** (0.009)	0.564 *** (0.203)	0.200 *** (0.069)	
Price Liberalization	-0.027 (0.030)	0.117 (0.117)	-0.011 (0.011)	0.062 (0.161)	0.022 (0.057)	
Trade and Foreign Exchange System	0.056 (0.048)	0.203 (0.203)	0.023 (0.019)	-0.125 (0.278)	-0.044 (0.098)	
Competition Policy	0.147 * (0.028)	0.126 * (0.126)	0.059 ** (0.010)	-0.330 * (0.174)	-0.117 ** (0.059)	
Banking Reform and Interest Rate Liberalization	0.003 (0.023)	0.112 (0.112)	0.001 (0.010)	-0.007 (0.153)	-0.003 (0.054)	
Securities Markets and Non-bank Institutions	-0.070 (0.019)	0.131 (0.131)	-0.028 (0.010)	0.156 (0.178)	0.056 (0.063)	
Overall Infrastructure Reform	0.192 ** (0.029)	0.114 *** (0.114)	0.078 *** (0.008)	-0.431 *** (0.156)	-0.153 *** (0.053)	
Religion*Large Scale Privatization	-0.191 *** (0.038)	0.083 *** (0.083)	-0.077 *** (0.017)	0.431 *** (0.114)	0.153 *** (0.040)	
Religion*Small Scale Privatization	0.258 *** (0.023)	0.133 *** (0.133)	0.104 ** (0.009)	-0.580 *** (0.185)	-0.206 *** (0.064)	
Religion*Governance and Enterprise Restructuring	0.277 *** (0.026)	0.150 *** (0.150)	0.112 *** (0.012)	-0.623 *** (0.207)	-0.221 *** (0.070)	
Religion*Price Liberalization	0.020 (0.030)	0.116 (0.116)	0.008 (0.012)	-0.046 (0.160)	-0.016 (0.056)	
Religion*Trade and Foreign Exchange System	-0.059 (0.051)	0.206 (0.206)	-0.024 (0.020)	0.133 (0.283)	0.047 (0.100)	
Religion*Competition Policy	-0.178 ** (0.032)	0.131 ** (0.131)	-0.072 ** (0.012)	0.399 ** (0.180)	0.142 ** (0.061)	
Religion*Banking Reform and Interest Rate Liberalization	0.019 (0.026)	0.114 (0.114)	0.008 (0.012)	-0.043 (0.156)	-0.015 (0.055)	
Religion*Securities Markets and Non-Bank Financial Institutions	0.024 (0.024)	0.136 (0.136)	0.010 (0.010)	-0.053 (0.187)	-0.019 (0.066)	
Religion*Overall Infrastructure Reform	-0.172 ** (0.034)	0.119 ** (0.119)	-0.070 *** (0.014)	0.387 ** (0.163)	0.137 ** (0.056)	
Age	0.005 *** (0.000)	0.008 *** (0.001)	0.002 *** (0.000)	-0.011 *** (0.001)	-0.004 *** (0.000)	
Age Squared/100	-0.005 *** (0.000)	-0.008 *** (0.001)	-0.002 *** (0.000)	0.012 *** (0.001)	0.004 *** (0.000)	
Male	0.003 (0.002)	0.005 (0.004)	0.000 (0.001)	-0.006 (0.005)	-0.002 (0.002)	
Basic School	-0.010 (0.007)	-0.016 (0.012)	-0.005 (0.004)	0.022 (0.017)	0.008 (0.006)	
Secondary School	-0.032 *** (0.009)	-0.055 *** (0.015)	-0.018 *** (0.006)	0.075 *** (0.021)	0.030 *** (0.009)	
Vocational/Professional School	-0.015 * (0.008)	-0.025 * (0.014)	-0.007 (0.004)	0.035 * (0.019)	0.013 * (0.007)	
Higher Professional Degree (University, College)	-0.036 *** (0.008)	-0.064 *** (0.014)	-0.025 *** (0.008)	0.087 *** (0.020)	0.037 *** (0.009)	
Postgraduate Degree	-0.047 *** (0.006)	-0.094 *** (0.013)	-0.054 *** (0.013)	0.123 *** (0.017)	0.072 *** (0.016)	
Number of Children	-0.002 (0.003)	-0.003 (0.004)	-0.001 (0.001)	0.005 (0.006)	0.002 (0.002)	
Children Born/Adopted between 1990-2006	0.001 (0.004)	0.002 (0.007)	0.000 (0.002)	-0.002 (0.010)	-0.001 (0.003)	
Married between 1990-2006	-0.010 *** (0.004)	-0.016 ** (0.007)	0.000 (0.002)	0.022 ** (0.010)	0.008 ** (0.003)	
Divorced between 1990-2006	0.043 *** (0.005)	0.059 *** (0.007)	0.004 (0.002)	-0.082 *** (0.010)	-0.024 *** (0.002)	
Household Size	-0.017 *** (0.002)	-0.028 *** (0.004)	-0.007 *** (0.002)	0.039 *** (0.006)	0.014 *** (0.002)	
Household Consumption Expenditures Equalized Using the Modified OECD Scales	-0.038 *** (0.004)	-0.062 *** (0.006)	-0.015 *** (0.003)	0.085 *** (0.007)	0.030 *** (0.003)	
Employment	-0.020 *** (0.002)	-0.034 *** (0.003)	-0.008 *** (0.001)	0.046 *** (0.005)	0.016 *** (0.002)	
Frequency in % (actual/predicted)	10.36/10.39	21.92/22.05	23.32/23.31	36.07/36.02	8.33/8.22	

Source: author's calculations. Notes: Marginal effects evaluated at the sample mean of the other variables are reported in columns. For dummy variables the effects of change from zero to one are presented. Religion and all interaction terms are instrumented. The natural logarithm of the number of people of a given religious domination in a given country in 1900 is used as the IV for religion; interactions of respective variables with the IV for religion are used as IVs for interaction terms. Bootstrapped standard errors are in parentheses. *, **, and *** stand for 10, 5, and 1 percent significance levels, respectively.

Table A7a: Marginal Effects of Ordered Logit Model for Explaining Perceptions of Economic Situation (without IVs)

Dependent Variable: Perceptions of Economic Situation	[1]		[2]		[3]		[4]		[5]		[6]	
	Strongly Disagree	Disagree	Neither Disagree nor Agree	Agree	Strongly Agree	Strongly Disagree	Disagree	Neither Disagree nor Agree	Agree	Strongly Agree	Strongly Disagree	Disagree
Religion	-0.259 ***	-0.049 ***	0.074 ***	0.182 ***	0.051 ***	(0.085)	(0.017)	(0.025)	(0.037)	(0.009)	(0.048)	(0.037)
Large Scale Privatization	0.221 ***	0.165 ***	-0.045 ***	-0.045 ***	-0.090 ***	(0.048)	(0.041)	(0.012)	(0.057)	(0.020)	(0.048)	(0.057)
Small Scale Privatization	0.029	0.021	-0.006	-0.033	-0.012	(0.032)	(0.024)	(0.006)	(0.036)	(0.013)	(0.036)	(0.036)
Governance and Enterprise Restructuring	-0.042	-0.031	0.009	0.048	0.017	(0.058)	(0.043)	(0.012)	(0.066)	(0.023)	(0.048)	(0.066)
Price Liberalization	-0.048 *	-0.036 *	0.010 *	0.055 *	0.020 *	(0.030)	(0.021)	(0.006)	(0.033)	(0.012)	(0.030)	(0.033)
Trade and Foreign Exchange System	-0.197 ***	-0.147 ***	0.040 ***	0.224 ***	0.080 ***	(0.049)	(0.040)	(0.012)	(0.056)	(0.020)	(0.049)	(0.056)
Competition Policy	-0.082	-0.061	0.017	0.093	0.033	(0.061)	(0.045)	(0.012)	(0.069)	(0.025)	(0.061)	(0.069)
Banking Reform and Interest Rate Liberalization	0.121 ***	0.091 ***	-0.025 ***	-0.138 ***	-0.049 ***	(0.037)	(0.026)	(0.008)	(0.041)	(0.015)	(0.037)	(0.041)
Securities Markets and Non-bank Institutions	-0.120 ***	-0.090 ***	0.024 ***	0.137 ***	0.049 ***	(0.033)	(0.024)	(0.007)	(0.036)	(0.014)	(0.033)	(0.036)
Overall Infrastructure Reform	-0.024	-0.018	0.005	0.027	0.010	(0.040)	(0.030)	(0.008)	(0.046)	(0.017)	(0.040)	(0.046)
Religion*Large Scale Privatization	-0.084 *	-0.063 *	0.017	0.096 *	0.034 *	(0.049)	(0.038)	(0.011)	(0.057)	(0.020)	(0.049)	(0.057)
Religion*Small Scale Privatization	-0.083 ***	-0.062 ***	0.017 ***	0.095 ***	0.034 ***	(0.029)	(0.022)	(0.006)	(0.033)	(0.012)	(0.029)	(0.033)
Religion*Governance and Enterprise Restructuring	0.057	0.043	-0.012	-0.065	-0.023	(0.060)	(0.044)	(0.012)	(0.067)	(0.024)	(0.060)	(0.067)
Religion*Price Liberalization	-0.025	-0.019	0.005	0.029	0.010	(0.040)	(0.019)	(0.005)	(0.029)	(0.010)	(0.040)	(0.029)
Religion*Trade and Foreign Exchange System	0.219 ***	0.163 ***	-0.044 ***	-0.249 ***	-0.089 ***	(0.041)	(0.040)	(0.013)	(0.056)	(0.020)	(0.041)	(0.056)
Religion*Competition Policy	0.036	0.027	-0.007	-0.041	-0.014	(0.043)	(0.044)	(0.012)	(0.068)	(0.024)	(0.043)	(0.068)
Religion*Banking Reform and Interest Rate Liberalization	-0.054	-0.040	0.011	0.062	0.045	(0.048)	(0.029)	(0.008)	(0.047)	(0.016)	(0.048)	(0.047)
Religion*Securities Markets and Non-Bank Financial Institutions	0.075 *	0.056 *	-0.015 *	-0.085 *	-0.030 *	(0.032)	(0.032)	(0.009)	(0.045)	(0.017)	(0.032)	(0.045)
Religion*Overall Infrastructure Reform	-0.044	-0.033	0.009	0.050	0.018	(0.058)	(0.032)	(0.009)	(0.049)	(0.017)	(0.044)	(0.049)
Age	0.006 ***	0.005 ***	-0.001 ***	-0.007 ***	-0.002 ***	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Age Squared/100	-0.006 ***	-0.004 ***	0.001 ***	0.007 ***	0.002 ***	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Male	0.003	0.003	-0.001	-0.004	-0.001	(0.003)	(0.002)	(0.001)	(0.004)	(0.001)	(0.003)	(0.002)
Basic School	0.013	0.009	-0.003	-0.014	-0.005	(0.014)	(0.010)	(0.003)	(0.015)	(0.005)	(0.014)	(0.015)
Secondary School	-0.008	-0.006	0.002	0.009	0.003	(0.015)	(0.011)	(0.003)	(0.017)	(0.006)	(0.015)	(0.017)
Vocational/Professional School	0.021	0.015	-0.004	-0.023	-0.008	(0.013)	(0.010)	(0.003)	(0.016)	(0.005)	(0.013)	(0.016)
Higher Professional Degree (University, College)	-0.017	-0.014	0.003	0.020	0.008	(0.013)	(0.011)	(0.002)	(0.016)	(0.006)	(0.013)	(0.016)
Postgraduate Degree	-0.059 ***	-0.060 **	0.004	0.080 **	0.035 *	(0.021)	(0.028)	(0.003)	(0.033)	(0.019)	(0.021)	(0.033)
Number of Children	-0.002	-0.001	0.000	0.002	0.001	(0.003)	(0.002)	(0.000)	(0.004)	(0.001)	(0.003)	(0.004)
Children Born/Adopted between 1990-2006	-0.014 ***	-0.011 ***	0.003 ***	0.016 ***	0.006 ***	(0.005)	(0.004)	(0.001)	(0.006)	(0.002)	(0.005)	(0.006)
Married between 1990-2006	-0.002	-0.002	0.000	0.002	0.001	(0.005)	(0.003)	(0.001)	(0.005)	(0.002)	(0.005)	(0.003)
Divorced between 1990-2006	0.031 ***	0.020 ***	-0.007 ***	-0.033 ***	-0.011 ***	(0.008)	(0.005)	(0.002)	(0.008)	(0.002)	(0.008)	(0.005)
Household Size	-0.022 ***	-0.016 ***	0.004 ***	0.025 ***	0.009 ***	(0.003)	(0.002)	(0.001)	(0.004)	(0.002)	(0.003)	(0.004)
Household Consumption Expenditures Equalized Using the Modified OECD Scales	-0.040 ***	-0.030 ***	0.008 ***	0.046 ***	0.016 ***	(0.004)	(0.003)	(0.001)	(0.004)	(0.002)	(0.004)	(0.004)
Employment	-0.023 ***	-0.017 ***	0.005 ***	0.026 ***	0.009 ***	(0.006)	(0.004)	(0.001)	(0.007)	(0.002)	(0.006)	(0.007)
Frequency in % (actual/predicted)	20.02/19.99	29.18/29.15	15.71/15.72	27.30/27.34	7.79/7.80							

Source: author's calculations. Notes: Marginal effects evaluated at the sample mean of the other variables are reported in columns. For dummy variables the effects of change from zero to one are presented. Bootstrapped standard errors are in parentheses. *, **, and *** stand for 10, 5, and 1 percent significance levels, respectively.

Table A7b: Marginal Effects of Ordered Logit Model for Explaining Perceptions of Economic Situation (with IVs)

Dependent Variable: Perceptions of Economic Situation	[1]					
	Strongly Disagree	Disagree	Neither Disagree nor Agree	Agree	Strongly Agree	
Religion	-0.192 ***	-0.142 ***	0.040 ***	0.218 ***	0.077 ***	
Large Scale Privatization	0.219 **	0.162 **	-0.045 **	-0.249 **	-0.087 **	
Small Scale Privatization	0.129 ***	0.095 ***	-0.027 ***	0.146 ***	-0.051 ***	
Governance and Enterprise Restructuring	0.087	0.071	-0.020	-0.110	-0.039	
Price Liberalization	-0.103 **	-0.076 ***	0.021 **	0.117 ***	0.041 ***	
Trade and Foreign Exchange System	-0.095	-0.070	0.020	0.108	0.038	
Competition Policy	-0.220 ***	-0.162 ***	0.045 ***	0.249 ***	0.088 ***	
Banking Reform and Interest Rate Liberalization	0.081	0.060	-0.017	-0.092	-0.032	
Securities Markets and Non-bank Institutions	-0.032	-0.023	0.006	0.036	0.013	
Overall Infrastructure Reform	-0.299	-0.221 ***	0.062 **	0.340 ***	0.119 ***	
Religion*Large Scale Privatization	-0.083	-0.061	0.017	0.094	0.033	
Religion*Small Scale Privatization	-0.186 ***	-0.137 ***	0.038 ***	0.211 ***	0.074 ***	
Religion*Governance and Enterprise Restructuring	-0.078	-0.058	0.016	0.089	0.031	
Religion*Price Liberalization	0.033	0.024	-0.007	-0.037	-0.013	
Religion*Trade and Foreign Exchange System	0.115 *	0.085 *	-0.024 *	-0.130 *	-0.046 *	
Religion*Competition Policy	0.175 **	0.129 ***	-0.036 **	-0.198 ***	-0.070 ***	
Religion*Banking Reform and Interest Rate Liberalization	-0.012	-0.009	0.002	0.014	0.005	
Religion*Securities Markets and Non-Bank Financial Institutions	-0.015	-0.011	0.003	0.012	0.006	
Religion*Overall Infrastructure Reform	0.232 **	0.171 **	-0.048 **	-0.263 **	-0.092 **	
Age	0.006 ***	0.004 ***	-0.001 ***	-0.007 ***	-0.002 ***	
Age Squared/100	-0.006 ***	-0.004 ***	0.001 ***	0.007 ***	0.002 ***	
Male	0.004	0.003	-0.001	-0.005	-0.002	
Basic School	0.013	0.009	-0.003	-0.015	-0.005	
Secondary School	-0.007	-0.005	0.001	0.008	0.003	
Vocational/Professional School	0.022	0.015	-0.005	-0.024	-0.008	
Higher Professional Degree (University, College)	-0.017	-0.013	0.003	0.020	0.007	
Postgraduate Degree	-0.050 **	-0.048 *	0.005 ***	0.065 *	0.027	
Number of Children	0.000	0.000	0.000	0.001	0.000	
Children Born/Adopted between 1990-2006	-0.015 ***	-0.011 ***	0.003 ***	0.017 ***	0.006 ***	
Married between 1990-2006	-0.001	-0.001	0.000	0.001	0.000	
Divorced between 1990-2006	0.031 ***	0.020 ***	-0.007 ***	-0.032 ***	-0.011 ***	
Household Size	-0.022 ***	-0.016 ***	0.005 ***	0.025 ***	0.009 ***	
Household Consumption Expenditures Equalized Using the Modified OECD Scales	-0.041 ***	-0.030 ***	0.008 ***	0.046 ***	0.016 ***	
Employment	-0.023 ***	-0.017 ***	0.005 ***	0.026 ***	0.009 ***	
Frequency in % (actual/predicted)	20.02/20.11	29.18/29.28	15.71/15.66	27.30/27.22	7.79/7.73	

Source: author's calculations. Notes: Marginal effects evaluated at the sample mean of the other variables are reported in columns. For dummy variables the effects of change from zero to one are presented. Religion and all interaction terms are instrumented. The natural logarithm of the number of people of agiven religious domination in a given country in 1900 is used as the IV for religion; interactions of respective variables with the IV for religion are used as IVs for interaction terms. Bootstrapped standard errors are in parentheses. *, **, and *** stand for 10, 5, and 1 percent significance levels, respectively.

Table A8a: Marginal Effects of Ordered Logit Model for Explaining Perceptions of Political Situation (without IVs)

Dependent Variable: Perceptions of Political Situation	Strongly Disagree		Disagree		Neither Disagree nor Agree		Agree		Strongly Agree	
	[2]	[3]	[4]	[5]	[6]					
Region	-0.119 *	(0.063)	-0.062 ***	(0.018)	0.036	(0.024)	0.111 **	(0.045)	0.034 ***	(0.012)
Large Scale Privatization	0.143 ***	(0.030)	-0.017 ***	(0.027)	-0.023 ***	(0.006)	-0.174 ***	(0.038)	-0.063 ***	(0.014)
Small Scale Privatization	0.020	(0.028)	-0.065	(0.023)	-0.003	(0.004)	-0.024	(0.034)	-0.009	(0.012)
Governance and Enterprise Restructuring	-0.060 *	(0.035)	0.023 *	(0.028)	0.010	(0.006)	0.073 *	(0.042)	0.027 *	(0.015)
Price Liberalization	-0.085 **	(0.035)	0.015 ***	(0.027)	0.014 **	(0.006)	0.103 **	(0.041)	0.037 **	(0.015)
Trade and Foreign Exchange System	-0.033	(0.042)	0.067	(0.035)	0.005	(0.007)	0.040	(0.051)	0.014	(0.019)
Competition Policy	-0.022	(0.032)	0.033	(0.026)	0.004	(0.005)	0.027	(0.038)	0.010	(0.014)
Banking Reform and Interest Rate Liberalization	0.025	(0.020)	-0.015	(0.026)	-0.004	(0.004)	-0.030	(0.024)	-0.011	(0.009)
Securities Markets and Non-bank Institutions	-0.071 ***	(0.025)	0.061 ***	(0.022)	0.012 **	(0.005)	0.086 **	(0.031)	0.031 ***	(0.012)
Overall Infrastructure Reform	0.019	(0.040)	-0.058	(0.032)	-0.003	(0.007)	-0.023	(0.048)	-0.008	(0.017)
Religion*Large Scale Privatization	-0.020	(0.034)	0.118	(0.028)	0.003	(0.005)	0.025	(0.042)	0.009	(0.015)
Religion*Small Scale Privatization	-0.079 ***	(0.024)	0.016 ***	(0.022)	0.013 ***	(0.004)	0.096 ***	(0.031)	0.035 ***	(0.011)
Religion*Governance and Enterprise Restructuring	0.028	(0.033)	-0.049	(0.027)	-0.005	(0.005)	-0.035	(0.040)	-0.013	(0.015)
Religion*Price Liberalization	0.018	(0.025)	-0.070	(0.021)	-0.003	(0.004)	-0.021	(0.031)	-0.008	(0.011)
Religion*Trade and Foreign Exchange System	0.082 **	(0.039)	-0.027 **	(0.033)	-0.013 *	(0.007)	-0.099 **	(0.048)	-0.036 **	(0.017)
Religion*Competition Policy	0.040	(0.037)	-0.018	(0.031)	-0.006	(0.006)	-0.048	(0.045)	-0.018	(0.016)
Religion*Banking Reform and Interest Rate Liberalization	-0.018	(0.029)	0.020	(0.024)	0.003	(0.005)	0.022	(0.035)	0.008	(0.013)
Religion*Securities Markets and Non-Bank Financial Institutions	0.074 **	(0.032)	-0.058 **	(0.028)	-0.012 **	(0.006)	-0.090 **	(0.040)	-0.033 **	(0.015)
Religion*Overall Infrastructure Reform	-0.070 *	(0.039)	0.015 *	(0.031)	0.011	(0.007)	0.085 *	(0.047)	0.031 *	(0.016)
Age	0.004 ***	(0.001)	0.003 ***	(0.001)	-0.001 ***	(0.000)	-0.005 ***	(0.001)	-0.002 ***	(0.000)
Age Squared/100	-0.004 ***	(0.001)	-0.003 ***	(0.001)	0.001 ***	(0.000)	0.005 ***	(0.001)	0.002 ***	(0.000)
Male	-0.002	(0.002)	-0.001	(0.002)	0.000	(0.000)	0.002	(0.003)	0.001	(0.001)
Basic School	-0.001	(0.014)	-0.001	(0.012)	0.000	(0.002)	0.002	(0.017)	0.001	(0.006)
Secondary School	-0.027 **	(0.013)	-0.024 **	(0.012)	0.003 ***	(0.001)	0.034 **	(0.017)	0.013 *	(0.007)
Vocational/Professional School	0.000	(0.014)	0.000	(0.011)	0.000	(0.002)	0.000	(0.017)	0.000	(0.006)
Higher Professional Degree (University, College)	-0.042 ***	(0.013)	-0.038 ***	(0.013)	0.004 **	(0.001)	0.055 **	(0.018)	0.022 ***	(0.008)
Postgraduate Degree	-0.085 ***	(0.013)	-0.100 ***	(0.019)	-0.018	(0.012)	0.132 ***	(0.022)	0.072 ***	(0.021)
Number of Children	-0.002	(0.003)	-0.002	(0.002)	0.000	(0.000)	0.003	(0.003)	0.001	(0.001)
Children Born/Adopted between 1990-2006	-0.008	(0.005)	-0.006	(0.004)	0.001	(0.001)	0.009	(0.006)	0.003	(0.002)
Married between 1990-2006	-0.002	(0.005)	-0.001	(0.004)	0.000	(0.001)	0.002	(0.006)	0.001	(0.002)
Divorced between 1990-2006	0.022 **	(0.010)	0.016 **	(0.007)	-0.004 *	(0.003)	-0.025 **	(0.011)	-0.009 **	(0.003)
Household Size	-0.024 ***	(0.002)	-0.020 ***	(0.002)	0.004 ***	(0.001)	0.029 ***	(0.003)	0.011 ***	(0.001)
Household Consumption Expenditures Equalized Using the Modified OECD Scales	-0.022 ***	(0.003)	-0.018 ***	(0.003)	0.004 ***	(0.001)	0.026 ***	(0.004)	0.010 ***	(0.001)
Employment	-0.017 ***	(0.006)	-0.014 ***	(0.004)	0.003 **	(0.001)	0.021 ***	(0.007)	0.008 ***	(0.002)
Frequency in % (actual/predicted)	17.73/17.69		25.97/25.98		21.20/21.23		27.71/27.70		7.39/7.40	

Source: author's calculations. Notes: Marginal effects evaluated at the sample mean of the other variables are reported in columns. For dummy variables the effects of change from zero to one are presented. Bootstrapped standard errors are in parentheses. *, **, and *** stand for 10, 5, and 1 percent significance levels, respectively.

Table A8b: Marginal Effects of Ordered Logit Model for Explaining Perceptions of Political Situation (with IVs)

Dependent Variable: Perceptions of Political Situation	Strongly Disagree		Disagree		Neither Disagree nor Agree		Agree		Strongly Agree	
	[1]	[2]	[3]	[4]	[5]	[6]	[5]	[6]	[5]	[6]
Religion	-0.119 *	(0.065)	-0.098 *	(0.054)	0.019 *	(0.079)	0.146 *	(0.079)	0.053 *	(0.029)
Large Scale Privatization	0.114 ***	(0.042)	0.094 ***	(0.035)	-0.018 **	(0.017)	-0.139 **	(0.051)	-0.050 ***	(0.018)
Small Scale Privatization	0.063	(0.044)	0.052	(0.036)	-0.010	(0.010)	-0.076	(0.053)	-0.028	(0.019)
Governance and Enterprise Restructuring	-0.002	(0.047)	-0.001	(0.035)	0.000	(0.009)	0.002	(0.057)	0.001	(0.021)
Price Liberalization	-0.176 ***	(0.039)	-0.145 ***	(0.048)	0.029 ***	(0.011)	0.215 ***	(0.047)	0.078 ***	(0.018)
Trade and Foreign Exchange System	0.138 **	(0.055)	0.114 **	(0.077)	-0.022 **	(0.019)	-0.169 **	(0.067)	-0.061 **	(0.025)
Competition Policy	-0.065	(0.048)	-0.053	(0.044)	0.011	(0.010)	0.079	(0.057)	0.029	(0.020)
Banking Reform and Interest Rate Liberalization	-0.063	(0.048)	-0.052	(0.038)	0.010	(0.010)	0.077	(0.059)	0.028	(0.021)
Securities Markets and Non-bank Institutions	0.021	(0.053)	0.018	(0.031)	-0.003	(0.010)	0.026	(0.023)	-0.009	(0.023)
Overall Infrastructure Reform	-0.143	(0.119)	-0.118	(0.047)	0.023	(0.008)	0.174	(0.144)	0.063	(0.052)
Religion*Large Scale Privatization	0.009	(0.043)	0.007	(0.062)	-0.001	(0.017)	-0.010	(0.052)	-0.004	(0.019)
Religion*Small Scale Privatization	-0.123 ***	(0.039)	-0.101 ***	(0.037)	0.020 **	(0.009)	0.150 ***	(0.047)	0.054 ***	(0.017)
Religion*Governance and Enterprise Restructuring	-0.028	(0.048)	-0.023	(0.043)	0.005	(0.012)	0.034	(0.059)	0.012	(0.021)
Religion*Price Liberalization	0.110 ***	(0.035)	0.091 ***	(0.048)	-0.018 ***	(0.012)	-0.134 ***	(0.045)	-0.049 ***	(0.017)
Religion*Trade and Foreign Exchange System	-0.091	(0.061)	-0.075	(0.081)	0.015	(0.020)	0.111	(0.074)	0.040	(0.027)
Religion*Competition Policy	0.084 *	(0.051)	0.070 *	(0.051)	-0.014	(0.012)	-0.103 *	(0.061)	-0.037 *	(0.022)
Religion*Banking Reform and Interest Rate Liberalization	0.071	(0.056)	0.058	(0.044)	-0.012	(0.012)	-0.086	(0.068)	-0.031	(0.024)
Religion*Securities Markets and Non-Bank Financial Institutions	-0.021	(0.058)	-0.017	(0.039)	0.003	(0.010)	0.025	(0.071)	0.009	(0.025)
Religion*Overall Infrastructure Reform	0.092	(0.120)	0.076	(0.055)	-0.015	(0.014)	-0.112	(0.146)	-0.041	(0.053)
Age	0.004 ***	(0.001)	0.003 ***	(0.000)	-0.001 ***	(0.000)	-0.005 ***	(0.001)	-0.002 ***	(0.000)
Age Squared/100	-0.004 ***	(0.001)	-0.003 ***	(0.000)	0.001 ***	(0.000)	0.005 ***	(0.001)	0.002 ***	(0.000)
Male	-0.016	(0.003)	-0.001	(0.004)	0.000	(0.001)	0.002	(0.004)	0.001	(0.001)
Basic School	-0.008	(0.014)	-0.001	(0.012)	0.000	(0.002)	0.001	(0.018)	0.000	(0.006)
Secondary School	-0.026 **	(0.012)	-0.023 **	(0.014)	0.003 **	(0.001)	0.033 **	(0.016)	0.013 *	(0.007)
Vocational/Professional School	-0.003	(0.013)	0.000	(0.013)	0.000	(0.002)	0.000	(0.016)	0.000	(0.006)
Higher Professional Degree (University, College)	-0.042 ***	(0.014)	-0.039 ***	(0.013)	0.004 **	(0.002)	0.055 ***	(0.019)	0.022 **	(0.009)
Postgraduate Degree	-0.085 ***	(0.011)	-0.101 ***	(0.013)	-0.019 *	(0.011)	0.132 ***	(0.018)	0.072 ***	(0.018)
Number of Children	-0.002	(0.003)	-0.001	(0.004)	0.000	(0.000)	0.002	(0.004)	0.001	(0.001)
Children Born/Adopted between 1990-2006	-0.008 *	(0.004)	-0.007 *	(0.007)	0.001 **	(0.001)	0.010 *	(0.006)	0.004 *	(0.002)
Married between 1990-2006	-0.001	(0.004)	-0.001	(0.006)	0.000	(0.001)	0.001	(0.005)	0.000	(0.002)
Divorced between 1990-2006	0.021 **	(0.010)	0.016 **	(0.007)	-0.004 *	(0.002)	-0.025 **	(0.011)	-0.008 **	(0.003)
Household Size	-0.024 ***	(0.003)	-0.020 ***	(0.004)	0.004 ***	(0.001)	0.029 ***	(0.003)	0.010 ***	(0.001)
Household Consumption Expenditures Equalized Using the Modified OECD Scales	-0.022 ***	(0.004)	-0.018 ***	(0.006)	0.004 ***	(0.001)	0.027 ***	(0.004)	0.010 ***	(0.002)
Employment	-0.018 ***	(0.005)	-0.015 ***	(0.003)	0.003 **	(0.001)	0.022 ***	(0.006)	0.008 ***	(0.002)
Frequency in % (actual/predicted)	17.73/17.69		25.97/25.98		21.20/21.18		27.71/27.73		7.39/7.42	

Source: author's calculations. Notes: Marginal effects evaluated at the sample mean of the other variables are reported in columns. For dummy variables the effects of change from zero to one are presented. Religion and all interaction terms are instrumented. The natural logarithm of the number of people of agiven religious domination in a given country in 1900 is used as the IV for religion; interactions of respective variables with the IV for religion are used as IVs for interaction terms. Bootstrapped standard errors are in parentheses. *, **, and *** stand for 10, 5, and 1 percent significance levels, respectively.

Chapter 3

Life Satisfaction and the Euro Adoption¹

Abstract

This paper analyzes the perceived impact of the euro introduction on the life satisfaction of individuals in 17 European economies. Using data from the Eurobarometer surveys and applying the difference-in-differences approach, we explore which groups were primarily affected by the euro introduction and whether the life satisfaction of individuals adapted to the euro introduction within two years. Additionally, we test the association between changes in life satisfaction and perceived changes in prices after the euro introduction. The empirical findings suggest that in most EU12 countries, individuals perceived the euro introduction negatively, while individuals from most new member countries were either not affected or were affected positively. Our results also provide evidence of adaptation to the euro introduction within two years for some groups. These findings are particularly relevant for analyzing public opinion regarding the euro introduction.

Keywords: life satisfaction, economic integration, euro, currency changeover

JEL Classification: F15, I31, R11

¹This chapter is a joint work with Vladimir Otrachshenko

3.1. Introduction

By signing the Maastricht Treaty in 1992, the members of the European Community agreed to establish the European Union including later introduction of a single European currency. As an accounting currency, the euro was introduced to financial markets in 1999 and complete replacement of the national currencies occurred in 2002 in EU12 countries.² As widely discussed in the economic literature, the adoption of the single currency is associated with both benefits and disadvantages. For instance, countries in an optimal currency area benefit from a reduction in transaction costs, increase in trade intensity, new jobs, lower currency risks, symmetricity of supply and demand shocks, and the opportunity to jointly overcome these shocks. However, the costs of the adoption of the common currency are associated with the inability to conduct monetary policy independently.³

Most economic studies analyze the consequences of the common currency adoption by using objective economic indicators, such as inflation and unemployment rates, GDP, etc. However, as pointed out by Deroose et al. (2007), Ehrmann (2006), and Mastrobuoni (2004), among others, objective economic indicators may differ from the perceptions of these indicators by individuals. For instance, these authors argue that the perceived inflation rate increased dramatically after the euro introduction, even though there was almost no change in the actual inflation rate in most EU12 countries. According to Deroose et al. (2007) and Ehrmann (2006), the difference between the actual and perceived inflations may be due to the dramatic change in the prices of some goods and services, such as alcohol, tobacco, the prices of restaurants, cinemas, and hairdressers. Given the sharp rise in the prices of these goods and services, individuals may have the impression that prices increased in general.⁴ Thus, it is important to

²The EU12 countries that introduced the euro in 2002 are Austria, Belgium, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, and Spain. Slovenia introduced euro in 2007; the Cyprus Republic and Malta in 2008; Slovakia in 2009; Estonia in 2011.

³For the analysis of various macroeconomic effects of common currency introduction see Beetsma and Giuliodori (2010), Fagan and Gaspar (2008), Frankel and Rose (2002), Hobijn et al. (2006), Lane (2006), Schadler et al. (2005), among others.

⁴See Brachinger (2005), Del Giovane and Sabbatini (2005).

consider not only macroeconomic consequences of the euro introduction, but also how individuals perceive this introduction.

Life satisfaction has been used in the literature in order to evaluate the effect of particular events on the individual well-being. Life satisfaction is defined as an individual judgement regarding the quality of his or her own life (see Veenhoven, 1984). As suggested by Kahneman et al. (1997), life satisfaction represents experienced utility. That is, an individual utility is defined as a hedonic quality of an individual's life, derived from his or her perceptions of past and current experiences. The main advantage of this approach is that this utility is measurable. Recent studies by Di Tella and MacCulloch (2006), Loewenstein and Ubel (2008), and Fleurbaey (2009) also underline the role of life satisfaction in evaluating the welfare effects of economic policies.⁵ A first attempt to evaluate the impact of the euro introduction at the individual level was made by Wunder et al. (2008). The authors find the negative effect of the euro introduction on the financial satisfaction of the individuals in Germany and associate it with the mental challenges related to a daily need to convert prices into a new currency. Also, the authors explain intuitively that financial dissatisfaction is related to the perception of high inflation.

In the economic and psychological literature, the reaction of life satisfaction to events as well as the persistence of this reaction has been studied by using a set point theory (see Brickman and Campbell, 1971; Headey and Wearing, 1992). According to this theory, life satisfaction returns to its initial level (set point) some time after the event. This complete adaptation has been tested in the case of different individual events, e.g. marriage, childbirth, layoff, etc.; however, it has not yet been applied to the analysis of national events.⁶

In this paper we evaluate the perceived impact of the euro introduction on the life

⁵The role of life satisfaction for the evaluation of economic policies comes from the relationship between life satisfaction and macroeconomic conditions. For instance, studies by Alesina et al. (2004), Clark and Oswald, (1994), Di Tella et al. (2001) and (2003), Clark and Senik (2010), among others, examine the relationship between life satisfaction and various macroeconomic variables, such as GDP growth, inflation and unemployment rates, and income inequality.

⁶See Brickman et al. (1978), Suh et al. (1996), Lucas et al. (2003 and 2004), Easterlin (2004), Clark et al. (2008), Oswald and Powdthavee (2008), Di Tella et al. (2010).

satisfaction of individuals in 17 European countries, including the EU12 countries that introduced the euro in 2002, and the countries that joined the eurozone more recently, including the Cyprus Republic, Estonia, Malta, Slovenia and Slovakia.⁷ We assign individuals to different groups based on gender, employment status, education, age, and income level, since these groups may perceive the impact of the euro introduction differently. We also contribute to the literature on the set point theory of happiness by testing whether life satisfaction returns to its initial level within a two year period after the euro introduction. Also, we analyze whether the perceived impact of the euro is associated with individuals' perceptions of changes in prices, in the financial situation of a household, and a general economic situation in a country.

To analyze the impact of the euro introduction, we employ the difference-in-differences estimation. This approach has been widely used for policy evaluation and is based on comparing the outcomes of a group affected by the new policy, the treatment group, and a group unaffected by this policy, the control group. In our case, the treatment group is represented by individuals living in a country that introduced the euro, while the control group represents individuals from a country that did not adopt the euro. In order to make results more robust, we introduce several countries as a control group. For each country, data for two years before and two years after the euro introduction are used.⁸ The results suggest that individuals in EU12 and new member countries were affected by the euro introduction differently. We find that in 2002, in most EU12 countries, females, individuals over 65 years old, the unemployed, and the lowest income group perceived the euro introduction negatively, that is, the euro introduction decreased their life satisfaction, while other groups were either not affected or affected positively. The empirical findings suggest that for females and the unemployed, there is a negative association between the perceived impact of the euro and perceived price increases, while other groups as well as the individuals from most

⁷With an exception of Estonia, data used in our paper are prior to the European sovereign debt crisis and results are not driven by the recent developments in the eurozone.

⁸As highlighted by Bertrand et al. (2004), standard errors are understated when the longer period of data is used for a difference-in-differences estimation. To avoid this issue, we use the shorter time span.

new member countries do not have such associations. We also find evidence that some groups in both new and old members of the eurozone adapted to the introduction of the common currency within two years.

The empirical findings may be of interest to countries that are obliged to join the euro area, such as Bulgaria, the Czech Republic, Hungary, Latvia, Lithuania, Poland and Romania, or countries in other parts of the world which may undertake similar regional financial integration, such as the West African Monetary Zone or the Asian Monetary Unit.⁹

The paper is organized as follows. The next section presents a review of relevant literature. In further sections we describe the methodology, identification strategy, and data used, and discuss our results.

3.2. Literature

There are many studies in political economics devoted to European integration, for instance, Gabel and Palmer (1995), Gabel and Whitten (1997), Gärtner (1997), Kaltenthaler and Anderson (2001), Banducci et al. (2003), among others. These studies analyze the relationship between public support for a common currency and economic and political conditions. In this section we briefly review some of these studies.

Gabel and Whitten (1997) examine the relationship between public support for European integration and economic conditions. Using the data from the Eurobarometer for 7 EU member states for 1984-1989, their findings suggest that perceptions/attitudes of EU citizens towards their national economies are more important than objective economic indicators for European integration. As a result, the authors argue, governments should consider the perceptions of the public along with the consideration of ways to strengthen economic conditions.

⁹The West African Monetary Zone which includes Gambia, Ghana, Guinea, Liberia, Nigeria, and Sierra Leone plans to introduce a common currency, the Eco, by 2015. The Asian Monetary Unit is a basket composed of 16 currencies of the ASEAN countries, China, Japan, and South Korea.

Gärtner (1997) analyzes the public attitudes of Europeans towards the single currency in 14 EU member countries. Using data from the Eurobarometer, the author finds that the public has rational expectations related to the single monetary union. This conclusion is based on the macro level analysis of past inflation and failures of fiscal policy and public acceptance of the single currency. Also, the author finds that the highest ratio of acceptance is found in the countries that have been in the European Monetary System longer.

Macroeconomic effects of financial integration receive much attention from both researchers and policy makers. However, the effect of common currency introduction and its relationship with individual well-being has not yet been widely analyzed in the economic literature. One of the few studies on the implications of economic integration for individual well-being was conducted by Welsch and Bonn (2008). The authors argue that the macroeconomic convergence in the EU countries leads to the convergence in life satisfaction in these countries. This finding provides a rationale for the analysis of the effects of euro introduction on life satisfaction in addition to the analysis of the macroeconomic effects of the euro introduction.

Another study by Wunder et al. (2008) provides a first assessment of the short-term effects of the euro introduction on the individual well-being in Germany. Using data from Germany and the UK, the authors employ difference-in-differences approach and find a negative relationship between the euro introduction and financial satisfaction. As the authors argue, this result is associated with the mental challenges related to a daily need to convert prices into a new currency, which can be overcome within one year. Also, the authors point out that the effects of euro introduction in Germany are not directly comparable with the rest of Europe due to Germany's stronger economic situation and its stronger national currency. This invites a further discussion about the effects of the euro on individual perceptions of well-being in other European countries.

In the economic and psychological literature, the reaction of life satisfaction to events as well as the persistence of such reactions has been studied by using a set

point theory (see Brickman and Campbell, 1971; Headey and Wearing, 1992, among others). According to this theory, life satisfaction is relatively stable over time. When individual events occur, there are three periods for the average life satisfaction of the same individual over time. The first one corresponds to a stable period prior to the event, also known as a baseline period. The second is a reaction period when life satisfaction is temporary altered by the event. Finally, the third period is known as an adaptation period in which life satisfaction returns to the initial stable level. This return to the initial level corresponds to the complete adaptation of the individual to the events.

Brickman et al. (1978) provide a first empirical assessment of the set point theory and argue that the increase in life satisfaction after winning a lottery is temporary, and after one year the life satisfaction of the lottery winners is the same as that of non-winners. Further psychological studies have examined the set point theory in the case of various individual events. For example, Suh et al. (1996) highlight that the complete adaptation time takes at most three years for major positive individual events, such as admission to graduate school, marriage, or improvement in individual financial situation, and negative individual events, for instance, crime accident, or financial difficulties. Lucas et al. (2003) suggest that individuals, on average, adapt to marriage and widowhood completely, while Lucas et al. (2004) argue that the complete adaptation does not occur in the case of unemployment.

However, some economic studies have questioned the findings from the psychological literature. For instance, Easterlin (2004) argues that the adaptation period usually takes longer than psychological studies suggest, and is not necessarily always completed at all. Oswald and Powdthavee (2008) also find empirical support to the incomplete adaptation: in the case of disability, life satisfaction does not return to its initial level. On the other hand, Clark et al. (2008) provide empirical evidence of the complete adaptation in the case of major individual events (e.g., marriage, divorce, widowhood, childbirth, layoff, and, with a less certainty, unemployment), but admit that the adaptation period is different for different events. Recently, Di Tella et al.

(2010) also find empirical support for the complete adaptation of life satisfaction in the case of changes in income. Overall, economic studies suggest that life satisfaction adapts to individual events, but not necessarily completely. This paper applies the set point theory to a national event.

3.3. Methodology

3.3.1. Economic Model

In this section we present the theoretical framework underlying the individual reaction to price changes after the euro adoption. An individual i chooses among bundles in a consumption set $X \subset R_+^k$. Preferences ordering is represented by a continuous strictly concave utility function $U_i(x_1, \dots, x_k) : R_+^k \rightarrow R$. The budget set of the individual is given by $B = \{\mathbf{x} \text{ in } X : \mathbf{p}\mathbf{x} \leq I\}$, where I is the individual income and $\mathbf{p} = (p_1, \dots, p_k)$ is the vector of perceived prices of goods, $1, \dots, k$. We assume that after the euro introduction, the individual forms his or her own perceptions of prices. As discussed later in this section, the level of perceived prices may or may not correspond to actual prices. Thus, the individual maximization problem is as follows:

$$\begin{aligned}
 v_i(\mathbf{p}, I) &= \max_{\mathbf{x}} U_i(\mathbf{x}) & (3.1) \\
 &\text{subject to } \mathbf{p}\mathbf{x} = I \\
 &\mathbf{x} \in X
 \end{aligned}$$

For simplicity, consider $k = 2$, that is, the individual optimizes over two goods, x_1 and x_2 . The vector $\mathbf{p} = (p_1, p_2)$ represents prices before the euro adoption, while the vector of perceived prices after the euro adoption is $\mathbf{p}' = (p'_1, p'_2)$. Without loss of generality we assume that the vectors p and p' are such that $p_1 \geq p'_1$ and $p_2 < p'_2$.¹⁰ As a result of these perceived price changes, the individual either is not affected or

¹⁰The perception of prices after the euro introduction may also change in the same direction for both goods. However, our conclusions remain the same.

becomes better off/worse off. In appendix, Figures 1.1 to 1.3 illustrate these individual reactions. As can be seen from these figures, the perceived impact of the euro adoption depends on preferences for particular goods and the perceived change in prices of these goods.

In Figure 1.1, the consumption bundle A represents the individual optimum before the euro introduction, while A' is the new optimal bundle. The individual moves to a higher indifference curve $U^{A'}$ after the euro introduction and, thus, becomes better off.

On the other hand, the individual who prefers x_2 over x_1 , $x_2 \succ x_1$ is worse off (see Figure 1.2). Since x_2 perceived as relatively more expensive, the individual substitutes it by the less preferred x_1 and moves from B to B' which is located at lower indifference curve $U^{B'}$.

Finally, Figure 1.3 illustrates the situation for an individual if he/she is not affected by the new currency. In this case the optimal consumption bundle moves from C to C' along the same indifference curve $U^C = U^{C'}$.

In the context of the set point theory, the initial level of life satisfaction corresponds to utility received by an individual prior the euro introduction, U^A , U^B , or U^C . The individual reaction to the euro introduction, that is increase, decrease, or no change in utility, is driven by preferences as well as by individual perceptions of price changes. The individual adapts to the euro introduction completely once he/she returns to the initial level of utility U^A , U^B , or U^C some time after the euro introduction. This complete adaptation may in a relatively short period of time after the euro introduction or may take longer.¹¹ In our empirical specification, we analyze the two years after the euro introduction and study whether complete adaptation occurs during this period. Analysis of the long term adaptation is beyond the scope of our paper.

¹¹ As discussed in previous literature, the timing of individual adaptation varies in case of individual events. For instance, full adaptation takes two years after marriage, four years after changes in income, seven or eight years after widowhood, or may not occur at all as in case of disability (see Lucas et al., 2003 and 2004; Clark et al., 2008; Oswald and Powdthavee, 2008; Di Tella et al., 2010, among others).

3.3.2. Empirical Specification

In order to estimate the impact of the euro adoption on life satisfaction, we use the difference-in-differences approach. This approach is described by Greene (2008), among others, and is used for evaluating the effects of policies (treatments) on certain outcomes. The evaluation of policy effects is based on the comparison of the outcomes of a group affected by the policy, that is the treatment group, and a group unaffected by the policy, the control group, before and after the policy introduction. In our case the treatment group is represented by individuals living in a country that introduced the euro, while the control group represents individuals from a country that did not adopt the euro.

The empirical specification is described below. It is estimated separately for each country by ordered logit with heteroskedasticity robust bootstrapped standard errors clustered at the individual level.

$$\begin{aligned}
 satis_{itc}^* &= \beta_1 year1_t + \beta_2 year2_t + \beta_3 treatment_c + & (3.2) \\
 &+ \beta_4 treatment_c * year1_t + \beta_5 treatment_c * year2_t + \\
 &+ \mathbf{x}'_{itc} \boldsymbol{\gamma} + \varepsilon_{itc}
 \end{aligned}$$

where subscripts i , t , c stand for individual, time, and country, respectively. $treatment_c$ is a dummy variable equal to one for a treatment country, that is country which introduced the euro, and zero, otherwise. The dummies $year1_t$ and $year2_t$ are equal to one for the first and second year after the euro introduction, respectively.¹² $satis_{itc}$ is self-reported individual life satisfaction. The responses of $satis_{itc}$ are categorically ordered and given on a Likert scale, taking values from one to four. These responses are as follows:

¹²One could be also interested in evaluating a long term effect of the euro introduction on life satisfaction. However, as highlighted by Welsch and Bonn (2008), macroeconomic convergence tightly connected with economic integration leads to convergence in average life satisfaction across countries. Therefore, in the long run it is difficult to distinguish the effect of euro introduction from the effects of macroeconomic factors and different country level events.

$$satis_{itc} = \begin{cases} 4, & \text{if } \tau_3 < satis_{itc}^*; \\ 3, & \text{if } \tau_2 < satis_{itc}^* < \tau_3 \\ 2, & \text{if } \tau_1 < satis_{itc}^* < \tau_2 \\ 1, & \text{if } satis_{itc}^* < \tau_1, \end{cases} \quad (3.3)$$

where τ_j , $j = 1, \dots, 3$, is the threshold of switching from category $(j - 1)$ to category j and $satis_{itc}^*$ corresponds to a latent individual response regarding life satisfaction.

The coefficients, β_1 and β_2 , measure the common time trend in the treatment and control countries, while β_3 corresponds to the time constant difference between treatment and control countries. The parameters of particular interest are β_4 and β_5 capturing the average treatment effect on life satisfaction. These parameters represent the perceived impact of the euro introduction on life satisfaction during the first and second years after the introduction of the new currency. The estimate of parameter β_4 is used for testing the relationship between the perceived price changes and perceived impact of the euro.

Independent variables \mathbf{x}_{itc} that enter the equation (3.2) include income quartiles, $income_{itc}$; respondent's age and age squared, age_{itc} and $agesq_{itc}$; a dummy for gender, $male_{itc}$; respondent's education, $educ_{itc}$, marital and employment statuses, $married_{itc}$ and $semp_{itc}$ is a dummy variable equal to one if the individual either employed or self-employed and zero otherwise. γ is a vector of estimated parameters of explanatory variables, \mathbf{x}_{itc} . ε_{itc} is a stochastic disturbance term which follows the logistic distribution.

In our analysis the ordered logit is applied. We calculate the probabilities for each level of life satisfaction for an average individual in our sample in the treatment country c in the period t as:

$$\text{Prob}(satis_{itc} = 1|\mathbf{x}) = \Lambda(\tau_1 - \mathbf{z}'\beta - \bar{\mathbf{x}}'_{itc}\gamma), \quad (3.4)$$

$$\text{Prob}(satis_{itc} = 2|\mathbf{x}) = \Lambda(\tau_2 - \mathbf{z}'\beta - \bar{\mathbf{x}}'_{itc}\gamma) - \Lambda(\tau_1 - \mathbf{z}'\beta - \bar{\mathbf{x}}'_{itc}\gamma),$$

$$\text{Prob}(satis_{itc} = 3|\mathbf{x}) = \Lambda(\tau_3 - \mathbf{z}'\beta - \bar{\mathbf{x}}'_{itc}\gamma) - \Lambda(\tau_2 - \mathbf{z}'\beta - \bar{\mathbf{x}}'_{itc}\gamma),$$

$$\text{Prob}(satis_{itc} = 4|\mathbf{x}) = 1 - \Lambda(\tau_3 - \mathbf{z}'\beta - \bar{\mathbf{x}}'_{itc}\gamma).$$

where $\Lambda(\cdot)$ represents the logistic distribution function from the equation (3.2). \mathbf{z} and $\bar{\mathbf{x}}$ are vectors of explanatory variables from equation 1 and $\bar{\mathbf{x}}$ stands for the average value of explanatory variables.

Also, the partial effect of explanatory variables for each category of life satisfaction can be computed as:

$$\begin{aligned} \frac{\partial \text{Prob}(satis_{itc} = 1|\mathbf{x}, year = t)}{\partial x_{itc}} &= -\gamma \Lambda(\tau_1 - \mathbf{z}'\beta - \bar{\mathbf{x}}'_{itc}\gamma), & (3.5) \\ \frac{\partial \text{Prob}(satis_{itc} = 2|\mathbf{x}, year = t)}{\partial x_{itc}} &= \gamma [\Lambda(\tau_1 - \mathbf{z}'\beta - \bar{\mathbf{x}}'_{itc}\gamma) - \Lambda(\tau_2 - \mathbf{z}'\beta - \bar{\mathbf{x}}'_{itc}\gamma)], \\ \frac{\partial \text{Prob}(satis_{itc} = 3|\mathbf{x}, year = t)}{\partial x_{itc}} &= \gamma [\Lambda(\tau_2 - \mathbf{z}'\beta - \bar{\mathbf{x}}'_{itc}\gamma) - \Lambda(\tau_3 - \mathbf{z}'\beta - \bar{\mathbf{x}}'_{itc}\gamma)], \\ \frac{\partial \text{Prob}(satis_{itc} = 4|\mathbf{x}, year = t)}{\partial x_{itc}} &= \gamma [1 - \Lambda(\tau_3 - \mathbf{z}'\beta - \bar{\mathbf{x}}'_{itc}\gamma)]. \end{aligned}$$

These partial effects are also known as the marginal effects and indicate the change in predicted probabilities in response to a change in the particular explanatory variable, x_{itc} , for an individual i for the specific year, t , after the euro adoption in the treatment group.¹³

To check the robustness of the results to the choice of estimation method, we redefine the dependent variable into a zero/one (all dissatisfied/all satisfied) scale and estimate the linear probability model (LPM). Also, in addition to country by country estimations, pooled regressions are performed.¹⁴

¹³For details on calculation of marginal effects in ordered response models see Mallick (2009).

¹⁴For the new member countries pooled regressions were not performed due to different timing of the euro introduction by these countries as well as due to the use of different controls for each new member country.

3.3.3. Choice of Control Countries

To provide the results robust to the choice of control country, several control countries are introduced. For the EU12 countries the United Kingdom, Denmark, and Sweden are used as control countries, since these countries while being EU members, did not introduce the euro in 2002. In the appendix, Figures 2a.1 and 2a.2 represent the distribution of life satisfaction in our sample in EU12 treatment countries and control countries, respectively. As can be seen from Figure 2a.1, in most treatment countries the changes in the fraction of the "not at all satisfied" and "very satisfied" respondents are observed, while in control countries, according to Figure 2a.2, such changes are substantially lower. Also, as Welsch and Bonn (2008) pointed out, all EU countries had similar macroeconomic and life satisfaction trends in the period before the euro introduction. Therefore, the choice of control groups that belong to the EU, but are not in the eurozone, is justified, since the difference-in-differences estimator is valid under the assumption of similarity in average trends for treatment and control groups in the absence of the treatment (Abadie, 2005, among others).

However, the use of the same controls for the new members of the eurozone is not justifiable because of the differences in the economic development and average life satisfaction between the new members of the eurozone and the United Kingdom, Denmark, and Sweden. Therefore, for each of the new members of the eurozone, Cyprus, Estonia, Malta, Slovakia, and Slovenia, specific control countries are used. The selection of control groups for each new member country is based on regional proximity, linguistic similarities and common historical roots. For instance, Cyprus officially gained its independence from British administration in 1960 after the Zurich and London Agreement between the United Kingdom, Greece and Turkey. The official languages of Cyprus are Greek and Turkish, however, most citizens of Cyprus speak English as well. Therefore, the UK and Turkey are selected as control countries.¹⁵

¹⁵It should be noted that Turkey experienced changes in life satisfaction in 2008 because of economic crisis (see Figure 2b.2). This questions the use of Turkey as a control country. Thus, the results for the Cyprus Republic with Turkey as a control should be interpreted with a caution.

Malta was a British colony until 1964. Maltese and English are official languages in Malta. Given these historical links, the UK is selected as a control for Malta. For Slovakia, the Czech Republic, Poland, and Hungary are selected as controls. Slovakia and the Czech Republic together made up the country of Czechoslovakia from 1918 until 1993. The languages of the two countries are similar. Also, Slovakia has common borders with Poland and Hungary. These countries are also known as the Visegrád Group.

The historical similarity criterion can also be applied to Slovenia and Croatia as both countries were the part of Yugoslavia until almost the end of XXth century. Bulgaria is also used as a control country for Slovenia, since both countries belong to the Balkan region. The same criteria of regional proximity and common historical roots are applied to choose Latvia and Lithuania as the controls for Estonia.

The distribution of life satisfaction in the new member treatment and control countries is presented in Figures 2b.1 and 2b.2 in appendix, respectively.

3.4. Data

The data for this study are combined from several waves of the Eurobarometer, a repeated cross-sectional survey of individuals in Europe. For each country, the data for two years before the euro introduction and two years after the introduction are used. Our sample includes Austria, Belgium, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, and Spain for the years 2000-2003; the Cyprus Republic and Malta for the years 2006-2008; Slovenia for the years 2005-2008; Slovakia for the years 2007-2010; and Estonia for the years 2009-2011. The data used for all the new member countries, except Estonia, are prior to the European debt crisis. Data surveys are country representative. National samples include approximately 1,000 or more respondents per country per year.

The data contain all the relevant information for the study: self-responses about individual life satisfaction and various personal socioeconomic characteristics, such as

age, gender, years of education, marital and employment status. Individual income quartiles harmonized across EU countries range from 1 to 5 for the years 2000-2003. Since the income variable is not available for the new member countries, we construct a proxy variable for income for the years 2005-2011. This proxy variable represents the responses of individuals regarding the ownership of durables and takes the range from 1 (*none*) to 5 (*owning a house*).

The respondents are asked how satisfied they were with their life, using a Likert scale from 1 (*not at all satisfied*) to 4 (*very satisfied*). Descriptive statistics for treatment and control groups used in our paper is presented in Table 1a and Table 1b in appendix for EU12 and new member countries, respectively.

The perception indices are provided by the European Commission Consumer Survey and represent the public opinion regarding the changes in household financial situation, in prices, and in the general economic situation.¹⁶ These indices are calculated by aggregating the responses to the following questions: 1) "*How has the financial situation of your household changed over the last 12 months? It has (+ +) got a lot better, (+) got a little better, (=) stayed the same, (-) got a little worse, (- -) got a lot worse, N do not know*"; 2) "*How do you think that consumer prices have developed over the last 12 months? They have (++) risen a lot, (+) risen moderately, (=) risen slightly, (-) stayed about the same, (- -) fallen, N do not know*"; 3) "*How do you think the general economic situation in the country has changed over the past 12 months? It has (+ +) got a lot better, (+) got a little better, (=) stayed the same, (-) got a little worse, (- -) got a lot worse, N do not know*". The perception indices in each case represent the difference between the percentage of respondents who have chosen the positive options, (++) and (+), and the negative options, (-) and (- -). The range of the index is [-100;100], where -100 represents that all respondents in the particular country perceived the decrease in prices / worsening of own financial situation / worsening of general economic situation, while 100 represents that all respondents in the particular country perceived the increase in prices / improvement in own financial

¹⁶ Available online at http://ec.europa.eu/economy_finance/db_indicators/surveys/time_series/

situation / general economic situation.

3.5. Results and Discussion

3.5.1. EU12 Countries

In this section we analyze the perceived impact of the euro introduction on the life satisfaction of individuals in the EU12 countries. Three control countries are used: the United Kingdom, Denmark, and Sweden. Estimation results are robust to the choice of control group, but less significant when Sweden is used as a control country.

The country by country estimations are presented in Table 2a. For simplicity, the empirical findings are summarized in Table 3a. The columns of this table correspond to "increase", "decrease", and "no change" in life satisfaction of an average individual in a specific country in 2002, while the rows represent the effects on life satisfaction in 2003. When interpreting the results, we first concentrate on the immediate perceived impact of the euro introduction in 2002 and further we discuss this impact in 2003 in the context of the set point theory.

In Table 3a the countries can be divided into two main groups by the perceived impact of the euro introduction. The first group corresponds to countries in which the life satisfaction of individuals increased after the introduction of the new currency (Austria, Finland, Luxembourg), while the second group corresponds to countries in which the life satisfaction decreased (the rest of EU12 countries, except Italy). One may point out that the perceived impact of the euro is driven by the economic performance of the particular country, e.g. by the levels of GDP per capita, unemployment, government debt, etc. Following this argument, the individual perceptions in northern countries, such as Austria, Belgium, Finland, Germany, Luxembourg, and Netherlands will differ from the individual perceptions in Greece, Ireland, Portugal and Spain, since northern countries are better developed economically. However, our findings in Table 3a suggest that the grouping by the perceived impact of the euro

does not correspond to the grouping by economic performance. For instance, France and Germany are in the same group by the perceived impact of the euro with Portugal and Spain, though the economic performance of these countries differs substantially. Thus, individual perceptions of the euro in different countries are affected not only by the economic performance, but also by other factors. Among such factors may be patriotism and national pride (Pepermans and Verleye, 1998), attitudes towards competitiveness (Van de Vliert et al., 2000), attitudes towards business, price controls, social welfare, economic efficacy and fairness (Allen et al., 2005).

The groups of individuals within a country may also be affected by the euro introduction differently. To account for these differences, we disentangle the perceived impact of the euro by groups, such as gender, age, education, employment status, and income. The results for each group are summarized in Tables 4a.1 to 4a.5.¹⁷ We find that in almost every country, females, individuals over 65 years old, the unemployed, and lower income groups perceived the euro introduction negatively, while other groups were either not affected (males, young and middle aged individuals, individuals at all levels of education, and middle income groups) or affected positively (the employed, self-employed, and higher income groups).

The perceived negative impact of the euro on the life satisfaction of some groups may be associated with individual risks and uncertainty arising after its introduction. For instance, gender differences in risk aversion, uncertainty, and overconfidence are well documented in the literature (see Jonung, 1986; Arch, 1993; Prince, 1993; Byrnes et al., 1999; Schubert et al., 1999; Barber and Odean, 2001; Croson and Gneezy, 2009; among others). The findings in literature suggest that risks/uncertainty for females may be considered more as a possible threat, while for males it may be considered more as a possible opportunity; females are likely to anticipate negative outcomes with more nervousness, while males tend to be more confident. Also, females often perceive money in terms of things that can be purchased, while males may value more the power and status that money brings (Prince, 1993). This suggests that in case

¹⁷Ordered logit results for each group for each country are available upon request.

of the euro introduction, as compared to males, females may be more uncertain and have stronger fears that money change the value after the euro, and thus perceive the euro negatively.

Also, older people are more likely to perceive the euro introduction as a stress because of challenges handling conversion of prices into a new currency (Wunder et al., 2008), fears for their savings (Lunt and Livingstone, 1991), more reliability on mass media and lower ability to process new information easily (Laroche et al., 2004). The unemployed and low income groups are more likely to perceive economic insecurity more intensively (Linz and Semykina, 2008 and 2010). In case of the euro introduction this results in higher uncertainty regarding their own life, linked to their negative perceptions of the euro.

However, the most important factor that is likely to affect the life satisfaction of all groups after the euro introduction is sensitivity to perceived price changes. As argued by Mussweiler and Englich (2003), among others, the euro introduction induced an illusion that prices in the euro are higher than prices in old national currency. Indeed, the perceived inflation rate increased dramatically after the euro introduction, even though there was almost no change in the actual inflation rate in most EU12 countries (Deroose et al., 2007; Ehrmann, 2006; Mastrobuoni, 2004; among others). In order to test the association between the impact of the euro on life satisfaction and perceived increase in prices, we apply the Freeman-Halton extension of Fisher's exact test which is also known as a contingency table. The main advantage of this test is that it is applicable for a small sample. The test is based on the hypergeometric distribution and provides the p-value for testing hypotheses.¹⁸ According to the European Commission Consumer Survey, the perceived increase in prices is observed in most EU12 countries. The null hypothesis of the test (H_0) is that there is no association between the impact of the euro and perceived increase in prices above the median EU12 level in 2002, while the alternative hypothesis (H_a) is that there is such an association.

The results are summarized in Tables 5.1 to 5.5. Rows labeled "below the me-

¹⁸For more technical details for this test see Freeman and Halton (1951).

dian level of EU12" and "above the median level of EU12" correspond to below and above the median perception of the prices in the EU12 countries. Columns labeled "increase", "no change", and "decrease" correspond to the impact of the euro introduction on life satisfaction of the individuals in a particular country. The classification of countries into columns is based on the estimated effects of the euro on life satisfaction obtained from the ordered logit regressions for each country in 2002, as described above. The number in each cell of these tables corresponds to the number of countries where individuals reacted specifically to the euro introduction and have perceptions regarding change in prices below or above the median EU12 level.

The results suggest that for females and unemployed, there is a negative association between the perceived impact of the euro and the perceived price increase while for males we do not have enough evidence for such an association. Also, we find evidence that the lower middle income group associates the perceived impact of the euro adoption with perceived price. However, the direction of this association for this group is not clear.

Similarly to ordered logit results, the main findings of binary linear regressions are summarized in Table 6a.¹⁹ For all countries, except Luxembourg in 2003, the signs of the effects are robust to the choice of estimation method. However, the results are less significant in the case of LPM. As can be seen from Table 6a, the individuals from higher number of countries are not affected by the euro, according to LPM results. This can be due to the aggregation of the dependent variable. Also, according to the LPM results, individuals from Belgium, Finland, and Spain were not affected by the euro in 2003. That is, individuals from these countries adapted to the euro introduction within short time, as the set point theory suggests.

Finally, pooled estimation results, for both ordered logit and linear probability model, are presented in Table 7. The results suggest that the impact of the euro on life satisfaction in treatment countries was negative in 2002 and (less robustly) in 2003 as well.

¹⁹The results of binary linear regressions for each country are available upon request.

3.5.2. Set Point Theory

Previous experimental and survey studies of adaptation to the new currency have been focused on testing the so-called "money illusion" hypothesis, that is the existence of perceived differences between prices in the euro and the previous national currency and the dissipation of these differences over time (see Mussweiler and Englich, 2003; Ranyard et al., 2005; Amado et al., 2007). As suggested by this literature, "money illusion" dissipates within six months, and this period is sufficient for the adaptation of all individuals to the new currency. In contrast to previous studies, we investigate adaptation from the perspective of set point theory. We estimate the impact of the euro adoption in 2003 and explore whether the life satisfaction of affected individuals returned to the same level as prior to the euro introduction. This analysis provides partial empirical evidence of the set point theory.

The effects of the euro introduction on life satisfaction in 2003 are summarized in Tables 4a.1 to 4a.5. The negative perception of the euro remains for females, the unemployed, and the lowest income group individuals in 2003, while the individuals over 65 years old returned to their initial levels of life satisfaction in 2003 on average. This means that the older aged individuals adapted to the euro introduction within two years.

Regarding the employed or self-employed, and the highest income group, we observe a positive perception of the euro in 2002, and this continues through 2003. Such positive perceptions by the employed and self-employed can be explained by their stronger emotional stability and self-confidence, as compared to the unemployed (see Brandstatter, 1997; Goldsmith et al., 1997; Waters and Moore, 2001; Koellinger et al., 2007; among others). The positive effects of the euro introduction may persist longer, since these groups are less uncertain and more confident regarding their own life and their national economic outcomes. Also, we find that the highest income group individuals adapt to the euro more easily because it had no impact on their life satisfaction in 2003.

Life satisfaction of some groups of individuals (males, young and middle aged individuals, at all levels of education, and middle income groups) did not change in 2002. While males still held the same perceptions in 2003, the lower middle income group, between 16 and 29 years old individuals perceive the euro positively in 2003. It may signal the delayed reaction of these groups to the euro introduction.

Thus, according to our results, only two groups adapted completely to the euro introduction within two years: the older aged individuals and high income groups. That is, the set point theory holds for these groups even in the short run. Although we find that other groups mainly reacted to the euro introduction either during the first or during the second year, we have insufficient evidence of the return of life satisfaction to its initial level in two years. It may also be the case that the adaptation of these groups takes a longer period.

3.5.3. New Members of the Eurozone

During 2007-2011 several new members, including Cyprus, Estonia, Malta, Slovakia, and Slovenia, introduced the euro. To separate the impact of the euro introduction from the impact of the economic crisis in 2008, the data before the autumn wave of 2008 are used for Cyprus, Malta, and Slovenia.²⁰ That is, for Slovenia the data are from 2005-2008, for Cyprus and Malta - 2006-2008. Since Slovakia adopted the euro in 2009, our estimations for this country may still accumulate the effect of the 2008 economic crisis. The analysis in this paper is prior to the European debt crisis, with the exception of Estonia, for which data are used from 2009-2011. Due to a small number of new member countries, we do not use the contingency table approach to test the association between the perceived impact of the euro and the perception of prices but we briefly summarize the statistics for perceived prices.

The estimation results for new member countries are presented in Table 2b and summarized in Table 3b. In Table 3b, we observe that individuals from Cyprus,

²⁰The Eurobarometer survey typically contains two waves per year, the first one is during spring and the second one is during autumn.

Malta, and Slovakia perceived the euro introduction positively, the Estonians were not affected, while the individuals from Slovenia perceived it negatively. It is likely that national economic performance prior to the euro introduction plays a greater role for citizens of the new member countries than for citizens of EU12 countries, since they are obliged to join the ERMII (European Exchange Rate Mechanism) and meet the Maastricht criteria prior to entering the eurozone. In line with this, Slovenia which has a stronger economic performance, as compared to the rest of new members, received less benefits from introducing the euro.

As in the previous section, we also disentangle the individuals into groups. As compared to EU12 countries, we find greater heterogeneity in results by groups between new member countries. As can be seen from Tables 4b.1 to 4b.5, in Slovenia, similarly to EU12 countries, females, individuals over 65 years old, and lower income groups perceived the euro introduction negatively and young and highly educated individuals were not affected. Other groups in Slovenia (males, middle aged individuals, the employed and self-employed, individuals with 15 to 18 years of education, upper middle and high income groups) perceived the euro negatively as well. The decrease in the life satisfaction of these groups is in contrast with the findings for EU12 countries. Given the Eurobarometer survey, increase in prices is the most important issue for Slovenians (71% in 2007). According to this survey, 57% and 71% Slovenians felt that all prices increased in 2007 and 2008, respectively. 86% and 92% of respondents attribute the increase in prices to the euro introduction in 2007 and 2008, respectively. Also, as suggested by Allen et al. (2005), economic beliefs in Slovenia, as compared to other countries in Europe, are characterized by stronger opposition to price controls and stronger support for social welfare. As the authors argue, rapid modernization in Slovenia combined with a generally low level of education and underdevelopment of social security system affects the economic beliefs of individuals. The negative perception of Slovenians may also be attributed to higher uncertainty regarding the market reforms.

Contrary to Slovenia, as can be seen from Tables 4b.1 to 4b.5, in Cyprus, Malta

and Slovakia, as compared to EU12 countries, more groups of individuals perceived the euro either positively or were not affected by its introduction. That is, an increase in life satisfaction is observed for females, young and middle aged individuals, the unemployed (no change in Slovakia), the employed and self-employed (no change in Malta), the individuals with 15 to 18 years of education, the lowest income groups in Malta, the upper middle income group in Slovakia, upper middle and the highest income groups in Cyprus, while other groups in Cyprus, Malta and Slovakia were not affected by the euro introduction. These positive effects may be explained by the lower level of uncertainty in these new member countries regarding to market reforms. According to the Eurobarometer survey, the citizens of these countries in comparison with Slovenians think that these reforms are beneficial for them. Since the individuals from new countries observed the experience of the euro introduction by EU12 countries and expected the euro introduction by their own countries well in advance, it is likely that at the time of the euro introduction they were less uncertain about the outcomes of this reform, as compared to individuals from EU12 countries. Moreover, according to the Eurobarometer survey, the public in Cyprus (52%), Malta (41%), and Slovakia (25%) felt that all prices increased after the euro introduction. These percentages are much lower than in Slovenia (71%).

In Estonia, most groups of individuals were not affected by the euro introduction, except for the lowest income group and the youngest age group who were affected negatively. Since the effect of the euro on life satisfaction in this country may be incorporated with the effect of the European debt crisis, the results for Estonia are preliminary.

Since only one period after the euro introduction is used for the analysis of Cyprus, Estonia, and Malta, we do not assess the extent of the individual adaptation in these countries. The results for Slovenia and Slovakia in the second period are presented in Tables 4b.1 to 4b.5. Most Slovenians did not adapt to the euro introduction within two years, except for the individuals from the upper middle income group for whom no effect of the euro on life satisfaction is observed in the second year. In Slovakia,

increase in life satisfaction during the second year is observed only for males and highly educated individuals. Thus, for the most groups of the individuals from new member countries the adaptation to the euro introduction was likely to take longer than two years.

Similarly to ordered logit results, the main findings of binary linear regressions are summarized in Table 6b. The effects of the euro introduction on life satisfaction of individuals from all new member countries are robust to the choice of estimation method.

3.5.4. Preliminary Implications for the Potential Eurozone Members

The analysis of the euro adoption by Cyprus, Estonia, Malta, Slovenia, and Slovakia allows us to make preliminary conclusions regarding the effects of the euro on life satisfaction of individuals from potential eurozone members. New member states of the EU, Bulgaria, the Czech Republic, Hungary, Latvia, Lithuania, Poland, and Romania are obliged to adopt the euro upon fulfilling the ERMII conditions and the Maastricht criteria. On the one hand, the expected introduction of the euro is likely to affect individuals from these countries in a similar way as the new eurozone members that have recently joined. That is, life satisfaction in potential eurozone member countries is likely to be affected either positively or not affected by the euro introduction. On the other hand, recent developments in the eurozone, primarily the European sovereign debt crisis, may negatively impact the effect of the euro on life satisfaction in these countries. In this context, the case of Estonia is especially relevant for the analysis, since this country adopted the euro during the debt crisis. Our findings suggest that the life satisfaction of the Estonians has not been affected by the euro introduction. Interestingly enough, public support for the euro in Estonia constantly increased and reached a peak in the year of the euro adoption. In line with our results, the information on public support may be used to predict the impact

of the euro on the life satisfaction of individuals from the potential members of the eurozone.

In Table 8, data on public support for the euro in all EU member countries are presented. As can be seen from this table, public support increased in the year of the euro introduction in all new members of the eurozone. In the potential eurozone member states, such as Latvia and Lithuania, support for the euro has always been only slightly lower than in Estonia. Given similar level of support for the euro, common historical roots, and regional proximity of these countries, we expect that the effects of the euro introduction by Latvia and Lithuania may be similar to the effects in Estonia, having little to no impact on life satisfaction.

Romania has the highest support for the euro among all the potential eurozone member states. Once this country joins the ERMII, it is likely that this support may increase at similar rates to those noted when the euro was introduced to other new members. Thus, the euro introduction is likely to have a positive effect on life satisfaction of the individuals in Romania. Similar effects may also be observed in Bulgaria and Hungary, whose citizens also show relatively high levels of support for the euro. However, this support has weakened during the debt crisis. Thus, the effect of the euro on life satisfaction in these countries may depend on further development of the eurozone crisis.

Due to common historical roots and close economic relations with Slovakia, one may expect similarly positive effects of the euro introduction on life satisfaction in the Czech Republic and Poland. However, the support for the euro in Slovakia, the Czech Republic, and Poland differs substantially. While in Slovakia support has traditionally been quite high, support for the euro has decreased dramatically in the Czech Republic and Poland over recent years. Due to weak public support, the possible effects of potential euro introduction on life satisfaction in these countries is not clear.

Price perceptions and perceptions of the general national economic situation are also important factors that will affect life satisfaction in potential eurozone member

states. As the analysis of current eurozone members suggests, inflationary price perceptions lead to a negative impact of the euro on life satisfaction, while perceived improvements in the general economic situation affect life satisfaction positively (see Table 9). Unless individuals from the potential members of the eurozone perceive higher inflation attributed to the euro introduction and low support for this introduction, the euro is likely to affect life satisfaction in these countries either positively or not at all. However, the effect may have a strong relationship with overall economic performance of potential member states.

3.6. Conclusion

This paper provides an assessment of the impact of the euro introduction on the life satisfaction of individuals in all countries of the eurozone during the first and second years after its adoption. The results suggest that individuals in EU12 and new member countries (the Cyprus Republic, Estonia, Malta, Slovenia and Slovakia) were affected by the euro introduction differently. In EU12 countries, the life satisfaction of females, older individuals, the unemployed, and the lowest income group decreased. This negative impact of the euro on life satisfaction in EU12 countries may be associated with individual risks and uncertainty arising after its introduction, as well as with the perceived increase in prices. As compared to EU12 countries, individuals from most new member countries, except Slovenia, perceived the euro either positively or were not affected by its introduction.

This paper provides the first evidence regarding the adaptation of life satisfaction to countrywide policy, since all the previous studies have tested the set point theory with respect to individual events only. In line with the set point theory, our empirical findings suggest that the changes in the life satisfaction of individuals measure reactions not only to individual events, but to countrywide events as well. However, we find that only two groups from EU12 countries adapted to the euro introduction within two years (older individuals and those with higher income). The adaptation of

other groups is likely to take a longer period. Regarding the new members, Slovakia and Slovenia, we observe that the adaptation to the euro introduction for all groups was not completed within two years.

The empirical findings of this paper may be of interest to countries that expect to enter the eurozone or countries in other parts of the world which may undertake similar regional financial integration, e.g. the West African Monetary Zone or Asian Monetary Unit. The analysis of perceptions of the euro introduction by particular groups as well as the persistence of these effects may be useful for policy communication. It is of particular interest for policy makers to address the groups affected by the new currency, since these individuals/groups may be politically active, voting in national elections. If the overall perception of individuals regarding the euro adoption in the particular country is negative, the politicians who supported it may be penalized during the next national elections.

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3.A. Appendix

3.A.1. Figures

Figure 1.1: The Individual Who is Better Off after the Euro Introduction

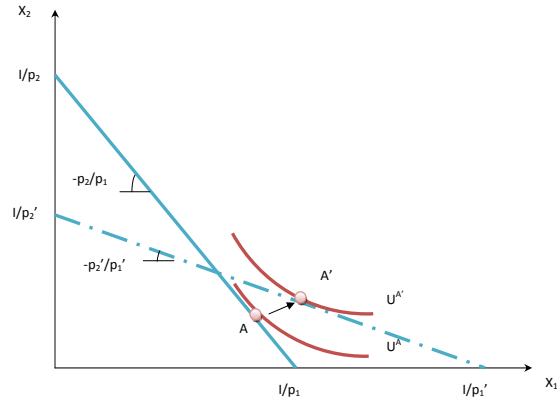


Figure 1.2: The Individual Who is Worse Off after the Euro Introduction

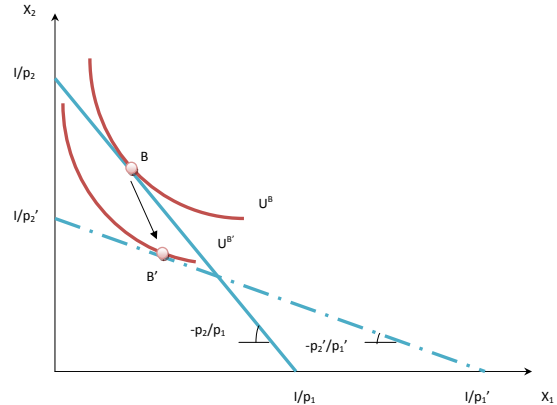
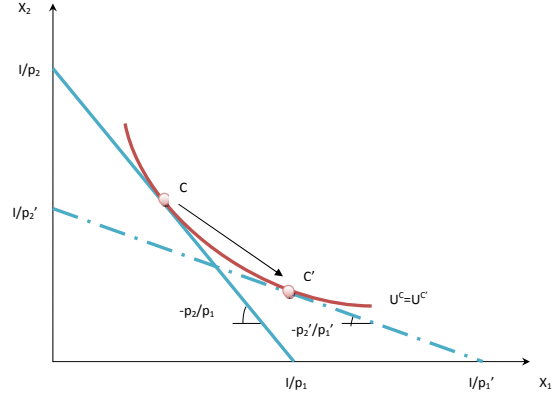


Figure 1.3: The Individual Who is not Affected by the Euro Introduction



Source: constructed by the authors.

Figure 2a.1: Distribution of Life Satisfaction for the EU12 (Treatment Countries)

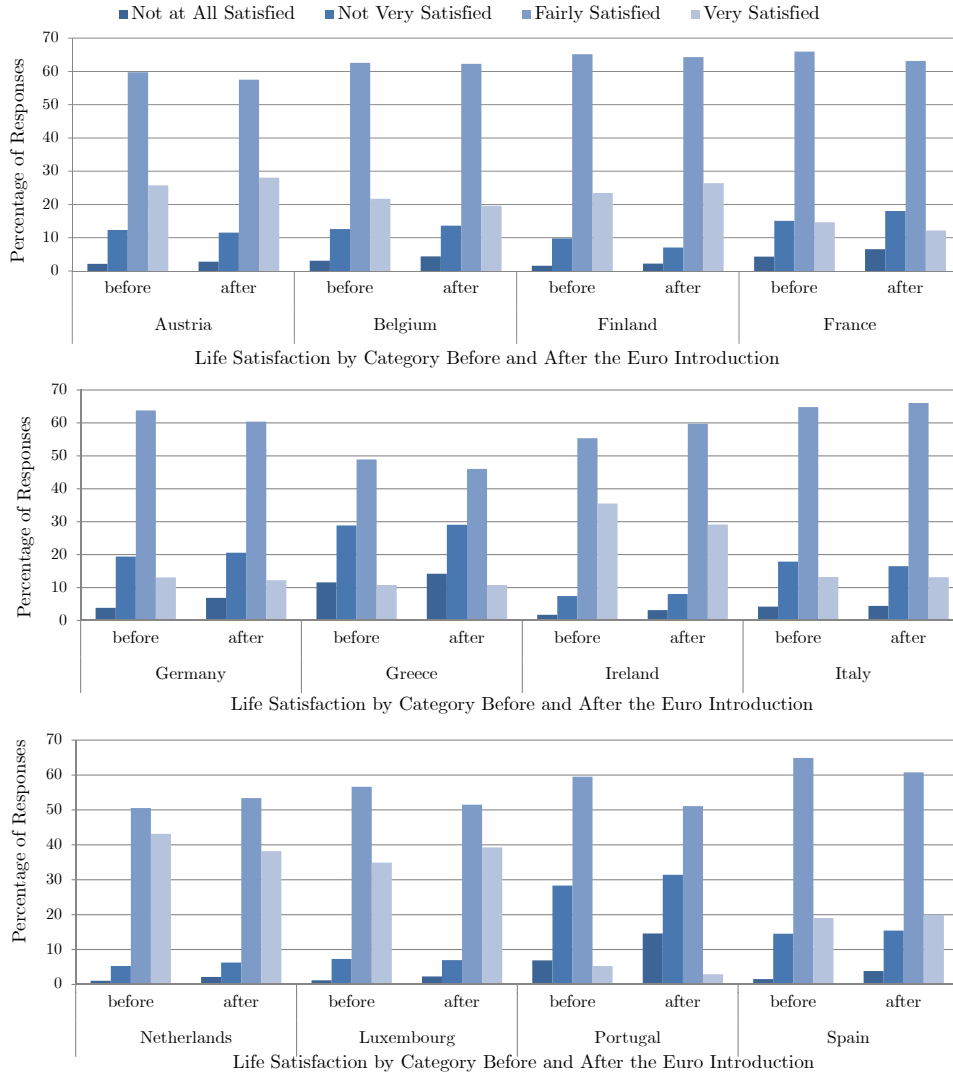
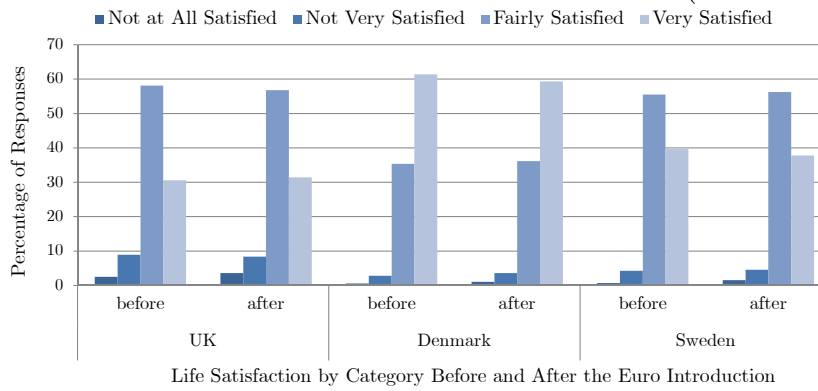


Figure 2a.2: Distribution of Life Satisfaction for the EU12 (Control Countries)



Source: the Eurobarometer.

Figure 2b.1: Distribution of Life Satisfaction for the New Members (Treatment Countries)

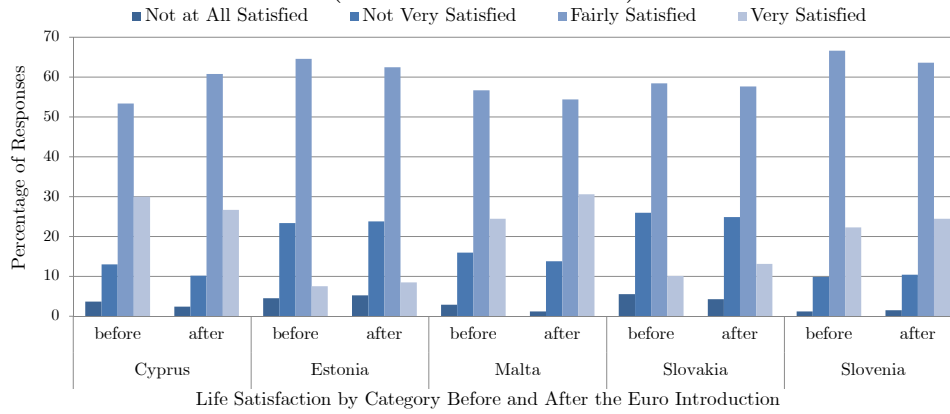
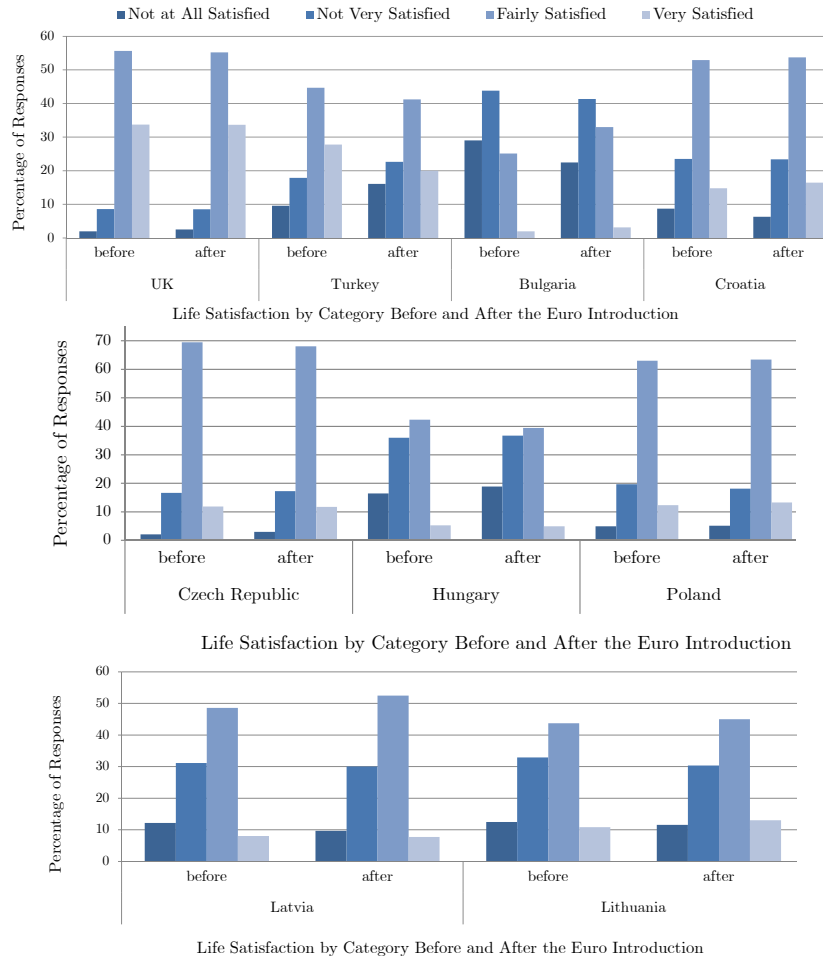


Figure 2b.2: Distribution of Life Satisfaction for the New Members (Control Countries)



Source: the Eurobarometer.

3.A.2. Main Tables

*Table 1a: Descriptive Statistics on Life Satisfaction for EU12
(Treatment and Control Countries)*

		Obs.	Mean	St.Dev.	Percentage of "Not at All Satisfied"	Percentage of "Not Very Satisfied"	Percentage of "Fairly Satisfied"	Percentage of "Very Satisfied"	
Treatment Countries	Austria	before	3935	3.090	0.678	2.19	12.35	59.72	25.74
		after	2979	3.108	0.706	2.85	11.55	57.54	28.06
	Belgium	before	4129	3.029	0.683	3.10	12.64	62.56	21.70
		after	3071	2.971	0.714	4.43	13.64	62.29	19.64
	Finland	before	4024	3.105	0.620	1.57	9.82	65.13	23.48
		after	3027	3.148	0.635	2.25	7.07	64.29	26.40
	France	before	3970	2.910	0.679	4.31	15.09	65.94	14.66
		after	2983	2.810	0.728	6.57	18.07	63.16	12.20
	Germany	before	8084	2.860	0.676	3.81	19.38	63.76	13.05
		after	6040	2.779	0.743	6.84	20.58	60.38	12.20
	Greece	before	4004	2.588	0.829	11.54	28.85	48.88	10.74
		after	3002	2.533	0.865	14.19	29.05	46.00	10.76
	Ireland	before	3900	3.247	0.661	1.72	7.41	55.36	35.51
		after	2952	3.149	0.689	3.12	8.03	59.72	29.13
	Italy	before	3960	2.869	0.679	4.19	17.85	64.77	13.18
		after	3048	2.879	0.676	4.40	16.47	66.01	13.12
	Netherlands	before	4006	3.358	0.630	1.02	5.27	50.55	43.16
		after	3016	3.277	0.673	2.12	6.27	53.42	38.20
	Luxembourg	before	2396	3.253	0.636	1.17	7.03	56.64	34.89
		after	1772	3.278	0.689	2.26	6.94	51.52	39.28
Portugal	before	3978	2.631	0.690	6.89	28.33	59.53	5.25	
	after	2970	2.423	0.771	14.58	31.41	51.11	2.90	
Spain	before	3975	3.015	0.629	1.51	14.54	64.91	19.04	
	after	2984	2.969	0.711	3.82	15.42	60.79	19.97	
Control Countries	UK	before	5369	3.167	0.682	2.46	8.92	58.06	30.56
		after	4011	3.160	0.717	3.54	8.35	56.72	31.39
	Denmark	before	3973	3.575	0.576	0.53	2.79	35.31	61.36
		after	2991	3.537	0.618	1.04	3.54	36.11	59.31
	Sweden	before	3991	3.341	0.590	0.65	4.23	55.47	39.64
		after	2983	3.302	0.626	1.51	4.53	56.19	37.78

Source: constructed by the authors using the Eurobarometer survey.

Table 1b: Descriptive Statistics on Life Satisfaction for New Members
(Treatment and Control Countries)

		Obs.	Mean	St.Dev.	Percentage of "Not at All Satisfied"	Percentage of "Not Very Satisfied"	Percentage of "Fairly Satisfied"	Percentage of "Very Satisfied"	
Treatment Countries	Cyprus	before	1505	3.096	0.753	3.65	13.02	53.36	29.97
		after	502	3.118	0.672	2.39	10.16	60.76	26.69
	Estonia	before	3917	2.752	0.654	4.49	23.39	64.59	7.53
		after	917	2.743	0.683	5.23	23.77	62.49	8.51
	Malta	before	1492	3.027	0.720	2.88	15.95	56.70	24.46
		after	500	3.144	0.687	1.20	13.80	54.40	30.60
	Slovakia	before	4305	2.731	0.714	5.53	25.95	58.42	10.10
		after	4101	2.811	0.707	4.29	24.88	57.67	13.16
	Slovenia	before	2077	3.100	0.600	1.20	9.87	66.63	22.29
		after	3023	3.111	0.630	1.49	10.42	63.61	24.48
Control Countries	UK	before	3961	3.212	0.676	1.97	8.61	55.67	33.75
		after	1303	3.201	0.695	2.53	8.52	55.26	33.69
	Turkey	before	4460	2.908	0.912	9.60	17.87	44.71	27.83
		after	1473	2.652	0.975	16.09	22.67	41.21	20.03
	Bulgaria	before	2006	2.000	0.789	29.06	43.82	25.12	1.99
		after	2961	2.169	0.808	22.46	41.34	33.03	3.17
	Croatia	before	1991	2.737	0.815	8.74	23.56	52.94	14.77
		after	2983	2.805	0.783	6.30	23.43	53.77	16.49
	Czech Republic	before	4168	2.910	0.600	2.09	16.63	69.46	11.83
		after	4093	2.889	0.629	2.94	17.23	68.07	11.76
	Hungary	before	3999	2.363	0.816	16.45	35.98	42.34	5.23
		after	3976	2.325	0.820	18.86	36.75	39.44	4.95
	Poland	before	3948	2.828	0.699	4.94	19.71	63.02	12.34
		after	3745	2.854	0.705	5.13	18.15	63.43	13.29
	Latvia	before	3920	2.525	0.809	12.19	31.15	48.60	8.06
		after	918	2.583	0.770	9.69	30.07	52.51	7.73
	Lithuania	before	3913	2.530	0.846	12.47	32.94	43.75	10.84
		after	890	2.596	0.857	11.57	30.34	45.06	13.03

Source: constructed by the authors using the Eurobarometer survey.

Table 2a: Ordered Logit Estimation Results for the EU12 Countries

Treatment country:	Austria	Belgium	Finland	France	Germany	Greece	Ireland	Italy	Luxembourg	Netherlands	Portugal	Spain
Threshold 1	-3.967 *** (0.155)	-3.801 *** (0.158)	-4.798 *** (0.166)	-4.366 *** (0.176)	-4.061 *** (0.160)	-3.956 *** (0.145)	-3.941 *** (0.176)	-4.035 *** (0.190)	-3.969 *** (0.179)	-4.269 *** (0.199)	-4.543 *** (0.167)	-4.368 *** (0.159)
Threshold 2	-2.318 *** (0.152)	-2.246 *** (0.156)	-3.149 *** (0.151)	-2.777 *** (0.170)	-2.240 *** (0.151)	-2.416 *** (0.146)	-2.481 *** (0.179)	-2.390 *** (0.189)	-2.458 *** (0.178)	-2.760 *** (0.195)	-2.741 *** (0.167)	-2.592 *** (0.159)
Threshold 3	0.593 *** (0.145)	0.739 *** (0.154)	0.081 (0.153)	0.380 *** (0.166)	0.908 *** (0.146)	0.376 *** (0.140)	0.503 *** (0.180)	0.718 *** (0.187)	0.515 *** (0.175)	0.230 (0.190)	0.503 *** (0.166)	0.398 ** (0.155)
Year 2002	0.040 (0.059)	0.047 (0.069)	0.054 (0.068)	0.049 (0.062)	0.063 (0.065)	0.039 (0.051)	0.053 (0.054)	0.047 (0.067)	0.042 (0.063)	0.045 (0.065)	0.049 (0.067)	0.041 (0.055)
Year 2003	0.136 * (0.081)	0.145 * (0.086)	0.161 ** (0.080)	0.157 ** (0.064)	0.157 * (0.081)	0.142 (0.089)	0.148 * (0.076)	0.147 * (0.078)	0.143 * (0.085)	0.141 * (0.081)	0.153 (0.098)	0.145 * (0.080)
Treatment country	-0.215 *** (0.054)	-0.475 *** (0.058)	-0.321 *** (0.050)	-0.832 *** (0.055)	-1.011 *** (0.046)	-1.608 *** (0.053)	0.167 ** (0.068)	-0.946 *** (0.069)	0.239 *** (0.076)	0.551 *** (0.052)	-1.706 *** (0.060)	-0.620 *** (0.047)
Treatment country*year	0.010 (0.086)	-0.319 *** (0.106)	0.128 (0.085)	-0.258 *** (0.088)	-0.180 ** (0.078)	-0.328 *** (0.063)	-0.305 *** (0.104)	-0.126 (0.105)	0.069 (0.116)	-0.183 ** (0.084)	-0.714 *** (0.074)	-0.232 *** (0.088)
Treatment country*year	-0.035 (0.110)	-0.088 (0.129)	-0.111 (0.098)	-0.262 ** (0.102)	-0.385 *** (0.095)	0.141 (0.118)	-0.306 *** (0.143)	-0.366 *** (0.119)	-0.041 (0.148)	-0.221 ** (0.104)	-0.384 *** (0.120)	-0.189 * (0.113)
Male	-0.134 *** (0.036)	-0.087 ** (0.041)	-0.251 *** (0.045)	-0.099 ** (0.044)	-0.109 *** (0.039)	-0.069 (0.044)	-0.210 *** (0.053)	-0.020 (0.050)	-0.158 *** (0.048)	-0.196 *** (0.040)	0.036 (0.038)	-0.051 (0.046)
Age	-0.051 *** (0.008)	-0.049 *** (0.007)	-0.074 *** (0.007)	-0.070 *** (0.007)	-0.054 *** (0.006)	-0.071 *** (0.007)	-0.062 *** (0.009)	-0.052 *** (0.010)	-0.060 *** (0.009)	-0.069 *** (0.009)	-0.070 *** (0.007)	-0.066 *** (0.008)
Age squared	0.001 *** (0.000)	0.001 *** (0.000)	0.001 *** (0.000)	0.001 *** (0.000)	0.001 *** (0.000)	0.001 *** (0.000)	0.001 *** (0.000)	0.001 *** (0.000)	0.001 *** (0.000)	0.001 *** (0.000)	0.001 *** (0.000)	0.001 *** (0.000)
Education 15-18 years	-0.150 ** (0.071)	-0.206 *** (0.064)	-0.363 *** (0.064)	-0.194 *** (0.067)	-0.304 *** (0.045)	0.160 *** (0.059)	-0.208 ** (0.091)	-0.135 ** (0.062)	-0.170 ** (0.078)	-0.185 *** (0.061)	0.025 (0.061)	-0.070 (0.057)
Education more than 19 years	0.069 (0.083)	-0.048 (0.067)	-0.173 *** (0.055)	-0.070 (0.076)	-0.100 * (0.066)	0.369 *** (0.077)	-0.061 (0.090)	0.065 (0.067)	-0.050 (0.078)	-0.025 (0.079)	0.225 *** (0.068)	0.131 ** (0.066)
Married	0.279 *** (0.065)	0.401 *** (0.066)	0.432 *** (0.050)	0.347 *** (0.057)	0.114 ** (0.045)	0.295 *** (0.069)	0.423 *** (0.061)	0.379 *** (0.063)	0.396 *** (0.079)	0.494 *** (0.049)	0.220 *** (0.066)	0.352 *** (0.067)
Divorced	-0.380 *** (0.091)	-0.254 *** (0.089)	-0.269 *** (0.085)	-0.397 *** (0.077)	-0.415 *** (0.079)	-0.348 *** (0.110)	-0.387 *** (0.111)	-0.355 *** (0.104)	-0.350 *** (0.124)	-0.330 *** (0.077)	-0.392 *** (0.101)	-0.332 *** (0.129)
Widowed	-0.158 * (0.092)	-0.070 (0.112)	0.086 (0.084)	-0.135 (0.103)	-0.060 (0.074)	-0.042 (0.095)	-0.039 (0.110)	-0.155 (0.113)	-0.149 (0.115)	-0.203 ** (0.096)	-0.254 *** (0.084)	-0.060 (0.108)
Employed or self-employed	0.088 * (0.051)	0.137 *** (0.046)	0.199 *** (0.048)	0.067 (0.051)	0.345 *** (0.041)	-0.065 (0.046)	0.188 *** (0.048)	0.073 (0.053)	0.089 (0.058)	0.135 ** (0.055)	0.100 ** (0.044)	0.030 (0.060)
Income	0.258 *** (0.019)	0.269 *** (0.021)	0.261 *** (0.022)	0.311 *** (0.017)	0.364 *** (0.018)	0.318 *** (0.023)	0.272 *** (0.023)	0.288 *** (0.023)	0.257 *** (0.022)	0.228 *** (0.018)	0.321 *** (0.024)	0.279 *** (0.023)
Number of observations	9836	9090	11446	10215	16319	9868	7604	8822	7594	10338	9690	9278
Pseudo R-squared	0.025	0.036	0.033	0.059	0.064	0.094	0.030	0.053	0.029	0.034	0.131	0.036
Log pseudolikelihood	-9661.95	-8930.37	-10544.35	-9912.87	-16068.09	-10600.61	-7326.14	-8561.58	-7256.13	-9708.15	-9638.74	-9068.94

Control Country: United Kingdom

Source: authors' calculations. Notes: Dependent variable is life satisfaction. Robust bootstrapped standard errors clustered at individual level are in parentheses. *, **, and *** correspond to 10, 5, and 1 percent significance levels, respectively.

Table 2a (cont.): Ordered Logit Estimation Results for the EU12 Countries

Treatment country:	Austria	Belgium	Finland	France	Germany	Greece	Ireland	Italy	Luxembourg	Netherlands	Portugal	Spain
Threshold 1	-5.412 *** (0.153)	-5.272 *** (0.172)	-6.398 *** (0.163)	-5.863 *** (0.172)	-5.529 *** (0.150)	-5.314 *** (0.175)	-5.371 *** (0.166)	-5.653 *** (0.169)	-5.428 *** (0.216)	-5.683 *** (0.163)	-6.301 *** (0.164)	-5.953 *** (0.172)
Threshold 2	-3.601 *** (0.142)	-3.614 *** (0.158)	-4.577 *** (0.135)	-4.198 *** (0.165)	-3.637 *** (0.137)	-3.734 *** (0.157)	-3.805 *** (0.140)	-3.878 *** (0.155)	-3.730 *** (0.199)	-4.049 *** (0.167)	-4.414 *** (0.159)	-3.959 *** (0.160)
Threshold 3	-0.729 *** (0.130)	-0.653 *** (0.154)	-1.294 *** (0.130)	-1.014 *** (0.163)	-0.475 *** (0.135)	-1.035 *** (0.163)	-0.867 *** (0.132)	-0.733 *** (0.133)	-0.799 *** (0.194)	-1.088 *** (0.160)	-1.060 *** (0.153)	-0.987 *** (0.155)
Year 2002	-0.192 *** (0.061)	-0.190 *** (0.061)	-0.200 *** (0.060)	-0.202 *** (0.054)	-0.211 *** (0.055)	-0.181 *** (0.060)	-0.197 *** (0.061)	-0.188 *** (0.085)	-0.199 *** (0.049)	-0.190 *** (0.084)	-0.187 *** (0.057)	-0.188 *** (0.060)
Year 2003	-0.039 (0.080)	-0.040 (0.080)	-0.047 (0.080)	-0.048 (0.088)	-0.042 (0.079)	-0.047 (0.079)	-0.039 (0.083)	-0.042 (0.090)	-0.041 (0.083)	-0.038 (0.073)	-0.046 (0.069)	-0.045 (0.089)
Treatment country	-1.428 *** (0.055)	-1.735 *** (0.059)	-1.635 *** (0.050)	-2.173 *** (0.063)	-2.288 *** (0.056)	-2.791 *** (0.059)	-1.093 *** (0.070)	-2.240 *** (0.073)	-1.023 *** (0.062)	-0.707 *** (0.048)	-3.151 *** (0.066)	-1.878 *** (0.063)
Treatment country*	0.241 *** (0.093)	-0.084 (0.097)	0.387 *** (0.079)	-0.011 (0.080)	0.092 (0.071)	-0.096 (0.083)	-0.053 (0.111)	0.112 (0.106)	0.308 *** (0.104)	0.047 (0.101)	-0.497 *** (0.085)	-0.008 (0.096)
Treatment country*	0.145 (0.130)	0.099 (0.138)	0.100 (0.110)	-0.058 (0.111)	-0.190 * (0.110)	0.327 *** (0.117)	-0.117 (0.157)	-0.178 (0.134)	0.133 (0.146)	-0.045 (0.110)	-0.193 (0.118)	0.001 (0.120)
Year 2003	-0.160 *** (0.044)	-0.116 *** (0.039)	-0.258 *** (0.038)	-0.123 *** (0.041)	-0.119 *** (0.033)	-0.107 ** (0.042)	-0.237 *** (0.050)	-0.058 * (0.050)	-0.189 *** (0.054)	-0.216 *** (0.043)	-0.002 (0.038)	-0.087 ** (0.043)
Male	-0.055 *** (0.006)	-0.054 *** (0.008)	-0.080 *** (0.007)	-0.074 *** (0.008)	-0.059 *** (0.006)	-0.076 *** (0.008)	-0.066 *** (0.007)	-0.061 *** (0.006)	-0.061 *** (0.009)	-0.071 *** (0.008)	-0.078 *** (0.007)	-0.070 *** (0.008)
Age	0.001 *** (0.000)	0.001 *** (0.000)	0.001 *** (0.000)	0.001 *** (0.000)	0.001 *** (0.000)	0.001 *** (0.000)	0.001 *** (0.000)	0.001 *** (0.000)	0.001 *** (0.000)	0.001 *** (0.000)	0.001 *** (0.000)	0.001 *** (0.000)
Age squared	-0.174 *** (0.057)	-0.195 ** (0.067)	-0.384 *** (0.068)	-0.202 *** (0.059)	-0.362 *** (0.043)	0.183 *** (0.051)	-0.241 *** (0.072)	-0.095 * (0.058)	-0.207 *** (0.074)	-0.171 *** (0.050)	0.07 (0.067)	-0.069 (0.057)
Education 15-18 years	0.028 (0.058)	-0.057 (0.070)	-0.152 ** (0.067)	-0.062 (0.054)	-0.169 *** (0.047)	0.317 *** (0.050)	-0.102 * (0.054)	0.064 (0.064)	-0.090 (0.059)	-0.017 (0.061)	0.184 *** (0.065)	0.105 * (0.056)
Education more than 19 years	0.250 *** (0.062)	0.361 *** (0.059)	0.381 *** (0.064)	0.287 *** (0.048)	0.070 (0.051)	0.264 *** (0.055)	0.371 *** (0.058)	0.342 *** (0.058)	0.339 *** (0.068)	0.460 *** (0.047)	0.179 *** (0.063)	0.318 *** (0.061)
Married	-0.297 *** (0.098)	-0.179 * (0.097)	-0.208 *** (0.079)	-0.321 *** (0.068)	-0.374 *** (0.066)	-0.239 ** (0.106)	-0.263 *** (0.100)	-0.223 ** (0.093)	-0.250 *** (0.088)	-0.239 *** (0.078)	-0.264 *** (0.100)	-0.214 ** (0.100)
Divorced	-0.160 (0.101)	-0.077 (0.095)	0.048 (0.106)	-0.146 * (0.079)	-0.095 (0.066)	-0.060 (0.091)	-0.070 (0.121)	-0.140 (0.100)	-0.172 * (0.099)	-0.192 * (0.099)	-0.252 *** (0.094)	-0.070 (0.082)
Widowed	0.131 ** (0.053)	0.198 *** (0.049)	0.262 *** (0.047)	0.116 ** (0.054)	0.385 *** (0.050)	-0.049 (0.051)	0.272 *** (0.058)	0.120 ** (0.048)	0.164 ** (0.064)	0.188 *** (0.059)	0.134 *** (0.042)	0.075 ** (0.063)
Employed or self-employed	0.267 *** (0.021)	0.266 *** (0.026)	0.263 *** (0.047)	0.322 *** (0.022)	0.376 *** (0.013)	0.322 *** (0.021)	0.272 *** (0.024)	0.281 *** (0.021)	0.267 *** (0.025)	0.225 *** (0.022)	0.315 *** (0.022)	0.278 *** (0.018)
Income	10874	10128	12484	11253	17357	10906	8642	9860	8632	11376	10728	10316
Number of observations	0.089	0.117	0.105	0.164	0.162	0.193	0.074	0.156	0.055	0.053	0.248	0.125
Pseudo R-squared	-9525.65	-8799.59	-10400.93	-9782.03	-15915.48	-10457.90	-7197.81	-8428.93	-7128.70	-9580.64	-9485.38	-8926.30
Log_pseudolikelihood												

Control Country: Denmark

Source: authors' calculations. Notes: Dependent variable is life satisfaction. Robust bootstrapped standard errors clustered at individual level are in parentheses. *, **, and *** correspond to 10, 5, and 1 percent significance levels, respectively.

Table 2a (cont.): Ordered Logit Estimation Results for the EU12 Countries

Treatment country:	Austria	Belgium	Finland	France	Germany	Greece	Ireland	Italy	Luxembourg	Netherlands	Portugal	Spain
Threshold 1	-5.200 *** (0.178)	-5.136 *** (0.161)	-6.048 *** (0.153)	-5.577 *** (0.175)	-5.058 *** (0.129)	-5.155 *** (0.129)	-5.412 *** (0.179)	-5.486 *** (0.175)	-5.475 *** (0.196)	-5.545 *** (0.133)	-6.055 *** (0.152)	-5.758 *** (0.200)
Threshold 2	-3.373 *** (0.173)	-3.457 *** (0.149)	-4.207 *** (0.136)	-3.901 *** (0.152)	-3.169 *** (0.128)	-3.570 *** (0.120)	-3.790 *** (0.156)	-3.694 *** (0.159)	-3.719 *** (0.164)	-3.864 *** (0.118)	-4.151 *** (0.142)	-3.759 *** (0.174)
Threshold 3	-0.220 (0.155)	-0.198 (0.130)	-0.128 (0.128)	-0.476 *** (0.142)	0.131 (0.123)	-0.512 *** (0.131)	-0.450 *** (0.143)	-0.268 (0.167)	-0.370 *** (0.155)	-0.582 *** (0.117)	-0.475 *** (0.115)	-0.497 *** (0.169)
Year 2002	-0.121 ** (0.060)	-0.117 ** (0.060)	-0.134 ** (0.062)	-0.132 ** (0.065)	-0.147 *** (0.054)	-0.113 ** (0.052)	-0.131 ** (0.063)	-0.113 ** (0.056)	-0.129 ** (0.059)	-0.125 ** (0.059)	-0.116 * (0.062)	-0.114 ** (0.048)
Year 2003	-0.220 *** (0.070)	-0.216 *** (0.087)	-0.224 *** (0.084)	-0.238 *** (0.068)	-0.236 *** (0.074)	-0.235 *** (0.062)	-0.219 ** (0.096)	-0.229 *** (0.075)	-0.223 *** (0.069)	-0.216 *** (0.081)	-0.244 *** (0.082)	-0.225 *** (0.074)
Treatment country	-0.754 *** (0.056)	-1.050 *** (0.063)	-0.874 *** (0.044)	-1.504 *** (0.066)	-1.571 *** (0.048)	-2.305 *** (0.061)	-0.368 *** (0.079)	-1.583 *** (0.059)	-0.306 *** (0.064)	0.060 (0.044)	-2.563 *** (0.083)	-1.208 *** (0.056)
Treatment country* year 2002	0.179 ** (0.090)	-0.195 ** (0.094)	0.343 *** (0.081)	-0.095 (0.093)	0.021 (0.065)	-0.182 ** (0.083)	-0.172 (0.127)	0.038 (0.114)	0.265 ** (0.117)	-0.032 (0.088)	-0.589 *** (0.090)	-0.095 (0.096)
Treatment country* year 2003	0.334 *** (0.113)	0.283 * (0.146)	0.282 ** (0.121)	0.122 (0.113)	-0.013 (0.091)	0.548 *** (0.087)	0.076 (0.175)	-0.006 (0.149)	0.344 ** (0.140)	0.117 (0.123)	-0.009 (0.118)	0.183 (0.134)
Male	-0.122 *** (0.036)	-0.079 * (0.044)	-0.233 *** (0.036)	-0.095 ** (0.042)	-0.098 *** (0.030)	-0.073 * (0.042)	-0.194 *** (0.049)	-0.019 (0.046)	-0.139 *** (0.049)	-0.176 *** (0.038)	0.039 (0.038)	-0.050 (0.040)
Age	-0.070 *** (0.008)	-0.074 *** (0.008)	-0.095 *** (0.007)	-0.090 *** (0.007)	-0.070 *** (0.006)	-0.088 *** (0.005)	-0.088 *** (0.008)	-0.079 *** (0.007)	-0.083 *** (0.009)	-0.089 *** (0.006)	-0.092 *** (0.056)	-0.086 *** (0.008)
Age squared	0.001 *** (0.000)	0.001 *** (0.000)	0.001 *** (0.000)	0.001 *** (0.000)	0.001 *** (0.000)	0.001 *** (0.000)	0.001 *** (0.000)	0.001 *** (0.000)	0.001 *** (0.000)	0.001 *** (0.000)	0.001 *** (0.000)	0.001 *** (0.000)
Education 15-18 years	-0.035 (0.059)	-0.051 (0.069)	-0.205 *** (0.066)	-0.057 (0.061)	-0.276 *** (0.053)	0.262 *** (0.049)	-0.056 (0.074)	0.046 (0.065)	0.019 (0.073)	-0.017 (0.082)	0.159 *** (0.055)	0.054 (0.069)
Education more than 19 years	0.090 * (0.052)	0.009 (0.066)	-0.077 (0.061)	0.006 (0.067)	-0.119 ** (0.050)	0.329 *** (0.030)	-0.013 (0.066)	0.111 ** (0.055)	0.047 (0.064)	0.055 (0.072)	0.197 *** (0.055)	0.133 ** (0.066)
Married	0.390 *** (0.059)	0.512 *** (0.060)	0.510 *** (0.060)	0.433 *** (0.062)	0.183 *** (0.042)	0.397 *** (0.065)	0.547 *** (0.071)	0.510 *** (0.070)	0.518 *** (0.064)	0.587 *** (0.063)	0.351 *** (0.059)	0.476 *** (0.056)
Divorced	-0.248 *** (0.080)	-0.128 (0.094)	-0.181 ** (0.078)	-0.262 *** (0.088)	-0.321 *** (0.057)	-0.157 * (0.083)	-0.214 ** (0.087)	-0.143 (0.091)	-0.193 * (0.099)	-0.194 ** (0.089)	-0.188 ** (0.096)	-0.139 (0.096)
Widowed	-0.159 * (0.095)	-0.099 (0.106)	0.043 (0.092)	-0.177 * (0.104)	-0.030 (0.065)	-0.087 (0.103)	-0.089 (0.121)	-0.196 * (0.118)	-0.197 * (0.119)	-0.261 ** (0.120)	-0.249 *** (0.093)	-0.098 (0.111)
Employed or self- employed	0.088 * (0.048)	0.163 *** (0.046)	0.237 *** (0.062)	0.089 (0.056)	0.367 *** (0.044)	-0.059 (0.046)	0.239 *** (0.057)	0.084 * (0.050)	0.104 ** (0.067)	0.145 *** (0.051)	0.107 ** (0.053)	0.049 (0.061)
Income	0.253 *** (0.018)	0.260 *** (0.018)	0.258 *** (0.024)	0.314 *** (0.021)	0.372 *** (0.016)	0.306 *** (0.022)	0.259 *** (0.027)	0.279 *** (0.021)	0.249 *** (0.028)	0.224 *** (0.022)	0.308 *** (0.020)	0.265 *** (0.024)
Number of observations	10605	9859	12215	10984	17088	10637	8373	9591	8363	11107	10459	10047
Pseudo R-squared	0.041	0.063	0.051	0.099	0.098	0.141	0.042	0.095	0.033	0.034	0.194	0.067
Log pseudolikelihood	-9649.22	-8898.44	-10470.17	-9853.68	-16032.90	-10588.91	-7298.82	-8486.08	-7227.90	-9671.62	-9504.30	-9012.93

Control Country: Sweden

Source: authors' calculations. Notes: Dependent variable is life satisfaction. Robust bootstrapped standard errors clustered at individual level are in parentheses. *, **, and *** correspond to 10, 5, and 1 percent significance levels, respectively.

Table 2b: Ordered Logit Estimation Results for the New Member Countries

Control Country:	UK	Turkey	UK	Control Country:	Latvia	Lithuania
Threshold 1	-4.513 *** (0.203)	-3.288 *** (0.133)	-4.108 *** (0.257)	Threshold 1	-4.858 *** (0.164)	-4.896 *** (0.173)
Threshold 2	-2.785 *** (0.193)	-1.976 *** (0.137)	-2.214 *** (0.248)	Threshold 2	-2.838 *** (0.152)	-2.869 *** (0.167)
Threshold 3	0.039 (0.193)	0.126 ** (0.138)	0.594 *** (0.237)	Threshold 3	0.611 *** (0.153)	0.301 ** (0.163)
Year 2008	-0.0004 (0.071)	-0.556 *** (0.063)	-0.004 (0.069)	Year 2011	0.266 *** (0.059)	0.294 *** (0.066)
Treatment country	-0.484 *** (0.064)	0.387 *** (0.067)	-0.648 *** (0.066)	Treatment country	0.540 *** (0.038)	0.562 *** (0.054)
Treatment country* year 2008	0.023 (0.114)	0.578 *** (0.103)	0.311 ** (0.140)	Treatment country* year 2011	-0.113 (0.103)	-0.151 (0.096)
Male	-0.036 (0.054)	-0.026 ** (0.041)	-0.142 *** (0.050)	Male	-0.169 *** (0.044)	-0.139 *** (0.044)
Age	-0.075 *** (0.008)	-0.058 *** (0.006)	-0.048 *** (0.008)	Age	-0.157 *** (0.007)	-0.156 *** (0.009)
Age squared	0.001 *** (0.000)	0.001 *** (0.000)	0.001 *** (0.000)	Age squared	0.002 *** (0.000)	0.002 *** (0.000)
Education 15-18 years	0.121 (0.085)	0.058 *** (0.051)	0.007 (0.061)	Education 15-18 years	-0.786 *** (0.101)	-0.605 *** (0.079)
Education more than 19 years	0.476 *** (0.075)	0.207 *** (0.057)	0.354 *** (0.077)	Education more than 19 years	-0.360 *** (0.107)	-0.196 ** (0.083)
Married	0.376 *** (0.060)	0.086 *** (0.065)	0.273 *** (0.065)	Married	0.177 *** (0.067)	0.093 * (0.054)
Divorced	-0.484 *** (0.098)	-0.653 *** (0.207)	-0.553 *** (0.111)	Divorced	-0.278 *** (0.095)	-0.345 *** (0.086)
Widowed	-0.122 (0.100)	-0.549 *** (0.119)	-0.200 * (0.120)	Widowed	-0.183 ** (0.093)	-0.325 *** (0.096)
Employed or self-employed	-0.002 *** (0.065)	-0.150 *** (0.056)	0.126 ** (0.060)	Employed or self-employed	0.675 *** (0.040)	0.566 *** (0.048)
Income	0.250 *** (0.037)	0.130 *** (0.030)	0.239 *** (0.041)	Income	0.434 *** (0.026)	0.401 *** (0.030)
Number of observations	7271	7940	7256	Number of observations	9672	9637
Pseudo R-squared	0.024	0.020	0.024	Pseudo R-squared	0.078	0.076
Log pseudolikelihood	-7154.20	-9581.65	-7153.46	Log pseudolikelihood	-9628.85	-9981.16

Source: authors' calculations. Notes: Dependent variable is life satisfaction. Robust bootstrapped standard errors clustered at individual level are in parentheses. *, **, and *** correspond to 10, 5, and 1 percent significance levels, respectively.

Table 2b (cont.): Ordered Logit Estimation Results for the New Member Countries

Control country:	Czech Republic	Hungary	Poland	Control country:	Bulgaria	Croatia
Threshold 1	-5.062 *** (0.194)	-3.328 *** (0.137)	-4.564 *** (0.148)	Threshold 1	-3.002 *** (0.181)	-4.780 *** (0.181)
Threshold 2	-2.834 *** (0.184)	-1.396 *** (0.132)	-2.513 *** (0.150)	Threshold 2	-0.976 *** (0.193)	-2.881 *** (0.184)
Threshold 3	0.503 *** (0.186)	1.592 *** (0.131)	0.665 *** (0.146)	Threshold 3	2.390 *** (0.190)	0.164 (0.179)
Year 2009	0.207 *** (0.058)	-0.034 (0.059)	0.168 *** (0.054)	Year 2007	0.411 *** (0.060)	0.260 *** (0.063)
Year 2010	0.140 * (0.074)	0.378 *** (0.070)	0.462 *** (0.063)	Year 2008	0.454 *** (0.073)	0.191 ** (0.041)
Treatment country	-0.611 *** (0.051)	0.691 *** (0.049)	-0.345 *** (0.048)	Treatment country	2.988 *** (0.066)	0.938 *** (0.057)
Treatment country* year 2009	0.065 (0.079)	0.293 *** (0.086)	0.081 (0.088)	Treatment country* year 2007	-0.268 *** (0.083)	-0.132 (0.087)
Treatment country* year 2010	0.533 *** (0.102)	0.242 ** (0.096)	0.154 (0.098)	Treatment country* year 2008	-0.365 *** (0.094)	-0.110 (0.095)
Male	-0.039 (0.032)	-0.050 * (0.042)	-0.036 (0.038)	Male	0.019 (0.043)	-0.082 ** (0.040)
Age	-0.105 *** (0.007)	-0.120 *** (0.006)	-0.104 *** (0.008)	Age	-0.117 *** (0.009)	-0.116 *** (0.008)
Age squared	0.001 *** (0.000)	0.001 *** (0.000)	0.001 *** (0.000)	Age squared	0.001 *** (0.000)	0.001 *** (0.000)
Education 15-18 years	-0.353 *** (0.081)	0.090 * (0.051)	-0.151 *** (0.053)	Education 15-18 years	0.029 (0.059)	-0.012 (0.074)
Education more than 19 years	0.109 (0.080)	0.599 *** (0.046)	0.344 *** (0.059)	Education more than 19 years	0.483 *** (0.075)	0.421 *** (0.066)
Married	0.230 *** (0.065)	0.194 *** (0.045)	0.196 *** (0.054)	Married	0.112 * (0.058)	0.302 *** (0.057)
Divorced	-0.443 *** (0.084)	-0.404 *** (0.068)	-0.434 *** (0.100)	Divorced	-0.191 (0.129)	-0.147 ** (0.133)
Widowed	-0.148 (0.093)	-0.192 ** (0.075)	-0.296 *** (0.079)	Widowed	-0.404 *** (0.084)	-0.411 *** (0.086)
Employed or self-employed	0.338 *** (0.049)	0.345 *** (0.037)	0.327 *** (0.041)	Employed or self-employed	0.278 *** (0.048)	0.100 * (0.061)
Income	0.276 *** (0.027)	0.280 *** (0.024)	0.266 *** (0.021)	Income	0.191 *** (0.033)	0.191 *** (0.087)
Number of observations	14759	14475	14318	Number of observations	10067	10074
Pseudo R-squared	0.040	0.063	0.042	Pseudo R-squared	0.202	0.064
Log pseudolikelihood	-14036.68	-15735.49	-14312.75	Log pseudolikelihood	-9946.62	-10041.31

Source: authors' calculations. Notes: Dependent variable is life satisfaction. Robust bootstrapped standard errors clustered at individual level are in parentheses. *, **, and *** correspond to 10, 5, and 1 percent significance levels, respectively.

Table 3a: Summary of Ordered Logit Estimation Results for the EU12 Countries

The effect on average individual		The impact of the euro introduction on life satisfaction in 2002		
		increase	decrease	no change
The impact of the euro introduction on life satisfaction in 2003	increase	Austria Finland Luxembourg	Belgium Greece	
	decrease		France Germany Ireland Netherlands Portugal Spain	Italy
	no change			

Source: authors' calculations. *Notes:* This table represents the summary of ordered logit results. The label "increase"/"decrease" in the column and row means that the difference-in-differences estimators are positive/negative and statistically significant for the particular year and for the particular group of controls. The label "no change" corresponds to no statistical significance.

Table 3b: Summary of Ordered Logit Estimation Results for the New Member Countries

The effect on average individual		The impact of the euro introduction on life satisfaction in the first year		
		increase	decrease	no change
The impact of the euro introduction on life satisfaction in the second year	increase	Slovakia		
	decrease		Slovenia	
	no change			
	inconclusive	Cyprus Malta		Estonia

Source: authors' calculations. *Notes:* This table represents the summary of ordered logit results. The label "increase"/"decrease" in the column and row means that the difference-in-differences estimators are positive/negative and statistically significant for the particular year and for the particular group of controls. The label "no change" corresponds to no statistical significance. The label "inconclusive" stands for Cyprus, Estonia, and Malta during the second year, since there are no second year estimation results for these countries.

Table 4a.1: Summary of Ordered Logit Estimation Results for the EU12 Countries by Gender

Male		The impact of the euro introduction on life satisfaction in 2002		
		increase	decrease	no change
The impact of the euro introduction on life satisfaction in 2003	increase		Greece	Austria
	decrease		Ireland Portugal	Germany Italy
	no change	Finland Luxembourg	Belgium	France Netherlands Spain
Female		The impact of the euro introduction on life satisfaction in 2002		
		increase	decrease	no change
The impact of the euro introduction on life satisfaction in 2003	increase	Austria Finland Luxembourg	Greece	
	decrease		France Germany Italy Netherlands Portugal	
	no change		Belgium Ireland Spain	

Source: authors' calculations. Notes: This table represents the summary of ordered logit results by groups. The label "increase"/"decrease" in the column and row means that the difference-in-differences estimators are positive/negative and statistically significant for the particular year and for the particular group of controls. The label "no change" corresponds to no statistical significance.

Table 4a.2: Summary of Ordered Logit Estimation Results
for the EU12 Countries by Employment Status

The unemployed		The impact of the euro introduction on life satisfaction in 2002			
		increase	decrease	no change	
The impact of the euro introduction on life satisfaction in 2003	increase		Greece		
	decrease		France Germany Ireland Netherlands Portugal Spain	Italy	
	no change	Finland	Belgium Luxembourg	Austria	
The employed or self-employed		The impact of the euro introduction on life satisfaction in 2002			
		increase	decrease	no change	inconclusive
The impact of the euro introduction on life satisfaction in 2003	increase	Austria Finland France Netherlands Luxembourg Spain	Belgium		Greece
	decrease	Germany Italy			
	no change		Ireland Portugal		

Source: authors' calculations. Notes: This table represents the summary of ordered logit results by groups. The label "increase"/"decrease" in the column and row means that the difference-in-differences estimators are positive/negative and statistically significant for the particular year and for the particular group of controls. The label "no change" corresponds to no statistical significance.

Table 4a.3: Summary of Ordered Logit Estimation Results for the EU12 Countries by Income

Income=1		The impact of the euro introduction on life satisfaction in 2002		
		increase	decrease	no change
The impact of the euro introduction on life satisfaction in 2003	increase			
	decrease		Ireland Netherlands Portugal	Austria Germany Luxembourg
	no change	Finland	Belgium France Greece Spain	Italy
Income=2		The impact of the euro introduction on life satisfaction in 2002		
		increase	decrease	no change
The impact of the euro introduction on life satisfaction in 2003	increase	Austria		Belgium Finland Greece Netherlands Luxembourg
	decrease		Ireland Italy Portugal	
	no change	France		Germany Spain
Income=3		The impact of the euro introduction on life satisfaction in 2002		
		increase	decrease	no change
The impact of the euro introduction on life satisfaction in 2003	increase	Luxembourg		Greece
	decrease	Italy	Belgium France	
	no change	Austria Finland	Ireland Portugal	Germany Netherlands Spain
Income=4		The impact of the euro introduction on life satisfaction in 2002		
		increase	decrease	no change
The impact of the euro introduction on life satisfaction in 2003	increase	Austria		Belgium
	decrease			
	no change	Finland Ireland Italy Netherlands	France Greece Portugal	Germany Luxembourg Spain

Source: authors' calculations. Notes: This table represents the summary of ordered logit results by groups. The label "increase"/"decrease" in the column and row means that the difference-in-differences estimators are positive/negative and statistically significant for the particular year and for the particular group of controls. The label "no change" corresponds to no statistical significance.

Table 4a.4: Summary of Ordered Logit Estimation Results for the EU12 Countries by Age

Age 16-29 years old		The impact of the euro introduction on life satisfaction in 2002			
		increase	decrease	no change	
The impact of the euro introduction on life satisfaction in 2003	increase	Finland Luxembourg		Belgium Germany Greece Netherlands Spain	
	decrease		Portugal	Austria France Italy	
	no change			Ireland	
Age 30-49 years old		The impact of the euro introduction on life satisfaction in 2002			
		increase	decrease	no change	inconclusive
the impact of the euro introduction on life satisfaction in 2003	increase	Austria			Greece
	decrease				Germany
	no change	Finland	Belgium Portugal	Ireland Italy Netherlands Luxembourg	France
Age 50-64 years old		The impact of the euro introduction on life satisfaction in 2002			
		increase	decrease	no change	
The impact of the euro introduction on life satisfaction in 2003	increase			Finland	
	decrease		Germany Portugal		
	no change	Luxembourg	Austria Belgium France Greece Ireland Italy Spain		
Age more than 65 years old		The impact of the euro introduction on life satisfaction in 2002			
		increase	decrease	no change	
The impact of the euro introduction on life satisfaction in 2003	increase			Austria Greece	
	decrease				
	no change	Finland	Belgium Portugal	France Germany Ireland Italy Netherlands Luxembourg Spain	

Source: authors' calculations. Notes: This table represents the summary of ordered logit results by groups. The label "increase"/"decrease" in the column and row means that the difference-in-differences estimators are positive/negative and statistically significant for the particular year and for the particular group of controls. The label "no change" corresponds to no statistical significance.

Table 4a.5: Summary of Ordered Logit Estimation Results for the EU12 Countries by the Level of Education

Less than 15 years of education		The impact of the euro introduction on life satisfaction in 2002		
		increase	decrease	no change
The impact of the euro introduction on life satisfaction in 2003	increase		Greece	Belgium
	decrease			
	no change	Finland	Netherlands Portugal Spain	Austria France Germany Ireland Italy Luxembourg
15-18 years of education		The impact of the euro introduction on life satisfaction in 2002		
		increase	decrease	no change
The impact of the euro introduction on life satisfaction in 2003	increase	Finland		Austria Greece Luxembourg
	decrease		France Ireland Netherlands Portugal	Germany Italy
	no change		Belgium	Spain
More than 19 years of education		The impact of the euro introduction on life satisfaction in 2002		
		increase	decrease	no change
The impact of the euro introduction on life satisfaction in 2003	increase	Austria Netherlands		Belgium Greece Spain
	decrease		Portugal	Germany
	no change	Finland Luxembourg		France Ireland Italy

Source: authors' calculations. Notes: This table represents the summary of ordered logit results by groups. The label "increase"/"decrease" in the column and row means that the difference-in-differences estimators are positive/negative and statistically significant for the particular year and for the particular group of controls. The label "no change" corresponds to no statistical significance.

Table 4b.1: Summary of Ordered Logit Estimation Results for the New Member Countries by Gender

Male		The impact of the euro introduction on life satisfaction in the first year		
		increase	decrease	no change
The impact of the euro introduction on life satisfaction in the second year	increase		Slovakia	
	decrease		Slovenia	
	no change			
	inconclusive			Cyprus Estonia Malta
Female		The impact of the euro introduction on life satisfaction in the first year		
		increase	decrease	no change
The impact of the euro introduction on life satisfaction in the second year	increase	Slovakia		
	decrease		Slovenia	
	no change			
	inconclusive	Cyprus Malta		Estonia

Source: authors' calculations. *Notes:* This table represents the summary of ordered logit results. The label "increase"/"decrease" in the column and row means that the difference-in-differences estimators are positive/negative and statistically significant for the particular year and for the particular group of controls. The label "no change" corresponds to no statistical significance. The label "inconclusive" stands for Cyprus, Estonia, and Malta during the second year, since there are no second year estimation results for these countries.

Table 4b.2: Summary of Ordered Logit Estimation Results for the New Member Countries by Employment Status

The unemployed		The impact of the euro introduction on life satisfaction in the first year		
		increase	decrease	no change
The impact of the euro introduction on life satisfaction in the second year	increase			
	decrease			Slovenia
	no change			Slovakia
	inconclusive	Cyprus Malta		Estonia
The employed or self-employed		The impact of the euro introduction on life satisfaction in the first year		
		increase	decrease	no change
The impact of the euro introduction on life satisfaction in the second year	increase	Slovakia		
	decrease		Slovenia	
	no change			
	inconclusive	Cyprus		Estonia Malta

Source: authors' calculations. *Notes:* This table represents the summary of ordered logit results. The label "increase"/"decrease" in the column and row means that the difference-in-differences estimators for a particular year are positive/negative and statistically significant and for the particular group of controls. The label "no change" corresponds to no statistical significance. The label "inconclusive" stands for Cyprus, Estonia, and Malta during the second year, since there are no second year estimation results for these countries.

Table 4b.3: Summary of Ordered Logit Estimation Results for the New Member Countries by Income

Income=1		The impact of the euro introduction on life satisfaction in the first year		
		increase	decrease	no change
The impact of the euro introduction on life satisfaction in the second year	increase			
	decrease		Slovakia	
	no change			Slovenia
	inconclusive	Malta	Estonia	
Income=2		The impact of the euro introduction on life satisfaction in the first year		
		increase	decrease	no change
The impact of the euro introduction on life satisfaction in the second year	increase			
	decrease			
	no change			Slovakia Slovenia
	inconclusive	Malta		Cyprus Estonia
Income=3		The impact of the euro introduction on life satisfaction in the first year		
		increase	decrease	no change
The impact of the euro introduction on life satisfaction in the second year	increase	Slovakia		
	decrease			
	no change		Slovenia	
	inconclusive	Cyprus		Estonia Malta
Income=4		The impact of the euro introduction on life satisfaction in the first year		
		increase	decrease	no change
The impact of the euro introduction on life satisfaction in the second year	increase			Slovakia
	decrease		Slovenia	
	no change			
	inconclusive	Cyprus		Estonia Malta

Source: authors' calculations. Notes: This table represents the summary of ordered logit results. The label "increase"/"decrease" in the column and row means that the difference-in-differences estimators are positive/negative and statistically significant for the particular year and for the particular group of controls. The label "no change" corresponds to no statistical significance. The label "inconclusive" stands for Cyprus, Estonia, and Malta during the second year, since there are no second year estimation results for these countries.

Table 4b.4: Summary of Ordered Logit Estimation Results for the New Member Countries by Age

Age 16-29 years old		The impact of the euro introduction on life satisfaction in the first year		
		increase	decrease	no change
The impact of the euro introduction on life satisfaction in the second year	increase	Slovakia		
	decrease			Slovenia
	no change			
	inconclusive	Cyprus	Estonia	Malta
Age 30-49 years old		The impact of the euro introduction on life satisfaction in the first year		
		increase	decrease	no change
The impact of the euro introduction on life satisfaction in the second year	increase	Slovakia		
	decrease		Slovenia	
	no change			
	inconclusive	Cyprus		Estonia Malta
Age 50-64 years old		The impact of the euro introduction on life satisfaction in the first year		
		increase	decrease	no change
The impact of the euro introduction on life satisfaction in the second year	increase			
	decrease		Slovenia	
	no change			Slovakia
	inconclusive	Malta		Cyprus Estonia
Age more than 65 years old		The impact of the euro introduction on life satisfaction in the first year		
		increase	decrease	no change
The impact of the euro introduction on life satisfaction in the second year	increase			
	decrease		Slovenia	
	no change			Slovakia
	inconclusive	Cyprus		Estonia Malta

Source: authors' calculations. Notes: This table represents the summary of ordered logit results. The label "increase"/"decrease" in the column and row means that the difference-in-differences estimators are positive/negative and statistically significant for the particular year and for the particular group of controls. The label "no change" corresponds to no statistical significance. The label "inconclusive" stands for Cyprus, Estonia, and Malta during the second year, since there are no second year estimation results for these countries.

Table 4b.5: Summary of Ordered Logit Estimation Results for the New Member Countries by the Level of Education

Less than 15 years of education		The impact of the euro introduction on life satisfaction in the first year		
		increase	decrease	no change
The impact of the euro introduction on life satisfaction in the second year	increase			
	decrease			Slovakia
	no change			Slovenia
	inconclusive	Cyprus		Estonia Malta
15-18 years of education		The impact of the euro introduction on life satisfaction in the first year		
		increase	decrease	no change
The impact of the euro introduction on life satisfaction in the second year	increase	Slovakia		
	decrease		Slovenia	
	no change			
	inconclusive	Cyprus Malta		Estonia
More than 19 years of education		The impact of the euro introduction on life satisfaction in the first year		
		increase	decrease	no change
The impact of the euro introduction on life satisfaction in the second year	increase			Slovakia
	decrease			Slovenia
	no change			
	inconclusive	Cyprus		Estonia Malta

Source: authors' calculations. *Notes:* This table represents the summary of ordered logit results. The label "increase"/"decrease" in the column and row means that the difference-in-differences estimators are positive/negative and statistically significant for the particular year and for the particular group of controls. The label "no change" corresponds to no statistical significance. The label "inconclusive" stands for Cyprus, Estonia, and Malta during the second year, since there are no second year estimation results for these countries.

Table 5.1: Fisher's Test Results for the EU12 Countries by Gender

The impact of the euro introduction on life satisfaction in 2002					
The perception of prices	Male	decrease	no change	increase	total
	below the median level of EU12	2	2	2	6
	above the median level of EU12	2	4	0	6
	total	4	6	2	12
two-sided p-value 0.481					
The perception of prices	Female	decrease	increase	total	
	below the median level of EU12	3	3	6	
	above the median level of EU12	6	0	6	
	total	9	3	12	
two-sided p-value 0.182					
one-sided p-value 0.091					

Source: authors' calculations. *Notes:* The test associates the impact of the euro introduction on life satisfaction with the perception of prices. The impact of the euro for each country is taken from ordered logit results. The perceptions of prices by groups are taken from the European Commission Consumer Survey. The table consists of the number of countries where individuals reacted specifically to the euro introduction and have perceptions regarding the change in prices below or above the median EU12 level. For females the 2x2 Fisher's exact (one-sided) test is used. The null hypothesis is no association between the impact of the euro and price perceptions, while the alternative is that the number of countries with the negative impact of the euro on life satisfaction and with the level of prices perceptions above the median EU12 level is higher than the number of countries with the negative impact and with the level of price perceptions below the median.

Table 5.2: Fisher's Test Results for the EU12 Countries by Employment Status

The impact of the euro introduction on life satisfaction in 2002					
The perception of prices	The unemployed	decrease	no change	increase	total
	below the median level of EU12	2	2	1	5
	above the median level of EU12	6	0	0	6
	total	8	2	1	11
two-sided p-value 0.061					
The perception of prices	The employed or self-employed	decrease	increase	total	
	below the median level of EU12	1	4	5	
	above the median level of EU12	2	4	6	
	total	3	8	11	
two-sided p-value 1.000					
one-sided p-value 0.576					

Source: authors' calculations. *Notes:* The test associates the impact of the euro introduction on life satisfaction with the perception of prices. The impact of the euro for each country is taken from ordered logit results. The perceptions of prices by groups are taken from the European Commission Consumer Survey. The table consists of the number of countries where individuals reacted specifically to the euro introduction and have perceptions regarding the change in prices below or above the median EU12 level. The Netherlands are excluded from the results for the unemployed due to data unavailability on perception of prices by the unemployed. Greece is excluded from the results for the employed and self-employed since ordered logit results with different control groups are inconclusive regarding the sign of the impact of the euro on life satisfaction. For the employed and self-employed the 2x2 Fisher's exact (one-sided) test is used. The null hypothesis is no association between the impact of the euro and price perceptions, while the alternative is that the number of countries with the negative impact of the euro on life satisfaction and with the level of price perception above the median EU12 level is higher than the number of countries with the negative impact and with the level of price perceptions below the median.

Table 5.3: Fisher's Test Results for the EU12 Countries by Income

The impact of the euro introduction on life satisfaction in 2002				
Income=1	decrease	no change	increase	total
below the median level of EU12	3	2	1	6
above the median level of EU12	4	2	0	6
total	7	4	1	12
two-sided p-value 1.000				
Income=2	decrease	no change	increase	total
below the median level of EU12	0	4	2	6
above the median level of EU12	3	3	0	6
total	3	7	2	12
two-sided p-value 0.091				
Income=3	decrease	no change	increase	total
below the median level of EU12	2	1	3	6
above the median level of EU12	2	4	0	6
total	4	5	3	12
two-sided p-value 0.134				
Income=4	decrease	no change	increase	total
below the median level of EU12	2	2	2	6
above the median level of EU12	1	2	3	6
total	3	4	5	12
two-sided p-value 1.000				

The perception of prices

Source: authors' calculations. Notes: The test associates the impact of the euro introduction on life satisfaction with the perception of prices. The impact of the euro for each country is taken from ordered logit results. The perceptions of prices by groups are taken from the European Commission Consumer Survey. The table consists of the number of countries where individuals reacted specifically to the euro introduction and have perceptions regarding the change in prices below or above the median EU12 level.

Table 5.4: Fisher's Test Results for the EU12 Countries by Age

The impact of the euro introduction on life satisfaction in 2002				
Age 16-29 years old	decrease	no change	increase	total
below the median level of EU12	0	5	1	6
above the median level of EU12	1	4	1	6
total	1	9	2	12
two-sided p-value 1.000				
Age 30-49 years old	decrease	no change	increase	total
below the median level of EU12	1	2	2	5
above the median level of EU12	1	3	0	4
total	2	5	2	9
two-sided p-value 0.697				
Age 50-64 years old	decrease	no change	increase	total
below the median level of EU12	1	4	1	6
above the median level of EU12	1	5	0	6
total	2	9	1	12
two-sided p-value 1.000				
Age more than 65 years old	decrease	no change	increase	total
below the median level of EU12	4	1	1	6
above the median level of EU12	6	0	0	6
total	10	1	1	12
two-sided p-value 0.455				

The perception of prices

Source: authors' calculations. Notes: The test associates the impact of the euro introduction on life satisfaction with the perception of prices. The impact of the euro for each country is taken from ordered logit results. The perceptions of prices by groups are taken from the European Commission Consumer Survey. The table consists of the number of countries where individuals reacted specifically to the euro introduction and have perceptions regarding the change in prices below or above the median EU12 level. Germany, Greece and France are excluded from the results for the age group 30-49 since ordered logit results with different control groups are inconclusive regarding the sign of the impact of the euro on life satisfaction.

Table 5.5: Fisher's Test Results for the EU12 Countries by the Level of Education

The impact of the euro introduction on life satisfaction in 2002				
Less than 15 years of education	decrease	no change	increase	total
below the median level of EU12	1	4	1	6
above the median level of EU12	3	3	0	6
total	4	7	1	12
two-sided p-value 0.545				
15-18 years of education	decrease	no change	increase	total
below the median level of EU12	1	4	1	6
above the median level of EU12	4	2	0	6
total	5	6	1	12
two-sided p-value 0.242				
More than 19 years of education	decrease	no change	increase	total
below the median level of EU12	0	3	3	6
above the median level of EU12	1	4	1	6
total	1	7	4	12
two-sided p-value 0.545				

Source: authors' calculations. *Notes:* The test associates the impact of the euro introduction on life satisfaction with the perception of prices. The impact of the euro for each country is taken from ordered logit results. The perceptions of prices by groups are taken from the European Commission Consumer Survey. The table consists of the number of countries where individuals reacted specifically to the euro introduction and have perceptions regarding the change in prices below or above the median EU12 level.

Table 6a: Summary of LPM Estimation Results for the EU12 Countries

The effect on average individual		The impact of the euro introduction on life satisfaction in 2002		
		increase	decrease	no change
The impact of the euro introduction on life satisfaction in 2003	increase		Greece	Austria
	decrease		France Germany Portugal	Italy Luxembourg Netherlands
	no change	Finland	Belgium Spain	Ireland

Source: authors' calculations. Notes: This table represents the summary of LPM results. The label "increase"/"decrease" in the column and row means that the difference-in-differences estimators are positive/negative and statistically significant for the particular year and for the particular group of controls. The label "no change" corresponds to no statistical significance.

Table 6b: Summary of LPM Estimation Results for the New Member Countries

The effect on average individual		The impact of the euro introduction on life satisfaction in the first year		
		increase	decrease	no change
The impact of the euro introduction on life satisfaction in the second year	increase	Slovakia		
	decrease		Slovenia	
	no change			
	inconclusive	Cyprus Malta		Estonia

Source: authors' calculations. Notes: This table represents the summary of LPM results. The label "increase"/"decrease" in the column and row means that the difference-in-differences estimators are positive/negative and statistically significant for the particular year and for the particular group of controls. The label "no change" corresponds to no statistical significance. The label "inconclusive" stands for Cyprus, Estonia, and Malta during the second year, since there are no second year estimation results for these countries.

Table 7: Pooled Estimation Results for the EU12 Countries

Control Country:	Ordered logit results			LPM results		
	UK	Denmark	Sweden	UK	Denmark	Sweden
Threshold 1	-4.053 *** (0.068)	-5.343 *** (0.069)	-4.689 *** (0.074)	-	-	-
Threshold 2	-2.380 *** (0.063)	-3.659 *** (0.069)	-3.005 *** (0.070)	-	-	-
Threshold 3	0.481 *** (0.066)	-0.805 *** (0.071)	-0.111 * (0.065)	-	-	-
Constant	-	-	-	0.907 *** (0.012)	0.981 *** (0.013)	0.992 *** (0.012)
Year 2002	0.035 (0.067)	-0.180 ** (0.070)	-0.117 ** (0.046)	-0.005 (0.009)	-0.014 ** (0.007)	-0.027 *** (0.007)
Year 2003	0.138 * (0.075)	-0.038 (0.068)	-0.233 *** (0.066)	0.017 (0.012)	-0.003 (0.009)	-0.031 *** (0.009)
Treatment country	-0.555 *** (0.037)	-1.802 *** (0.040)	-1.086 *** (0.030)	-0.078 *** (0.005)	-0.143 *** (0.005)	-0.155 *** (0.005)
Treatment country* year 2002	-0.194 *** (0.074)	0.021 (0.073)	-0.044 (0.050)	-0.028 *** (0.009)	-0.018 ** (0.008)	-0.006 (0.007)
Treatment country* year 2003	-0.202 ** (0.083)	-0.026 (0.070)	0.168 ** (0.072)	-0.037 *** (0.012)	-0.017 (0.011)	0.011 (0.010)
Male	-0.043 *** (0.015)	-0.050 *** (0.015)	-0.042 *** (0.016)	-0.005 (0.003)	-0.004 (0.004)	-0.004 (0.003)
Age	-0.071 *** (0.003)	-0.071 *** (0.003)	-0.074 *** (0.003)	-0.011 *** (0.000)	-0.011 *** (0.001)	-0.011 *** (0.001)
Age squared	0.001 *** (0.000)	0.001 *** (0.000)	0.001 *** (0.000)	0.0001 *** (0.000)	0.0001 *** (0.000)	0.0001 *** (0.000)
Education 15-18 years	0.329 *** (0.023)	0.330 *** (0.021)	0.341 *** (0.019)	0.060 *** (0.004)	0.060 *** (0.005)	0.060 *** (0.004)
Education more than 19 years	0.537 *** (0.023)	0.517 *** (0.021)	0.520 *** (0.022)	0.09 *** (0.005)	0.085 *** (0.005)	0.087 *** (0.004)
Married	0.200 *** (0.024)	0.197 *** (0.021)	0.220 *** (0.023)	0.022 *** (0.004)	0.018 *** (0.005)	0.020 *** (0.005)
Divorced	-0.228 *** (0.034)	-0.214 *** (0.033)	-0.200 *** (0.034)	-0.056 *** (0.010)	-0.052 *** (0.008)	-0.050 *** (0.008)
Widowed	-0.133 *** (0.040)	-0.132 *** (0.036)	-0.131 *** (0.036)	-0.033 *** (0.010)	-0.033 (0.008)	-0.035 *** (0.009)
Employed or self- employed	0.024 (0.024)	0.024 (0.017)	0.017 (0.019)	0.016 *** (0.005)	0.013 *** (0.003)	0.015 *** (0.004)
Income	0.289 *** (0.008)	0.290 *** (0.007)	0.290 *** (0.008)	0.056 *** (0.001)	0.054 *** (0.002)	0.054 *** (0.002)
Number of observations	63021	64059	63790	63466	64524	64244
(Pseudo) R-squared	0.032	0.062	0.040	0.054	0.065	0.062
Log pseudolikelihood	-65578.10	-65437.22	-65577.143	-	-	-

Source: authors' calculations. Notes: Dependent variable is life satisfaction. All treatment countries are included into regression. Robust bootstrapped standard errors clustered at individual level are in parentheses. *, **, and *** correspond to 10, 5, and 1 percent significance levels, respectively.

Table 8: Public Support for the Euro in the EU

Old EU Member States		1998	1999	2000	2001	2002	2003
In the Eurozone	Austria	68.36%	68.11%	57.82%	69.22%	82.48%	73.58%
	Belgium	74.57%	81.58%	76.98%	78.59%	85.13%	84.21%
	Finland	57.29%	48.97%	49.38%	50.41%	68.87%	71.78%
	France	74.05%	67.91%	68.35%	69.01%	73.38%	71.59%
	Germany	57.17%	59.75%	51.48%	58.18%	64.63%	62.53%
	Greece	78.97%	76.77%	78.59%	80.42%	74.90%	65.42%
	Ireland	83.11%	86.98%	77.70%	83.17%	86.14%	84.75%
	Italy	91.49%	88.22%	84.15%	85.83%	79.60%	73.26%
	Luxembourg	82.88%	83.48%	78.58%	84.83%	90.49%	85.02%
	Netherlands	77.11%	76.87%	68.70%	71.82%	67.51%	64.81%
Portugal	69.25%	76.04%	71.25%	69.38%	72.79%	72.86%	
Spain	80.90%	79.78%	77.49%	76.20%	82.91%	73.57%	
Out of the Eurozone	Denmark	37.32%	45.60%	43.93%	46.34%	57.89%	54.90%
	Sweden	44.93%	47.12%	35.03%	44.31%	56.22%	43.58%
	United Kingdom	45.72%	32.82%	26.95%	34.82%	35.13%	29.17%
New EU Member States		2006	2007	2008	2009	2010	2011
In the Eurozone	Cyprus	51.18%	51.17%	63.03%	67.45%	61.51%	55.70%
	Estonia	51.51%	55.18%	62.55%	64.66%	63.03%	73.28%
	Malta	52.75%	68.43%	72.49%	70.54%	69.54%	73.65%
	Slovenia	84.21%	90.04%	91.84%	88.83%	85.33%	82.71%
	Slovakia	63.56%	66.38%	71.01%	91.07%	89.25%	83.79%
Out of the Eurozone	Bulgaria	77.36%	73.33%	77.72%	72.15%	65.92%	66.25%
	Czech Republic	60.40%	58.23%	54.59%	52.26%	39.77%	29.07%
	Hungary	74.23%	70.21%	70.60%	71.10%	74.49%	65.58%
	Latvia	49.61%	52.47%	55.11%	56.08%	58.00%	57.19%
	Lithuania	50.92%	54.80%	59.04%	58.39%	56.95%	53.82%
	Poland	58.78%	55.41%	50.29%	50.38%	48.30%	41.79%
Romania	80.62%	83.41%	82.20%	82.82%	77.80%	76.90%	

Source: the Eurobarometer. Notes: The table represents mean response to the question regarding the support for the euro by country by year. The year of the euro introduction by a country is shaded.

Table 9: Perceptions and the Effect of the Euro on Life Satisfaction

Dependent variable: the effect of the euro on life satisfaction	OLS
Average perception of change in own financial situation	0.028 (0.027)
Constant	0.048 (0.376)
Number of observations	16
Adj. R-squared	0.016
Average perception of change in general economic situation	0.027 ** (0.011)
Constant	0.404 (0.330)
Number of observations	16
Adj. R-squared	0.163
Average perception of change in prices	-0.023 ** (0.011)
Constant	0.730 (0.498)
Number of observations	16
Adj. R-squared	0.190

Source: authors' calculations. Notes: The sample consists of countries that introduced the euro, except for Malta for which no data on perceptions are available. The dependent variable is the effect of the euro on life satisfaction which takes values -1 (decreased), 0 (not changed), 1 (increased), according to previous estimations. Perceptions represent average coefficient from the European Commission Consumer Survey on a particular perception during the year of the euro introduction in a particular country. Bootstrapped robust standard errors clustered at country level are in parentheses. *, **, and *** correspond to 10, 5, and 1 percent significance levels, respectively.