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# **DOES HIGHER EDUCATION CONTRIBUTE TO A CHANGE IN ATTITUDES TO GOVERNMENT PRICE CONTROL IN RUSSIA?**

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## **DOES HIGHER EDUCATION CONTRIBUTE TO A CHANGE IN ATTITUDES TO GOVERNMENT PRICE CONTROL IN RUSSIA?<sup>4</sup>**

Does the educational process itself transform an individual's world outlook towards pro-market values in transition? Much evidence indicates that education correlates with liberal values. However, it is not clear whether this association is the result of selection into education or whether education itself makes people liberal as education and liberal values both are linked to unobservable characteristics such as cognitive abilities, household traits, and the social environment, implying biased ordinary least squares estimates. We employ unique data from 2 waves of the Russia Longitudinal Monitoring Survey (RLMS-HSE) which contains individual attitudes towards government price control. To overcome the issue of the mutual correlation of liberal values, education, and predetermined and time stable characteristics (fixed effects), we use regressions in first-differences. A negative link between obtaining higher education and support for government price control is documented. The results are also robust to different indicators of the dependent variable and for different sub-samples. Additionally, based on a cross-section sample, we provide evidence that the psychodynamic channel of educational impact on pro-market attitudes is important: white-collar occupations can be considered as insurance against possible market price shocks. The liberal effect of education shows the importance of research on educational policy in the process of the formation of pro-market attitudes in Russia and in other transition economies.

Keywords: market economy, values, education, Russia, attitudes, RLMS-HSE

JEL Codes: P10, I23

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## Introduction

This article quantifies the effect of higher education on respondents' attitudes to government price regulation using first-differences regressions. We use 2 waves (2006, 2013) of the Russia Longitudinal Monitoring Survey (RLMS-HSE) and find that obtaining higher education reduces individual support for government price regulation. Our findings are stronger for the subsample of youth—individuals aged 15–19 in 2006.

Existing studies extensively discuss attitudes to various forms of government regulation in developed countries, less developed countries, and transition economies. Different correlates were discussed and investigated: trust (Aghion et al. 2008), relative trust (Pitlik & Kouba 2014), the mutual relationship between trust and corruption (Dimitrova-Grajzl et al. 2012; Denisova et al. 2010), employment and ownership (Jakobsen & Listhaug 2012), basic knowledge of international trade (Baron & Kemp 2004), the perception of the consequences of the absence of regulation (Malchow-Møller et al. 2009), economic expectations (Ravallion & Lokshin 2000; Robinson & Bell 1978), factor endowments and occupational characteristics (Mayda 2006; Mayda & Rodrik 2005; Scheve & Slaughter 2001), wealth and various other socio-economic correlates (Andreß & Heien 2001).

Among the pioneering works on the empirical analysis of attitudes toward government price control in the European part of the former USSR is the study of Duch (1993). He used interview data collected from respondents 16 years and older in 1990 by the Institute of Sociology of Academy of Science of USSR. Among the statistically significant and positive predictors of favourable attitudes to price liberalizations were preference for competitive elections, level of education, retrospective perception of the economic success of “perestroika”, and level of free market mindset—the belief that inequality is related to economic efficiency, attitudes toward inequality and social guaranties. Age and price growth expectations were negative predictors of favourable attitudes to price liberalization. Duch (1993) points out that the correlation between democracy and free markets is well studied in the philosophical literature. Despite historical evidence, when free market formation preceded the formation of democratic institutions, he argues that rather than democratic preferences causing support for market reforms, it was vice-versa. He points out, however, that the initiation by the Soviet government of primitive competition in the election process started in the early 1960s. This serves as evidence of the importance and antecedence of democratic preferences. A free market mindset is also important. Duch emphasizes the historical roots of collectivism going deep in Tsarist Russia and established during the time of collectivization as a counter to individual or market principles.

His literature review shows the negative role of obstacles which originated in Soviet economic culture during the later process of economic reforms. He bases his hypothesis of the correlation between economic factors (such as self-interest, personal perception of economic reforms, economic expectations) on the literature review. However, the author points out the importance of personal motivation and the perception of the economic situation of the country in general.

Frentzel-Zagorska & Zagorski (1993) use regression and factor analysis to study the predictors of market reform components in Poland, including the predictors of attitudes to government price control. They found that being male, having more years of education, having more income, being a professional, number of inhabitants in settlements and private business ownership are negative and statistically significant predictors of favourable attitudes to state interventionism; while age was a positive and statistically significant predictor.

Gibson (1996) conducted a factor and regression analysis of attitudes to the market economy in Russia and Ukraine in 1990 and 1992. A significant component of his work was the analysis of individual attitudes to price liberalization. Among statistically significant predictors of individual attitudes to price liberalization he documented the support of democratic institutions, level of education (individuals who have higher levels of education were more pro-market), retrospective evaluation of living standards, economic expectations, general life satisfaction and knowledge of Western European political ideas. These predictors were positively and significantly correlated to individual attitudes to price liberalization. Among significant, but negatively correlated predictors were age (senior cohorts were more conservative), gender (females were more conservative), and close-mindedness. The authors attempted to provide a causal relationship between democratic values and attitudes to economic reforms, including price liberalization. Despite several limitations of their analysis, their conclusions testify that the data give us grounds to believe there is an important role of democratic preferences.

Extensive statistical analysis of individual attitudes to economic reforms in general, and to price control in particular is present in the work of Hayo (2004). He uses data from New Democracies Barometer (Strathclyde University) from 1995 for Czechia and Slovakia, Slovenia, Hungary, Poland, Romania and Bulgaria. He defined more than two dozen variables that have a statistically significant correlation with individual attitudes to government price control. Among the main predictors are individual perceptions of the economic situation in the country (including the rate of privatization), individual employment, individual income, retrospective and prospective perception of economic characteristics (including wealth satisfaction and wage sufficiency at the primary place of work), political orientation, social and demographic

characteristics. Church going is positively associated with a liberal economic mindset. This association was explained by the leading role of the church in the liberalization of business activity (especially in Poland). The authors partially explain the positive correlation between education and economic-liberal values by an expectation of a higher surplus from a market economy for education (including price liberalization) in long run. In addition, the authors provided facts from the literature, which show that educated individuals feel more comfortable with a market economy. They partially explained some other correlations, for instance, the less liberal mindsets of state employees by their lower surpluses from the market economy. From the position of self-interest, they also analysed the experience of additional work and additional market income from currency exchange operations (prohibited in the socialist system) which is associated with attitudes that are more liberal. The correlation between democratic preferences and liberal economic attitudes is explained using facts from the literature. Less liberal attitudes among females are explained by a shortage of government maternity support along with economic reforms. According to the authors, females dislike market uncertainty.

In part, attitudes toward government price control are analysed in the work of Berinsky & Tucker (2006). The authors used a data set of 2841 observations collected in Russia during 1995–1996 (respondents were also interviewed before 1995) in the framework of a national survey. They found that respondents with higher education more often said that it is necessary to regulate prices, although their preferences were more liberal.

However, not many studies question the effect of education towards government regulation in general, and more specifically attitudes towards government price control.

There are several channels of educational impact on liberal values, which are formulated in a more general context. We mention them with a view to the possible implications for attitudes towards price control. Stubager (2008) considers possible mechanisms of educational impact on individual liberal preferences. He suggests several models, henceforth, in order not to confuse with classifications of models defined in other studies, we call them channels of impact. **The psychodynamic channel** implies education improves psychological resistance to changes and freedom. Individuals that are more educated are more able to control their lives and are less aware of market pricing. Thus, a negative association between education and attitudes towards government price control may be expected. This may be partially due to the income effect, which is discussed in the framework of underdog hypothesis (Andreß & Heien 2001). **The socialization channel** suggests that during the process of education individuals acquire values of the surrounding social environment—the liberal ideas of teachers, friends and the content of academic disciplines. For example, studying history (which is obligatory in most Russian post-

secondary educational institutions) students may learn about the consequences of central planning, therefore, one might expect a negative association between education and attitudes towards government regulation. **The ideological refinement channel** was discussed and tested by Phelan et al. (1995), who also made reference to the origins of this model (developed by Jackman and Muha (1984)). Using US data Phelan et al. (1995) indicate that education transmits the ideology of individualism, so a positive association between education and individual rights may be present. However, it is not clear what major ideology is present at Russian universities, therefore, it is hard to make any prior associations of education and liberal attitudes towards pricing. **The cognitive channel** suggests acquiring special knowledge and a rational way of thinking during the process of education. In the framework of attitudes toward government price control, a more educated individual may forecast the consequences of state price control—a deficit for instance—with more certainty. Thus, a negative association between attitudes towards government regulation and education may be assumed. Another possible channel is **The enlightened path of education**, which may lead to an appreciation of the humanitarian values of civilization and positively correlate with views of equality (Andreß & Heien 2001). Not all people can afford goods and services at market prices, therefore, after an individual receives educational treatment, this mechanism of enlightenment may make attitudes more pro-government.

The level of education is correlated with observed and unobserved characteristics such as social environment, household traits, parental traits, and general living conditions which are also correlated with liberal values, and requires panel data methods to be properly investigated (Lancee & Sarrasin 2015). Intelligence, education and liberal attitudes are also interrelated (Caplan & Miller 2010), requiring heterogeneity to be accounted for. Therefore, an unobserved selection process may cause bias in a set of regression models which does not account for it.

To the best of our knowledge, we are the first to quantify the effect of educational attainment on attitudes towards government price control in Russia, accounting for possible selection into higher educational institutions, based on unobservable characteristics which are predetermined or plausibly stable over time.

The closest paper to this issue is the study of Gibson (1996)<sup>5</sup>. However, it seems that the panel structure of surveys was used to analyze the interrelationship between economic and political attitudes in Russia and Ukraine rather than the relationship we focus on.

In short, we find a negative effect of higher education on attitudes towards government price control. Overall the effect of higher education is sharper and more stable on the subsample of youth.

The rest of the paper is organized as follows. Section 2 provides a detailed data analysis and presents regressions. Section 3 concludes and discusses the consistency of our findings with the findings of other authors and discusses possible directions for future research.

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<sup>5</sup> This work is not the first to study the economic liberal values of Russians. On the rise of transitions, the contrast of population's attitudes toward markets in USSR and US was reflected in famous joint publication of Russian scientists Maxim Boycko, Vladimir Korobov and American economist Robert Shiller (Shiller, Boycko, and Korobov 1991). A review of political and economic orientations among a Russian and Ukrainian pool of respondents is presented in the work of William Zimmerman (1995). Recent studies of attitudes to the West and liberal values among Russians are reflected in works of Sergei Guirev (Guirev, Trudolyubov, and Tsyvinski 2008) and Irina Denisova and colleagues (Denisova, Eller, and Zhuravskaya 2010).

## Data and regression analysis

In this study, we use data from RLMS-HSE, a non-government longitudinal survey of households. According to their official website, it is a series of annual nationally surveys based on representative samples of the Russian population. The data is collected during face-to-face interviews of each member of the sample household. We use data collected in 2006 and 2013 (the 15th and 22nd waves respectively), chosen because these contained questions which allow us to ascertain individual attitudes toward price control. Using the same set of predictors, we can estimate their empirical coefficients and run the regression in first-differences. In our analysis, we include only those respondents that were present in both waves. In addition, we analyse only the responses of adult respondents. According to RLMS-HSE methodology, an individual is an adult if he or she is 15 years old or older. The full sample of 2006 RLMS-HSE respondents is 14 689 individuals. The sample of 2013 is 21 752 individuals. However, the intersection of the two waves (i.e. number of individuals questioned in 2006 and 2013) is 7 935 persons only. Restricting the sample to adult individuals leaves us with 6 541 persons.

The main **dependent variable** is the index of individual attitudes to government price control in 2006 and 2013 and the first-difference of these two indices.

The **index itself** is an arithmetic mean of standardized values of three variables reflecting individual attitudes toward government price control on food, utilities and petrol. Formally, the individual index of attitudes toward government price control expressed by the following equation:

$$I_{it} = \frac{Y^1_t + Y^2_t + Y^3_t}{3}, \quad (1)$$

where  $i$  is the individual index of the RLMS-HSE respondent,  $t$  is the index of the year,  $Y^1_t, Y^2_t, Y^3_t$  are standardized values of respondents' answers to the questions measuring their preferences to the extent of government price control. The higher the value of the index, the higher the support for government price control.



Questions about price control were addressed in slightly different ways and using different scales in 2006 and 2013. Therefore, we use standardized<sup>6</sup> values of index components in order to compare, justify and calculate the first-differences of the index itself.

In 2006 interviewers asked individuals their opinion on who—state or market—should control prices for food, petrol and utilities. We decoded answers to three variables taking values of 1 if the individual chose state, and 0 for market.

Questions in 2013 were addressed to respondents in a different way. They were asked to what extent they agreed that:

- The government should define prices for food.
- The government should define prices for gas and petroleum.
- The government should define prices for utilities.

Respondents were asked to indicate their attitude on a scale from 1 to 10 where 1 means that the respondent completely disagrees with the statement and 10 means that he completely agrees with the statement. There were also quit options that we decoded to missing values in our dataset.

The main independent variable is an individual's possession of a university degree using an indicator of educational level, which is available from the RLMS-HSE data set. We came up with a binary variable that takes the value of 1 if an individual possesses a degree and 0 otherwise. According to the summary statistics provided in Table A1, in 2005 18% of respondents had a degree, in 2013 that share increased to 23%.

Almost all—6535 out of 6540—respondents reported general information on their educational status in our sample. However, digging deeper into details of educational trajectories shrinks the sample. For instance, only about 5380 respondents provided detail about their graduation from any post-secondary educational institutions they attended. Therefore, there are about 1160 observations without information on the individual's graduation. We have a very similar situation for other details of individual educational trajectory. Basing on the RLMS-HSE questionnaire, individuals were asked to indicate up to five professional courses and up to two educational institutions. Taking into account, that minor individuals reported attendance at more than two professional courses, we did not consider those answers. Therefore based on respondents' answers, we constructed patterns of educational trajectories of respondents for the seven year interval between surveys.

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<sup>6</sup> i.e. we calculated z-score for each variable

The most obvious and frequent pattern was no change in educational status. We documented, 5 725 individuals who did not have changes in their education based on the reported date of last graduation from any post-secondary educational institution. This value also includes those individuals who had no information reported on their graduation in both 2006 and 2013. 815<sup>7</sup> respondents reported changes in graduation from the last attended post-secondary institution. These 815 individuals are used for the comparative analysis below.

For those 815 individuals we document 35 patterns of educational trajectories between 2006 and 2013. By patterns of educational trajectories, we mean various combinations of educational attainment and graduation. For example, the group who reported graduation from the first higher education institution constitute one pattern; while the group of individuals who reported graduation from an educational institution plus professional courses will constitute another. In the result of analysis of educational patterns, we document 132 respondents reported graduation from more than one educational: 78 males and 54 females.

The major reason for a change in educational status between 2006 and 2013 was the acquisition of a first university degree (311 observations or 38% of the changes). Graduation from a technical school or professional course were the second and third major reasons (15.95% and 15.21% respectively). Only five (5.52%) of respondents changed their educational status because of graduation from vocational school (with a secondary school certificate<sup>8</sup>). Among other patterns covering least 2% of those with changed educational status were second professional university degree, first university degree and professional course, university degree and technical school degree, second professional course, first technical school degree and professional course.

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<sup>7</sup> Table with calculations is big and messy, therefore it is not included in this report, but may be delivered by author upon request.

<sup>8</sup> In Russian context, vocational school with secondary school degree means that a person started her vocational school after accomplishment 11<sup>th</sup> grade of secondary school.

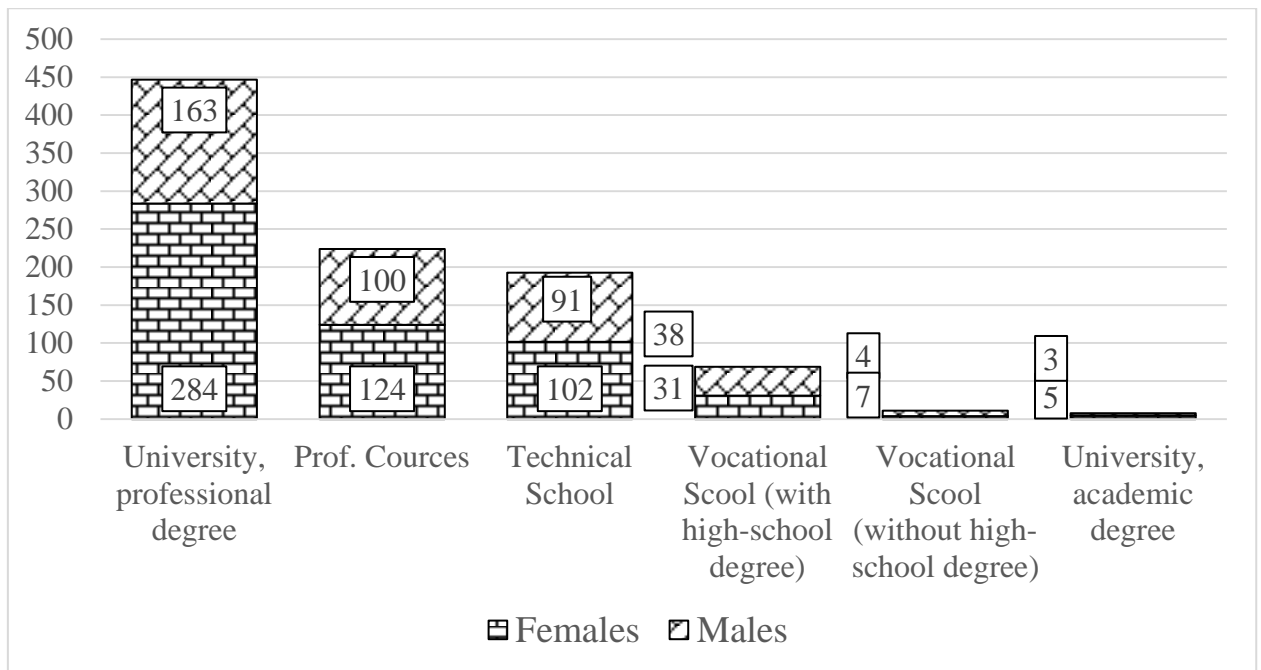


Figure 1. Distribution of changes in education by institution type and gender.

In Figure 1 we present distributions of changes in education across education institutions and in terms of gender for the 2006–2013 period<sup>9</sup>. The majority of graduates were females in most levels of post-secondary education. The only exception is vocational schools, where the share of females was only 44.9%. Therefore, the data reflected in Figure 1 shows that females in Russia are more ambitious in terms of educational attainment.

Now let us consider gender specific preferences for specializations in the 2006–2013 period for acquiring higher education. Overall, there were 395 respondents participating in the two waves of RLMS-HSE who reported that they obtained a first university degree after 2006. These individuals reported 50 different specializations (classified by ISCO-88). Moreover, some of the specializations were gender specific. In

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<sup>9</sup> We have to mention that data reflected in the diagram of Figure 1 shows changes in a certain level of education regardless of the fact whether or not it was first or second degree obtained at the corresponding level. In addition, we count individuals as many times as many degrees they acquired during 2006 – 2013 period, and therefore, individual who acquired two degrees, for instance, university and professional courses would be counted twice. That is why the numbers provided on the diagram would sum up to 952 which exceeds the overall number of individuals with changes in their educational status

Table 1 we show specializations nominated by 2% or more of the sample for their first university degree.

Table 1. Specialization preferences, % of total 2006-2013 university graduation.

University specialization	University specialization ISCO88 code	Females	Males	Total
Математик	2121	0	4.17	1.52
Инженер гражданского строительства; технолог строительных материалов	2142	1.2	4.86	2.53
Инженер-электрик; технолог в электрическом машиностроении	2143	0.4	2.78	1.27
Инженер телекоммуникаций, электроники, технолог в телекоммуникации	2144	0.8	4.86	2.28
Инженер - механик, морской инженер, инженер-аэронавт; инженер-ядерщик; технолог в механическом машиностроении	2145	0	11.81	4.3
Инженер-химик; технолог еды, напитков, технолог топлива	2146	0.8	2.08	1.27
Инженер горной промышленности (уголь, металл, нефть, природный газ); металлург; технолог добывающих отраслей	2147	0.4	3.47	1.52
Прочие инженеры (производительность труда в промышленности; технолог ткани и т.п.)	2149	5.58	6.94	6.08
Агроном, ученый – животновод, ученый – лесовод, ученый - садовод, ученый – почвовед	2213	2.39	1.39	2.03
Другие специалисты в области образования	2359	8.76	4.86	7.34
Главный бухгалтер, ревизор	2411	10.36	3.47	7.85
Адвокат, прокурор, юрист, юрисконсульт	2421	10.76	11.81	11.1
Эконометрик, экономист	2441	23.11	13.19	19.5
Психолог	2445	3.59	2.08	3.04
Исполнительный секретарь, чиновник, работник канцелярии	3439	6.77	6.94	6.84
Декоратор, дизайнер	3471	2.39	0	1.52
Спортсмен, тренер	3475	0.4	3.47	1.52
Всего		77.71	88.18	81.5

Overall, the 2% threshold for specialization accounts for about 88% of males and 78% of females who obtained higher education during the period under study. There are significantly more males obtaining engineering specializations. While females are the majority in humanities and economics related majors.

In our empirical model, **gender** is included as a binary variable taking 1 if a respondent is male and 0 otherwise.

**Individual age** is measured in years.

In order to measure individuals' **democratic preferences** in 2006 we used questions in which individuals had to state to what extent it is important to him personally to have each of the following in his country:

- free and fair elections;
- law and order;
- freedom of speech;
- independent press;
- political opposition;
- fair courts;
- protection of rights for national, religious and other minorities.

Respondents had five response options: 1—very important; 2—quite important; 3—yes and no; 4—not very important; 5—not important at all.<sup>10</sup> At the final stage, we calculated the index of democratic preferences as a mean of z-scores of answer values to the democracy related questions. These questions were not asked in 2013; therefore, for 2013 democratic preferences were measured using another question: According to your opinion, should state power become more democratic or exert more control over the politics? The respondents were asked to work their preference according to a discrete scale where 1 means that state power should become more democratic and 10 means the state should exert more control<sup>11</sup>. In order to preserve comparability with the index constructed for 2006, we have also standardized values of individual answers and obtained an index for democratic preference on a similar scale to one for 2006.

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<sup>10</sup> In order to make analysis more intuitive, we subtracted respondents' answers from 6.

<sup>11</sup> In order to make analysis more intuitive, we subtracted respondents' answers from 11.

To account for possible correlations between liberal attitudes and trust we included a binary variable, which equals 1 if a respondent stated that most people can be trusted and 0 otherwise.

For the purpose of family wealth measurement, we used **per capita family income**. Per capita income was calculated as total family income divided by number of family members. In addition, we deflated the value of 2013 family income to 2006 prices using Russian CPI published by GOSKOMSTAT<sup>12</sup>. In the regression equation, we include this variable in logarithmic terms.

**Economic expectations** were measured using individuals' answers to the question: "Do you think you and your family will live better or worse in the next 12 months?" The respondent had five choices and a quit option. The variable takes values of 1 if individual stated that he would live much worse and 5 if he believes that he will live much better. In the case of cross sectional regressions, we used a set of four dummy variables with the lowest expectations as the reference.

Practical **business experience** is also an important component of professional education. Therefore, the experience of dealing with the market economy directly is proxied with individual business involvement. Individual business involvement is negatively associated with demand for government price control. Denisova et al. (2010) argued that labour market experience does matter for individual preferences about direct state involvement into economy. They point out lower preferences of those employed in private firms toward government price control. The same is true for individuals who are self-employed or who have entrepreneurship experience.

We calculated the **mean of other family members' attitudes** toward price control (i.e. excluding the individual respondent himself) in order to control for attitude environment within the family.

An additional set of controls according to studies of liberal values and response behaviour were also employed in the regression analysis (Plug & Van Praag 1998; Duch 1993; Denisova et al. 2010; Ravallion & Lokshin 2000; Dimitrova-Grajzl et al. 2012; Aghion et al. 2008). Taking into account special aspects of the Russian economy and following the logic expressed in Denisova et al. (2010), we used (for regressions in levels) the set of dummy variables of primary selection units (PSU). According to RLMS-HSE methodology, individuals do not change their PSU in the panel set up. Therefore, for the purpose of the assessment of changes in the economic

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<sup>12</sup> <http://www.gks.ru/>

characteristics of the environment we use the log of averaged regional family income. For the purpose of control for attitudes of other household members toward government price control, we include the mean of index values of all other household members into regression equation.

Following Lancee & Sarrasin (2015) we postulate that both education and liberal attitudes are correlated with unobserved heterogeneous predetermined characteristics—fixed effects—such as a nurturing environment (the socio-economic characteristics of parents and other family members), factors fixed in time such as neighbourhood, primary school teachers and classmates. Another possible source of correlation is a mutual relationship between cognitive ability, liberal attitudes and education (Caplan 2001; Makowsky & Miller 2014; Caplan & Miller 2010).

The next step is providing an empirical model specification for testing the hypothesis above. Our baseline empirical model may be described in quite a simple way. Let  $I_{it}$  denote individual  $i$  index of attitudes towards government price control in year  $t$ , then basic empirical specification may be written as:

$$I_{it} = \alpha_0 + X_{it} \times \beta + \gamma \times Educ_{it} + v_i + e_t + \varepsilon_{it} \quad (2)$$

where:

- $\alpha_0$  is a constant term;
- $X_{it}$  captures individual characteristics of individual  $i$  in year  $t$  such as income, democratic preferences, economic expectations;
- $Educ_{it}$  is educational attainment of individual  $i$  in year  $t$ ;
- $\beta$  is the vector of empirical coefficients to be estimated;
- $v_i$  is individual unobservable effect (individual fixed effect), which is stable in time between the RLMS-HSE rounds. For example,  $v_i$  may represent individual innate ability,  $cov(Educ_{it}, v_i) \neq 0$ ;
- $e_t$  is a time component;
- $\varepsilon_{it}$  is an error term

Let's take a difference between two waves ( $t_0 = 2006$  and  $t_1 = 2013$ ). We have:



$$\begin{aligned}
I_{i2013} - I_{i2006} &= \alpha_0 + X_{i2013} \times \beta + \gamma \times Educ_{i2013} + v_i + e_{2013} + \varepsilon_{i2013} - \\
&- (\alpha_0 + X_{i2006} \times \beta + \gamma \times Educ_{i2006} + v_i + e_{2006} + \varepsilon_{i2006}) = \\
= \Delta Y_i &= \Delta X_i \times \beta + \gamma \times \Delta Educ_i + \underbrace{(e_{2013} - e_{2006})}_C + \underbrace{\Delta \varepsilon_i}_{u_i}
\end{aligned} \tag{3}$$

Therefore we arrive at the following baseline empirical equation:

$$\Delta I_i = C + \Delta X_i \times \beta + \gamma \times \Delta Educ_i + u_i. \tag{4}$$

Where:

- $\Delta I_i$  is the change in the index of attitudes towards government regulation of individual  $i$ ;
- $\Delta X_i$  is the change in individual characteristics of individual  $i$ ;
- $\Delta Educ_i$  is the change in educational attainment of individual  $i$ ;
- $C$  captures the contribution of time into demand of individual  $i$  (time effect), i.e. it says how on average attitudes change in time.

First of all we estimated regressions using cross-sectional data. The results are given in Table A2. Education negatively corresponds to the values of the index of government regulation. Expectations about a better life are negatively related to attitudes towards government regulation. Trust and democratic preferences are not very stable predictors in this cross section because the sign of the corresponding coefficients vary over time.

Next we estimated the coefficients for regressions in first-differences (Tables A3–A4). Overall the coefficient of the education variable is stable. When we add other controls—changes in democratic preferences, trust and family income controls its value stays almost the same (specifications 1–4). However, when we add economic expectations (equation 5) and the change in the mean of family attitudes (equation 7) and change in average family income in regions, the corresponding change in the value of the coefficient of the educational variable is large. For the subsample of youth (Table A4) the pattern is very similar, however it seems that the significance of the coefficient of the educational variable is stronger.

We recalculated models in the standard panel set-up<sup>13</sup> and run an LM test to see whether a panel effect exists and to test OLS versus random effect models. We obtain LM test statistics of 19.74 (significant at 1%), which suggest a panel effect of unobserved heterogeneity in the error term. We conducted a Hausman test to see whether a fixed effect model or a random effect model is appropriate. We obtain Hausman test statistics of 34.16 (significant at 1%), which suggest that a fixed effect model is more appropriate. These calculations were done for specification 7 (Table A3).

Finally, for households (where household size >2) we perform a sensitivity analysis (Table A5) of the coefficient of the education variable. Controlling for basic household, individual and regional characteristics—primary selection units, urban area, parental education, marital status, household size, the presence of children, health status, flat ownership, self-estimation of wealth, average opinion about price regulation of other family members—we perform a sensitivity analysis of the coefficient of the education variable, sequentially adding different predictors. In columns “3–4” we added two income-related variables to test (at first glance) “the underdog hypothesis”, next we add “democratic preferences” and trust dummies<sup>14</sup> in order to investigate the socialization channel. In order to account for the possible upgrading of humanitarian values in higher education, we utilized the following question of RLMS-HSE: “Today, the income inequalities which exist in our country are discussed a lot. What, in your opinion, can be done in order to reduce these income inequalities? You can choose 3 answers.” We created a binary variable, which equals 1, if an individual choose “implement state price regulation” and 0 otherwise. Next we added individual business experience, and finally we add a dummy variable = 1 if an individual has occupation which belongs to one of two major ISCO 88 groups: “legislators, senior officials and managers” or “professionals”. This was also done to test the psychodynamic model on the grounds of occupation-based insurance against possible price shocks. It turns out that the major change in the value of the coefficient of the education variable is observed after we add the “white-collar occupation” dummy variable. Finally we add industry dummies to capture possible benefits of industry representatives (Mayda & Rodrik 2005; Andreß & Heien 2001). However, we did not observe substantial changes in the value of the coefficient of interest.

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<sup>13</sup> From basics (Wooldridge 2012) we know that for a 2 period model fixed effect computations coincide with first differences. For convenience, we decided to present our regressions using set-up of first differences.

<sup>14</sup> Here we introduce dummy variables to capture the whole spectrum of the RLMS question about trust. The question states: “Do you believe that: 1) Most people can be trusted. 2) In relationships with people you should always be careful. 3) Both, depending on a person, conditions.”

## Discussion

In this study, we conducted an empirical analysis of the effect of higher education on the change of Russian people's attitudes to government price control using RLMS-HSE data for the period 2006 to 2013. We used an index of attitudes to government price control as the main characteristic in assessing these attitudes. This index is a mean of standardized values of respondents' attitudes to the idea of government control of the price for food, petrol and utilities. Based on the literature review and the variation in variables we selected the set of predictions related to individual preferences about government price control. This set includes possession of a higher education degree, democratic preferences, economic expectations and per capita family income, the mean value of the attitude index of other family members, gender, age, and indices of region-specific characteristics.

Cross sectional first-difference regressions indicate that higher education contributes to a less sympathetic attitude to government regulation of prices. This result supports the findings of negative correlations between education and attitudes towards government regulation in Russia and transition economies (Denisova et al. 2010; Dimitrova-Grajzl et al. 2012; Duch 1993).

We also document a strong correlation between mean values of other family members' attitudes to government price control and respondent's attitudes. This is true for regressions in levels and for regressions using first-differences. This effect could be partially explained by the unity of the ideology of the family members and the formation of the family's unified utility function. In this context, the phenomenon is coherent with results of Plug & Van Praag (1998) and Svallfors (2006).

Our results suggest a negative correlation between economic expectations and democratic preferences, and support for government price control. Conceptually, the established correlation of economic expectations is partially in line with the findings of the empirical work of Ravallion & Lokshin (2000). The significance of democratic preference was previously documented in many studies. Among these studies are the research of Duch (1993), and the work of Gibson (1996). However, we cannot state that democratic preferences have an effect, since there could be reverse interdependence.

Overall, sensitivity analysis shows that the psychodynamic channel of educational impact on attitudes towards government price control is important, suggesting that a white-collar occupation may be considered as possible insurance against market price shocks.

One limitation of our model is the different measures of indicators used for different years. However, the expected signs of regression coefficients are in line with intuition and with previous findings. Another potential problem is the weakness of our alternative identification strategy. However, in most regressions, the relationship between higher education and respondents' attitudes towards price regulation was negative, these findings were also robust to different indicators and samples. However, it would be beneficial to find a suitable traditional instrumental variable and to apply it to a broader set of pro-market individual values with a more homogeneous set of controls. This task is subject to future research by the authors.

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Table A 1. Summary statistics.

	2006				2013				Difference			
	Mean	St. Deviation	Min	Max	Mean	St. Deviation	Min	Max	Mean	St. Deviation	Min	Max
Index of individual att. to gov't price control	0.01	0.77	-3.13	0.35	0	0.93	-3.7	0.72	0.02	1.07	-4.05	3.85
Individual age	43.15	18.55	15	100	45.06	18.29	15	100				
Gender (1 stands for males)	0.43	0.49	0	1	0.42	0.49	0	1				
Possession of higher education	0.19	0.39	0	1	0.24	0.43	0	1	0.06	0.27	-1	1
Logarithm of individual income	7.29	3.06	0	12.63	8.05	2.83	0	14.04				
Economic expectations	3.26	0.76	1	5	3.21	0.8	1	5	-0.11	0.9	-3	4
Business experience	0.1	0.31	0	1	0.11	0.31	0	1	-0.01	0.33	-1	1
Democratic preferences	0.01	0.74	-3.57	0.95	0	1	-1.06	2.26	-0.08	1.2	-2.01	5.02
White collar occupation	0.33	0.47	0	1	0.36	0.48	0	1				
Preferences for equality	0.373	0.4836	0	1								
Trust									0.05	0.51	-1	1
Family income per capita (in logs)									0.22	0.82	-2.45	2.53
Mean of family members' atts.									-0.01	0.91	-4.05	3.85
Average family income in a regions									8.86	0.41	7.95	9.93



Table A 2. Determinants of attitudes to government price control, basic OLS estimates.  
 Dependent variable – individual index of attitudes toward government price control.

	(1) 2006	(2) 2013
Age	0.0158*** (0.00)	0.0209*** (0.00)
Age squared	-0.0001*** (0.00)	-0.0001*** (0.00)
Gender (1 stands for males)	-0.0897*** (0.01)	-0.0234 (0.01)
Possession of higher education	-0.2818*** (0.02)	-0.1512*** (0.02)
Constant	-0.3926*** (0.05)	-0.5993*** (0.05)
F-statistic	193.126	153.937
Prob > F	0.000	0.000
R-squared	0.057	0.037
Number of observation	11632	16534

Robust standard errors in parentheses.

\*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Table A 3. Determinants of changes in attitudes to government price control. Dependent variable – change in the index of attitudes towards government price control. OLS estimates. General sample.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Changes in:							
Possession of higher education	-0.1363** (0.06)	-0.1209* (0.07)	-0.1305* (0.07)	-0.1370* (0.07)	-0.1968** (0.09)	-0.1875** (0.09)	-0.1536* (0.08)
Democratic preferences		-0.0662*** (0.01)	-0.0617*** (0.01)	-0.0585*** (0.01)	-0.0488*** (0.02)	-0.0492*** (0.02)	-0.0451*** (0.02)
Trust			-0.0038 (0.03)	0.0012 (0.03)	-0.0137 (0.04)	-0.0250 (0.04)	0.0010 (0.04)
Family income per capita (in logs)				-0.0287 (0.02)	-0.0095 (0.03)	-0.0005 (0.03)	0.0192 (0.02)
Economic expectations					-0.0829*** (0.02)	-0.0761*** (0.02)	-0.0544** (0.02)
Business experience						-0.1744** (0.07)	-0.1396** (0.06)
Mean of family members' atts.							0.4040*** (0.03)
Average family income in a regions							0.0008 (0.05)
Constant	0.0314** (0.01)	0.0582*** (0.02)	0.0668*** (0.02)	0.0689*** (0.02)	0.0700*** (0.02)	0.0707*** (0.02)	0.0527** (0.03)
F-statistic	4.407	12.410	7.387	5.571	6.297	5.607	34.218
Prob > F	0.036	0.000	0.000	0.000	0.000	0.000	0.000
R-squared	0.001	0.006	0.006	0.006	0.011	0.013	0.135
Number of observation	5844	4575	4482	4323	3135	3075	3075

Robust standard errors in parentheses.

\*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Table A 4. Determinants of changes in attitudes to government price control. Dependent variable – change in the index of attitudes towards government price control. OLS estimates. Subsample of Youth.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Changes in:							
Possession of higher education	-0.5987*** (0.21)	-0.6678*** (0.24)	-0.6494*** (0.23)	-0.6618*** (0.24)	-0.9787*** (0.29)	-0.8620*** (0.29)	-0.8455*** (0.29)
Democratic preferences		0.0124 (0.10)	0.0031 (0.10)	0.0160 (0.11)	0.0757 (0.13)	0.0949 (0.13)	0.0729 (0.13)
Trust			0.2798 (0.19)	0.2479 (0.20)	0.3987 (0.25)	0.2926 (0.24)	0.3315 (0.26)
Family income per capita (in logs)				0.0073 (0.10)	0.0285 (0.13)	0.0323 (0.13)	0.0574 (0.13)
Economic expectations					-0.0278 (0.11)	-0.0225 (0.12)	-0.0264 (0.12)
Business experience						-0.9658* (0.57)	-0.9920* (0.57)
Mean of family members' atts.							0.3607** (0.18)
Average family income in a regions							0.2003 (0.29)
Constant	0.1115 (0.12)	0.1226 (0.14)	0.1323 (0.14)	0.1313 (0.19)	0.2529 (0.24)	0.2371 (0.24)	0.1503 (0.28)
F-statistic	8.158	4.023	3.187	2.295	2.886	2.778	2.617
Prob > F	0.005	0.020	0.026	0.063	0.019	0.016	0.013
R-squared	0.043	0.053	0.068	0.065	0.132	0.141	0.201
Number of observation	171	137	134	129	93	90	90

Robust standard errors in parentheses.

\*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Table A 5. Factors of individual attitudes towards government price control. OLS estimates. Dependent variable – individual index of attitudes toward government price control.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Age	-0.0007 (0.01)	0.0038 (0.01)	0.0138 (0.01)	0.0065 (0.01)	0.0083 (0.01)	0.0064 (0.01)	0.0085 (0.01)	0.0076 (0.01)	0.0073 (0.01)
Age squared	0.0000 (0.00)	-0.0000 (0.00)	-0.0001 (0.00)	-0.0001 (0.00)	-0.0001 (0.00)	-0.0001 (0.00)	-0.0001 (0.00)	-0.0001 (0.00)	-0.0001 (0.00)
Gender	-0.0792*** (0.02)	-0.0925*** (0.02)	-0.0821*** (0.03)	-0.0871** (0.03)	-0.0856** (0.04)	-0.0836** (0.03)	-0.0763** (0.03)	-0.0962*** (0.04)	-0.0815** (0.04)
Possession of Higher Education		-0.1752*** (0.03)	-0.1663*** (0.04)	-0.1542*** (0.04)	-0.1489*** (0.04)	-0.1414*** (0.04)	-0.1420*** (0.04)	-0.1119** (0.04)	-0.1138** (0.05)
Ln of Income			-0.0364 (0.02)	-0.0157 (0.03)	-0.0090 (0.03)	-0.0061 (0.03)	0.0038 (0.03)	0.0053 (0.03)	0.0040 (0.03)
Economic expectations				-0.0202 (0.02)	-0.0104 (0.02)	-0.0002 (0.02)	0.0034 (0.02)	0.0026 (0.02)	0.0059 (0.02)
Democratic preferences					-0.0373 (0.03)	-0.0405 (0.03)	-0.0394 (0.03)	-0.0391 (0.03)	-0.0428 (0.03)
Trust dummies	NO	NO	NO	NO	YES	YES	YES	YES	YES
Preferences for Equality						0.2115*** (0.03)	0.2100*** (0.03)	0.2113*** (0.03)	0.2115*** (0.03)
Business experience							-0.1528*** (0.05)	-0.1592*** (0.05)	-0.1596*** (0.05)
White-collar occupation								-0.0813** (0.04)	-0.0854** (0.04)
Industry dummies	NO	NO	NO	NO	NO	NO	NO	NO	YES
Constant	-0.5864** (0.27)	-0.6785** (0.27)	-0.4562 (0.39)	-0.2411 (0.41)	-0.2560 (0.46)	-0.2846 (0.45)	-0.3809 (0.45)	-0.3457 (0.45)	-0.2368 (0.46)
F-statistic	6.640	6.946	4.929	4.998	4.841	5.179	5.140	5.262	4.256
Prob > F	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
R-squared	0.133	0.141	0.137	0.139	0.148	0.165	0.170	0.172	0.181
Number of observation	4532	4532	3066	2545	2389	2389	2389	2385	2383

Robust standard errors in parentheses.

\*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$