



UNIVERSITY OF GOTHENBURG
SCHOOL OF BUSINESS, ECONOMICS AND LAW

May, 2013
Master's thesis (15 hp)
Department of Economics

Democratic Effects on Public Spending

A Study of the Post-Soviet Context

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ABSTRACT

Title:

Democratic Effects on Public Spending – A Study of the Post-Soviet Context

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The degree of democracy is an important factor determining a country's welfare through the formation of policies and the government's priorities. This study explores in a quantitative framework the effect of democracy on total public spending, public educational, public health care and public military spending in the Post-Soviet states with the aim to contribute with new input and understanding and to test whether previous findings hold for the Post-Soviet context. The quantitative results are then further tested in a case study on Belarus and the Kyrgyz Republic. In line with predictions a positive relationship between democracy and public spending is found in the region. The study shows no significant relationship between educational and health care spending and democracy. Contradicting previous research a positive relationship between democracy and military spending is found, where an increase in degree of democracy leads to higher military spending.

Key words:

Public spending, educational spending, health care spending, military spending, regime type, democracy, autocracy, Post-Soviet, Belarus, Kyrgyz Republic.

Table of Content

1.	Introduction.....	1
1.1.	Literature Overview.....	2
1.1.1.	Previous Research on Post-Soviet States.....	2
1.1.2.	Previous Research on Regime Type and Public Spending.....	3
2.	Theoretical Consideration	4
3.	Research Design	6
3.1.	Measurement and Operationalization.....	6
3.2.	The Data	7
4.	Description of the Post-Soviet Sample.....	9
4.1.	Context prior to 1991	9
4.2.	Context following 1991	10
5.	Empirical Analysis.....	13
5.1.	Empirical Strategy.....	13
5.2.	Empirical Results	15
5.2.3.	Case Study of Belarus and the Kyrgyz Republic	19
5.3.	Comparison of the Results	23
6.	Conclusion	24
7.	References.....	26
	Appendix 1: Overview of Measurements.....	30
	Appendix 2: Public Health Care Expenditure (per cent of total health care expenditure)	31
	Appendix 3: Additional Regressions.....	32
	Appendix 4: Additional Regressions including control variables	33
	Appendix 5: Correlation Between All Variables	35

List of Figures

Table 1:	Overview of data on public, educational, health care and military spending (in per cent)	8
Graph 1:	Democracy index for the Post-Soviet states 1991-2011	11
Table 2:	Democracy and public spending in the Post-Soviet states.....	15
Table 3:	Democracy and the composition of public spending in the Post-Soviet states	17
Graph 2:	Case study on democracy and public spending in Belarus and the Kyrgyz Republic	19

1. Introduction

A country's degree of democracy is one way to determine the citizens' possibilities to affect the public policies and decisions in a country and through that the priorities of the government. These priorities are then manifested through both the size and composition of public spending. Public spending in turn affects the welfare of the population, through for example the citizens' access to education and health care. The relationship between democracy and public spending is therefore relevant to study to understand whether and how different regime types prioritize their spending differently.

After the dissolution of the Soviet Union the Post-Soviet states have become an interesting sample to analyse. For centuries they shared a political and economic leadership until they in 1991, with the end of the Soviet era and command economy, faced a common shock and dramatically diverged differently. This shock forced the states to form their own states and transform their economies. During the over 20 years since then, these 15 states have evolved in different directions when it comes to regime type and are therefore relevant and interesting for a cross-country study. By reviewing the literature in this field, it is also clear that there is a lack of studies focusing on the specific link between democracy and public spending in the Post-Soviet states, especially during the recent decade, and there is therefore a need to study this region in a longer perspective.

The aim of this study is to contribute with new input to the existing research and to test whether the previous findings of the relationship between democracy and public spending hold for the Post-Soviet context. To achieve this purpose the following questions will be answered:

- Can the Post-Soviet states' variation in total public spending be explained by the variation in degree of democracy?
- Can the Post-Soviet states' variation in the composition of the public spending be explained by the variation in degree of democracy?

By answering the first question it will become clear whether the amount of public spending varies with regime type, while the second question focuses on the priorities of public spending between regime types. The second question is a good complement to a better understanding of the welfare priorities. It is however important to note that spending measurements are no guarantee for better outputs. Due to limitations, and the complexity of quality measures, this study will look into the variation of public spending and the allocation as indicators of the priorities by the governments.

A key prediction, based on the theoretical background and previous research, is that democratization positively affects both total public, educational and health care spending, and negatively affects military spending. The intuition behind this hypothesis is that democratic societies need to prioritize human capital and the majority of the population's interest in order to be re-elected, whereas autocratic societies can favour a small elite and still keep power.

A literature overview will first be introduced where previous research on Post-Soviet states and the relationship between regime type and public spending are reviewed. Then follows section two with theoretical considerations discussing the mechanisms behind democracy and public spending. Section three gives the methodological background and a data overview, while section four describes the situation for the Post-Soviet states both prior to and after the dissolution of the Soviet Union in 1991. Section five defines the empirical strategy and presents and analyses the results from the models and the case study where the two countries facing the largest democratic shift during the studied period, Belarus and the Kyrgyz Republic, are analysed. Finally some concluding remarks wrap up the discussions of this paper.

1.1.Literature Overview

Here follows an overview of previous research relevant for this study, both on Post-Soviet states as well as on the relation between political factors and public spending and its composition in general.

1.1.1. Previous Research on Post-Soviet States

Previous studies on welfare systems in Post-Soviet countries often focus on one single component of public spending and are usually based either on case studies or a comparison of very few countries over the first ten years (see for example Cook 2007, Kornai and McHale 2000, and Orenstein 2000). The literature on post-communist transformations often implies that there have been changes in the governments' spending patterns since the dissolution. However, as most of these studies are based on single cases or very few countries it is hard to draw conclusions on whether these findings are due to unique or common patterns. It is therefore difficult to generalize the results.

Careja and Emmeneggers' (2009) study is one of few quantitative studies on Post-Soviet states and their public spending. They study the distribution of welfare spending in the post-communist states in Central and Eastern Europe (CEE) that either are members or have applied for membership to the European Union and find that left incumbency is positively correlated both with total public and social expenditures. Orenstein (2008) studies all post-communist states and finds that strong democratic institutions are positively related to higher social spending.

Due to the scarcity of previous studies on public spending generalizable on all Post-Soviet states, as well as scarcity in studies including the last decade, it is motivated to further study this over a longer period and it indicates a need for further understanding.

1.1.2. Previous Research on Regime Type and Public Spending

When widening the horizon outside the Post-Soviet states, there is more literature addressing the interaction between democracy and variables related to public spending, both when it comes to the link between regime type and public spending, and the distribution of the spending. Many studies have focused on wealthy democracies (see for example Garrett and Mitchell 2001 and Hicks and Swank 1992), often due to the scarcity of data for non-democratic countries. In recent years, however, studies on less democratic and less developed countries, mainly in Latin America and Africa, have also been carried out (see for example Avelino et al. 2005 and Brown and Hunter 1999).

Avelino et al. (2005), Brown and Hunter (1999) as well as Shelton (2007) find public spending to be strongly positively related to democracy, and that the effect of democracy increases over time. Brown and Hunter (1999) find autocracies' to have a more sensitive output elasticity when it comes to economic constraints, such as decreasing levels of per-capita income or negative growth rates. With economic constraints, authoritarian regimes will reduce the public spending at a faster rate than democracies and when economic constraints diminish, they will increase spending at a faster rate. By contrast they find that democracies' output elasticity is more sensitive to political constraints, for example to changes in the demography of the electorate.

Nelson (2007) argues that democracy tend to encourage public spending, but emphasizes that democracy's both negative and positive effects on public spending and argues that this depends on which off the effects that dominate. Mulligan et al. (2004) operationalize democracy by fair voting and find no effect on educational spending or pension, concluding that democratic regime type has little effect on the extent of public spending. Also Mulligan et al. (2010) finds political factors to have partial impact on the size and allocation of public spending and emphasize growing incomes and demographic factors as explanatory variables of changes in social policy.

Research has also concentrated on the allocation of public spending between different components of the public sector such as public educational, public health and public military spending (from now on educational spending, health care spending and military spending). Avelino et al. (2005) find that democracies increase educational spending and argue that democracies increase spending on sectors strengthening the human capital to improve efficiency. Brown and Hunter (2004), Kaufman and Segura (2001) and Stasavage (2005) also find that democracy affects educational spending positively,

where the strongest relationship holds for primary school. When it comes to spending on health the results are contradicting each other, where Avelino et al. (2005) find no positive relationship between democracy and health care spending, while others find a positive relationship (see for example Ghoborah et al. 2000 and Kaufman and Segura 2001). Rudra and Haggards' (2001) findings show that authoritarian regimes are more likely to cut education and health care spending than democratic regimes. They argue that this is due to globalization pressure on democracies, where mainly trade and capital are determinants. The effect of democracy on military spending is by most researchers found to be negative. Both Dunne et al. (2008), Nordhaus et al. (2012) and Yildirim and Sezgin (2005) conclude that there is a negative relationship between military spending and democracy, and thus that autocracies spend more on their armies than democracies.

Other research explains the relationship between public spending and democracy by the electoral business cycle and similar models. This theory considers political factors to be important, but focuses on the pressure from the voters during a period prior to democratic elections. (see for example Blais and Nadeau 1992, Brender and Drazen 2012, Chauvet and Collier 2009 and Katsimi and Sarantides 2009). Another area of focus has been to differentiate between ideology, where Huber et al. (2004) find left parties to focus more on health and education while right parties focus on social security.

It is striking that almost all of the studies reach similar findings when it comes to the general link between democracy and public spending, where a vast majority find that democracy is associated with relatively higher public spending, even after introducing control variables. This effect is shown to increase over time and that democracies face a more sensitive output elasticity. Many do suggest differences in allocation, where most of them agree that democracies have a special interest in education and spend less on military, while the results are contradicting when it comes to health care spending. Some researchers argue that this is due to democracies being more prone to prioritize human capital and the majority citizens. There could be other transitional regions with similar political and economic context, such as some African or Latin American countries. However, as most studies are on the entire sample of OECD, South American or African countries it is difficult to apply the results on the Post-Soviet context and this study therefore attempts to complement these.

2. Theoretical Consideration

The structure of public spending is complicated and there are many different contexts and factors affecting it. For example do historical, demographic and geographic contexts have an impact. Today, no single theory covers the formation of public spending comprehensively, especially when it comes

to the link between regime type and public spending. This section therefore considers different theories that are believed to concern the particular relationship between the degree of democracy and public spending.

A government's total public spending consist of interest payments on the public debt ($r_t D_t$) plus all other public spending (G_t), and are constrained by the size of its tax revenue (T_t), the change in stock of government debt (ΔD_t) and the change in the money stock (ΔM_t):

$$G_t + r_t D_t \equiv T_t + \Delta D_t + \Delta M_t$$

(Olsson 2012 p.115). Hence, if a government increases either the tax revenue, its debt or its money supply, the total public spending will increase. At the same time, if debts are increased, the interest payments will constrain the government's possibilities of other public spending.

An important factor determining the tax revenue is a country's fiscal and legal capacity, which enables governments to tax its citizens (Olsson 2012 p. 123). The tax revenue could therefore be expected to vary with democracy where the population in a more democratic country has a higher trust in the government and therefore is more willing to pay taxes. A democracy may also have more functional institutions to regulate taxation and the tax base. The tax rate is also an important factor determining the tax revenue. To heavily increase the tax rate could lead to tax avoidance and evasion in open economies (Zodrow and Mieszkowski 1984 p. 358-359). At the same time the risk of losing re-elections due to high tax elasticity and unpopular decisions are greater risks for democracies. This fits well with Brown and Hunters' (1999) argument that autocracies have less sensitive output elasticity when it comes to economic constraints.

Following this discussion, democracies could be expected to have higher tax revenues, hence less constraints on public spending, but will not be able to increase the tax rate at the same speed as autocracies. How large the actual tax revenues are will be determined by both the tax rate and the willingness to pay taxes, depending on which effect is largest. The definition of public spending used in this study includes interest payments, though the relationship between public debt and regime type is not directly studied it could be seen as mirrored by the relative size of the spending on education, health care and military. Changes in the money stock are left out of this discussion, as monetary policy often is run by independent institutions in democracies and is not included in the public spending measure. In accordance with previous studies the size of public spending could also be affected by different short-run factors, for example the election cycle, exogenous economic factors and changes in ruling party ideology. In the short-run the tax revenue constrains the government's spending less than in the long-run as the government will need to carry out a

sustainable fiscal policy with a balanced budget in the longer run, but are more able to spend beyond their means in the short-run (Olsson 2012 p. 116, 119).

In a democratic state the government needs to construct its public sector on demand from a majority of its citizens. Democracies need to gain the public's support before any major action and have thus internal checks and balances that hold the leaders responsible. This implies that a democracy has to invest in a majority of the population, while an autocracy can limit its spending to favour the elite, which in turn suggests that democracies have a greater overall public spending, *ceteris paribus*. Since the populations in democracies will claim participation in the political system, the majority's economic interest and needs will be prioritized (Karvonen 2008 p. 89). Health and education are therefore expected to be more prioritized in democratic societies than in autocratic. This is in line with Avelino et al.'s (2005) findings that democracies invest more in human capital. The opposite holds for military spending, which does not give any value to the majority citizen but could be expected to favour the ruling elite.

3. Research Design

To meet the purpose of the study and to answer the research questions, a quantitative study in a panel-data setting will be conducted, studying the variation in public spending over time. The analysis includes annual data on public spending for all 15 Post-Soviet states between 1991 and 2011 in all cases where reliable data is available (see table 1 for an overview of the data). This method gives the opportunity to study the effect of changes in degree of democracy on the public spending over a long-run perspective in the Post-Soviet countries and simplifies the procedure of drawing conclusions and assuring statistical cogency. To complement the quantitative approach, two countries will be specifically analysed to help explain the mechanisms behind the relationship for the two studied countries.

3.1. Measurement and Operationalization

The following section operationalizes and defines the necessary terms, tools and measurements to answer the research questions presented in the introduction (see Appendix 1 for an overview of the measurements).

To operationalize public spending the widely recognized World Bank expense measure (2013:1) will be used, which includes "all cash payments for operating activities of the government in providing goods and services", as a per cent of GDP. This measure is used with the aim to understand the

structure of the economy, rather than the size of it. Using absolute numbers would cause misleading results when comparing economies of different size.

As illustrated in the literature overview, previous studies have used education, health care and military spending as public spending components when studying the relation between democracy and the composition of public spending. Since the aim of this study is to contribute to the knowledge gap and test if previous findings also hold for the Post-Soviet states, these variables will here constitute the measurement of the composition of public spending. Health and education are variables that are argued to boost the human capital, while military spending could be argued to favour a smaller ruling elite, why they are interesting to include to contrast each other. These three variables are not claimed to explain the whole composition of public spending but to be a relevant selection to understand the broader picture. When studying the composition of public spending it is interesting to understand how much of the total public spending is spent on education, health and military. Therefore these variables are measured as a per cent of public spending rather than of GDP, based on the same argument as before for using per cent rather than absolute numbers.

The educational spending includes current and capital government spending on educational administration, institutions, and subsidies and transfers for private entities (UNESCO Institute for Statistics 2013). The public health care spending comprises of social health insurance funds, central and local government recurrent and capital spending, as well as external borrowing and grants related to the health system (World Health Organization 2013). The military spending encompasses all payments to armed forces, defence ministries and other relevant government agencies and personnel as well as military aid (The World Bank 2013:2).

The degree of democracy is here defined by the Polity IV project's measure weighting among others presence of institutions, institutional power constraints, the guarantee of civil liberties and competitive political participation (Marshall et al. 2011 p. 14-16). This sums up different theoretical definitions of democratic degree and is therefore considered a wide and sustainable measure.

3.2. The Data

This study uses annual time-series cross-sectional data on a matrix containing 15 countries studied over 20 years. The data is collected from different sources; the general public and military spending data is collected from the World Bank (2013:4), the democratic estimations from the Center for Systemic Peace (2012), the educational spending data is from the UNESCO Institute for Statistics (2013) and the health and military expenditure data is from the World Health Organization (2013).

Both the UNESCO Institute for Statistics, the World Health Organization and the World Bank provide internationally comparable annual statistics collected from national official administrations and publicly available reports. According to the World Bank (2013:2) the definition of military spending comes with limitations since all governments are not transparent with what is included in their military account, but the measure is still considered to be the best available. The Polity IV estimations for assessing regime type and effects of authoritarian regimes is widely used, and scrutinized, by researchers. The Polity IV project provides annual valuations of changes in regimes and authority characteristics. The data set is also annually re-examined and regularly revised when new information arises to eliminate problems with for example subjectivity. This study uses the Polity2 measure of democracy as it is technically modified to range between -10 and +10 to facilitate panel data analyses (Marshall et al 2011 p. 3-8, 17).

Table 1: Overview of data on public, educational, health care and military spending (in per cent)

Country	Public			Education			Health care			Military		
	Mean	N	Std	Mean	N	Std	Mean	N	Std	Mean	N	Std
Ukraine	33.5	13	5.1	17.7	10	2.4	9.1	16	0.5	8.9	12	0.6
Moldova	30.9	13	4.9	20.5	13	2.3	11.8	16	1.7	1.6	13	0.1
Estonia	30.2	16	3.3	14.6	10	0.6	12.0	16	1.3	5.3	16	0.4
Lithuania	30.1	11	4.1	14.7	9	1.3	12.1	16	1.4	5.1	11	0.4
Latvia	29.1	17	2.7	14.5	9	1.1	9.8	16	0.8	4.3	17	0.4
Russian Federation	23.4	9	3.6	11.7	6	0.8	10.8	16	1.7	17.0	9	0.7
Belarus	21.3	19	3.2	15.6	7	3.2	9.3	16	1.3	5.4	17	0.4
Armenia	19.5	9	2.8	13.1	11	1.4	7.0	16	0.9	17.0	8	0.3
Kyrgyz Republic	19.2	13	2.9	22.7	13	1.9	12.6	16	1.7	16.8	12	0.8
Georgia	18.3	15	6.7	10.1	12	1.8	6.8	16	3.0	15.0	14	2.8
Azerbaijan	16.9	3	1.6	17.3	13	5.4	4.4	16	1.2	18.7	3	1.7
Kazakhstan	15.2	14	1.8	13.3	2	1.2	10.5	16	2.2	6.9	14	0.3
Tajikistan	10.8	6	1.6	16.7	10	2.1	6.3	16	1.1	15.1	6	1.1
Turkmenistan	.	0	.	.	0	.	12.0	16	1.8	.	0	.
Uzbekistan	.	0	.	22.8	1	0.0	7.2	16	0.7	.	0	.

Notes: Public spending is measured as a per cent of GDP, while education, health care and military spending are measured as a per cent of public spending for the years 1991-2011. Descending by mean public spending. The public and military spending data is collected from The World Bank (2013:4), the educational data from UNESCO Institute for Statistics (2013) and the health care data from the World Health Organization (2013).

When using secondary data there is always the question of credibility, as it is impossible to influence the data collection process. There are also inherent limitations in the data available. Governments often construct their own figures, why there is a risk of them being biased. This limitation is hard to avoid and as all four data sources are common within research and present methodologies and

sources transparently, the data used is still considered to be the most reliable comparable data available.

That the Post-Soviet sample includes autocracies leads to scarce data in some cases. With restrictions on access to public data and often unstable situations, some states have had problems to report annual figures some years as is presented in table 1.

In this study there is a total lack of public and military spending data for Turkmenistan and Uzbekistan and of educational data for Turkmenistan. In the education dataset there is no available data prior to 1995, except for Belarus and Latvia. The lack of data could be explained by the very unstable situation during the first years and is a common problem one has to deal with when studying transitional regimes. This study is however still justified as there is a need for a quantitative study on the Post-Soviet states and as there is available data for most countries. When analysing the final results, this limitation has to be taken into consideration.

4. Description of the Post-Soviet Sample

This study consists of a total sample where all Post-Soviet states are included. This means that the results will give a good understanding of this regional context. Following is a brief overview of the regional democratic and public spending context in the Post-Soviet states, both before the dissolution of the Soviet Union in 1991 and the development since then.

4.1. Context prior to 1991

The Soviet Union was governed by the Communist Party of the Soviet Union as a single-party state with a highly centralized government and economy. Power was mainly located in Moscow and the Communist Party was the ultimate policy maker and the only legal party available. There was wide political repression and persecution of enemies of the Soviet system and elections were held mainly to manifest the power of the Communist Party (see for example Cooper 1994, McCauley 2008 and Schapiro 1977). The leadership was thus strongly autocratic until the late 1980's when reform attempts were made, which slowly started to move the union in a more democratic direction (Center for Systemic Peace 2012).

The Soviet economy was characterized by a centralized command economy where the state owned almost all productive assets and used a non-market system of resource allocation, as well as a black market that grew very large. This resulted in heavily distorted prices, that services and

communications became underdeveloped and that the agricultural sector grew very large. The industries in the Soviet Union were mainly large-scale and labour-intensive and focused primarily on armaments, traditional materials, fuel and energy. The location of the industries as well as the division of labour was decided by the central authorities with the result that the different republics heavily specialized in different sectors, irrespective whether they had comparative advantages or not. Some countries therefore faced a hard time downscaling and adapting to market forces after the dissolution (see for example Cooper 1994 p. 454-455 McCauley 2008 p. 440-442 and Schapiro 1977 p. 161).

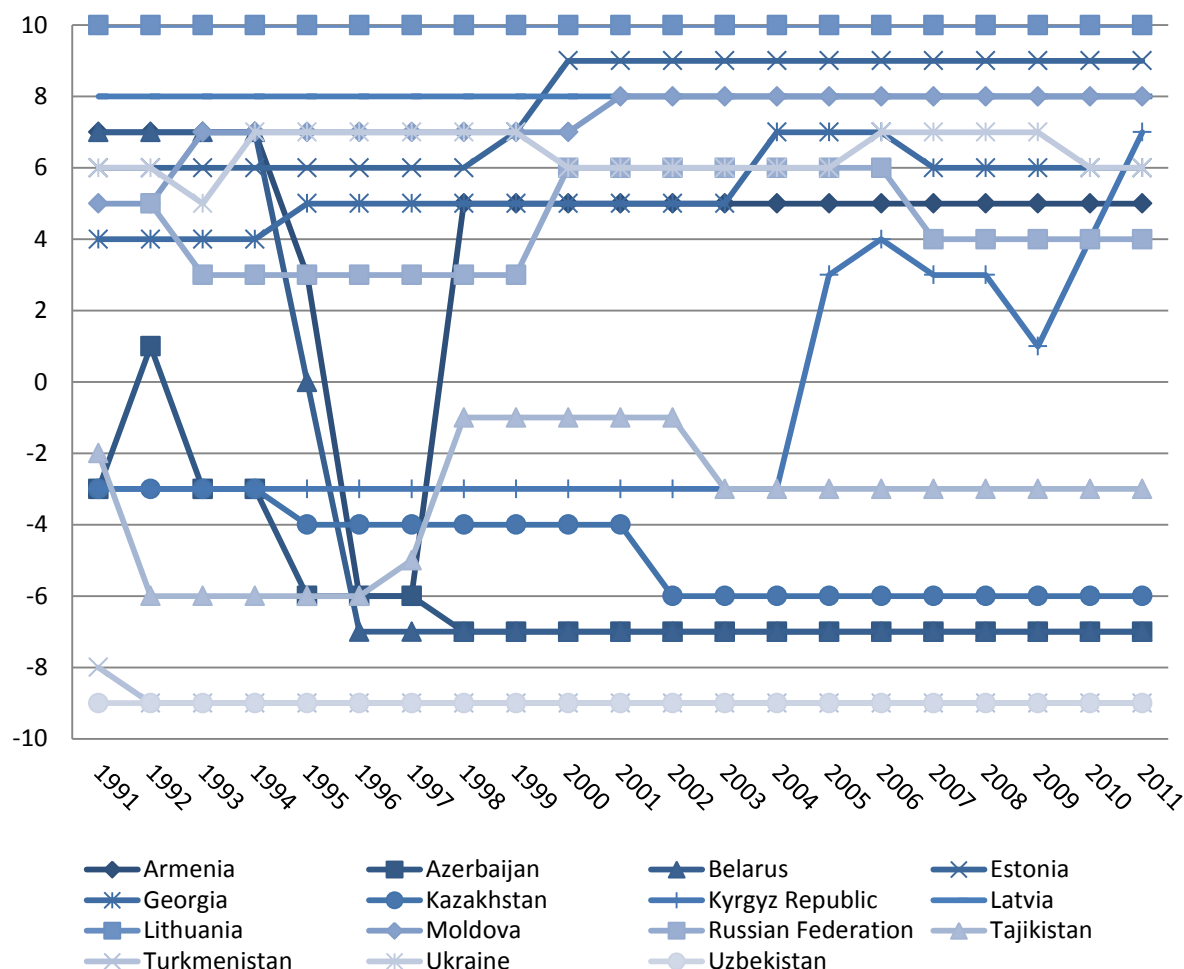
In the Soviet Union public spending accounted for around 60 per cent of GDP and both health care and education was free and aimed at being available for everyone (see for example Mironov 1991 and Rowland and Telyokov 1991). The central government in the Soviet Union put great emphasis on education and established a broad network of primary schools, resulting in almost universal literacy already in 1950 (Mironov 1991 p. 247, 251). In 1989 health care expenditures accounted for 5.1 per cent of budgetary outlays in the Soviet Union and were financed through the central government budget where the ministry controlled all facilities and financial resources. This resulted in an unequal supply of health care where for example Georgia had twice as many physicians per capita than Tajikistan. The health care supplied large quantities but often poorly maintained facilities, low-paid personnel, bad water management and insufficient supplies (Rowland and Telyukov 1991 p. 75-81), indicating that many states started with poor preconditions for health care once independent. With the arms race during the Cold War military spending in the Soviet Union became extremely high, which was paralyzing for the Soviet economy. The military budget did however decrease somewhat when Gorbachev came into power shortly before the dissolution of the Soviet Union (McCauley 2008 p. 443).

4.2.Context following 1991

During the dissolution of the Soviet Union the Baltic States experienced a relatively smooth transition towards democracy with the formation of opposition parties, functioning electoral systems, and constitutional change to decrease the power of the president. The democratic transition was different for many of the Commonwealth of Independent States (CIS), i.e. all Post-Soviet states except the Baltics and Georgia, where old communist elites could persist until the dissolution and anti-communist opposition was too weak to alter the power relations in a sustaining way. The constitutions were thus often heavily influenced by these elites rather than by democratically elected parliaments. In most central Asian countries the old communist elite managed to control all power resources and elect the first secretaries of the republican communist parties into autocratic

presidents (see for example Dabrowski and Gorat 2002 p. 15-20, 25 and The World Bank 2002 p. 99-100). This is also reflected by the Center for Systemic Peace (2012) in Graph 1, which displays the large differences and fluctuations in democracy among the studied countries.

Graph 1: Democracy index for the Post-Soviet states 1991-2011



Note: Democracy is measured on a scale from -10 (strongly autocratic) to +10 (strongly democratic) based on data from the Center for Systemic Peace (2012). The sample includes the Post-Soviet states and ranges from the end of the Soviet Union in 1991 until 2011.

The most negative democratic trend in this sample is Belarus who, since Lukashenko came into power in 1994, has created a constitutional autocracy. He instituted presidential rule and introduced restrictions on freedom of the press and speech, which could help to explain the major fall in degree of democracy (Freedom House 1998). After the dissolution of the Soviet Union, Belarus initiated capitalist reforms by for example privatising public firms, but with Lukashenko’s entry on the political scene command economy was reintroduced. Since 1999 Belarus has a two-state union treaty with the Russian Federation and has developed great political and economic integration (CIA 2013:2). Armenia (Center for Systemic Peace 2010:1) experienced some serious democratic irregularities in

the late 1990's before the president was overthrown and more democratic institutions came back into practice (CIA 2013:1).

The largest positive democratic fluctuations occurred in the Kyrgyz Republic, which was governed by an authoritarian president from independence until 2005 when the country started a more democratic executive recruitment process (Center for Systemic Peace 2010:2). Following 2005, the Kyrgyz Republic did still not develop into an electoral democracy and corruption was common, but the change of leader after 14 years and the relative respect of freedom of speech and freedom of religion can explain the positive democratic development (Freedom House 2008). After independence extensive land market reforms were carried out to abandon command economy and the years following 2005 the Kyrgyz government managed to balance the economy to control its deficits (CIA 2013:4).

When the Soviet Union transformed into independent countries the Post-Soviet states were left with different comparative advantages of production, where some countries possessed larger assets of natural resources. All countries experienced a drop in total output and especially the CIS countries faced a dramatic output decline in the first six years of independence. With continuous market reforms and the recovery of the first transition, most of the Post-Soviet states reached a positive growth around 1997 (The World Bank 2002 p. 3), though in 2012 the Kyrgyz Republic, Moldova, Tajikistan and Ukraine had not yet recovered properly and were still facing a GDP per capita smaller than in 1991 (The World Bank 2013:4). The transformation to market economy resulted in less fiscal control, the need to stabilize high inflation, unsustainable public debt in several countries and in addition a decline in total output, which resulted in heavily decreased spending on education and health care. The cuts in education led to decreased quality with a lack of access to school supplies and some countries have even failed to provide resources for basic education to all its citizens (The World Bank 2002 p. 81-85). After the dissolution the health care systems have also evolved in different directions and many countries are struggling to provide adequate health care to its citizens. This has led to underpaid personnel and the fact that many poor families cannot afford treatment (The World Bank 2002 p. 86-87). The increased income inequalities were, according to Careja and Emmenegger (2007), largely explained by the little attention put on social aspects of transformation. Urban areas are, according to the World Bank (2002 p. 84), often prioritized over rural areas.

As illustrated earlier in table 1 the countries geographically close to the European Union have a significantly higher public spending than the Central Asian countries, who on the other hand have a higher share of military spending to public spending. It is also observed that all countries have decreased their public spending since the dissolution of the Soviet Union. Interesting to note is that

despite the difficulties to recover economically Moldova and Ukraine have the highest public spending as a share of GDP. In Estonia, Belarus and Lithuania the governments account for more than seventy per cent of all health care expenditures in the countries, whereas in Tajikistan, Georgia and Azerbaijan the public expenditures are around 25 per cent of the total, and the population thus needs to rely more on private alternatives (The World Bank 2013:4). Currently the Baltic States are full members of NATO and both Georgia and Ukraine have applied for memberships and have been accepted for further discussions (NATO 2012 and 2013). These countries, except for Georgia in 2007-2008, show relatively small military spending compared to among others the Russian Federation, Armenia, Azerbaijan and the Kyrgyz Republic (The World Bank 2013:4). That Armenia is still technically at war with Azerbaijan and Turkey helps explaining their relatively large military sectors (CIA 2013:1), while Georgia's large military sector is mainly explained by the accumulation of military spending around the five-day war with Russia in 2008 (CIA 2013:3)

5. Empirical Analysis

This section will present the hypothesis, the econometric set-up and thus the basis for the empirical study, as well as the results.

5.1. Empirical Strategy

The basic equations to be estimated are:

$$y_{i,t} = \beta_0 + \beta_1 \text{democracy}_{i,t-1} + \varepsilon_{i,t}$$

$$y_{i,t} = \beta_0 + \beta_1 \text{democracy}_{i,t-1} + f_i + \eta_t + \varepsilon_{i,t}$$

where β_0 is a constant parameter, democracy is the Polity IV estimate lagged one year and $\varepsilon_{i,t}$ is the error term. The estimations are run with robust standard errors and fixed effect-estimation (FE-estimation) (f_i is country fixed effects and η_t is time fixed effects), to control for cross-country variations and differences caused by the path of time. Public spending is the dependent variable of interest, $y_{i,t}$ when answering the first research question, while education, health care and military spending respectively are the variables of interests when studying the composition of public spending.

The public spending variable is, based on findings in previous research, expected to be positively related to a change in degree of democracy, i.e. $\beta_1 > 0$. When analyzing the composition of public spending, both health care and educational spending are expected to be positively related to a change in regime type, $\beta_1 > 0$, supported in the argument that democracies need to invest more in

its citizens. Military spending on the other hand is predicted to have a negative correlation to democracy change, $\beta_1 < 0$, which has been the case in studies on other regions.

First, univariate regressions including lagged democracy are carried out to test the basic relationships in model 1. Any other explanatory variable that affect public spending is here captured in the error term. The independent variable is expected to be lagged democracy, as it is predicted that public economic policies follow democratic development. If lagged democracy is correlated to public spending the conclusion that the causality is running from democracy to public spending becomes more confident. One-year lag is considered most relevant in this study because least observations are dropped and to lag more years render very similar results (see Appendix 2).

In the models following the univariate regressions time and country fixed effects are included. The FE-estimators are used to control for country-specific and time invariant characteristics as time-invariant omitted variables are presumed (models 2 to 4). When controlling for only time fixed effects the differences in level of public spending dependent on degree of democracy are determined. Whereas when controlling for both time and country fixed effects the variation in democracy's effect on public spending is measured. Since the data set was not randomly selected, individual differences are treated as fixed rather than random (Angrist and Pischke 2009 p.223, 243). Squared lagged democracy is also included in the models to test for nonlinearity (model 5).

Because this is a time-series-cross-sectional analysis there may be a problem with autocorrelation and heteroskedasticity, and thus the standard errors may be misleading (Hill et al. 2012 p. 298). To control for heteroskedasticity robust standard errors are used. To deal with autocorrelation time fixed effects are used and due to the risk of high correlation, and thus a risk of multicollinearity, no control variables will be added in these regressions. Country fixed effects control for heterogeneity. As time and country fixed effects are included most variations caused by external factors are expected to be tackled without impacting the degree of freedom. The aim of this study is not to compose a model that explains the full formation of public spending, but rather to analyse the relationship between public spending and democracy, and therefore FE estimations are considered to be an adequate method. The models do not attempt to fully explain the mechanisms behind public spending but to see whether democracy is one explanatory factor, why the level of R-square is considered less important.

To deeper understand the mechanisms following a large change in regime type and to further test the results obtained in the regressions, a case study is conducted on the two countries, which have faced the largest shifts. As illustrated in graph 1, Belarus underwent a major drop in democracy after

1994, while the Kyrgyz Republic increased its democracy with seven units following 2004. Armenia is left out of the case study even though it faced a major drop. This is done because the country recovered again after one year and is therefore not a suitable case when studying the impact of a change in democracy (Center for Systemic Peace 2012). The years selected for the case study are the year of the major change and the four following years. As this paper argues that changes in public spending due to a changed democratic set-up is lagged, the year when the democratic shock occurred is therefore a good base line indicating the initial levels, and the four consecutive years are included to be sure to capture the full effect. The case study will mainly be statistical as the aim of the case study is to particularly study the two extreme changes and the effects following. The results in the case study will not be generalizable nor explain the whole country specific contexts, but will further test and illustrate the regression results.

5.2. Empirical Results

The aim of this study is to test the relationship between democracy and public spending in a Post-Soviet context. The main results suggest, in accordance with the predictions, a positive relationship between variation in democracy and public spending, no relationship with educational and health care spending and contradicting the predictions a positive relationship with military spending.

Table 2: Democracy and public spending in the Post-Soviet states¹

Model	Public spending				
	(1)	(2)	(3)	(4)	(5)
Democracy (t-1)	-0.029 (0.094)	0.292 (0.253)	-0.050 (0.055)	0.151* (0.084)	0.132 (0.100)
Democracy (t-1) ²					0.054* (0.027)
Country fixed effect	no	yes	no	yes	yes
Time fixed effect	no	no	yes	yes	yes
Constant	25.176*** (0.632)	24.874*** (0.238)	25.196*** (0.052)	11.861*** (1.351)	8.755*** (1.629)
R-square	0.001	0.006	0.006	0.734	0.739
N	154	154	154	154	154

Notes: Public spending is measured as a per cent of GDP (World Bank 2013:4) while democracy, lagged democracy and squared lagged democracy is measured on a scale from -10 (strongly autocratic) to +10 (strongly democratic) based on data from the Center for Systemic Peace (2012). Time period of the sample is 1991-2011. Robust standard errors are in parentheses. *** p < 0.01; ** p < 0.05; * p < 0.1.

¹ See appendix 1a for a correlation chart and Appendix 3 for regressions including the variables democracy (t), democracy (t-2) and democracy (t-3).

In line with the predictions, the positive democracy coefficient shows that an increase in democracy leads to a higher public spending ratio to GDP, consistent with previous studies. It is first when controlling for both time and country fixed effects that the explanatory variable becomes significant, there is thus underlying time and country specific influence in the first regression. One unit increase in democracy level leads to a 15 per cent increase in the public spending ratio the following year in the Post-Soviet states, when controlling for fixed effects. When controlling for nonlinearity, it is found that there is a positive quadratic relationship. The relationship has thus a parabolic shape with a stronger impact the more or less democratic the country is.

The strongly positive relationship, indicating that a shift in a country's degree of democracy from -10 (strongly autocratic) to +10 (strongly democratic) increases public spending by 300 per cent, might be overestimated. One explanation for the overestimation might be interactions with other variables adding up the effect explained by change in democracy. This explanation is supported by the regressions including control variables (see appendix 4) as the estimated effect that democracy has on public spending increases when including control variables. It is however difficult to state which other variables might bias the lagged democracy and the extent of the bias. Another explanation could be non-linearity in the sample or that the relationship is linear around the centre but not on the extremes. When also including squared lagged democracy (see appendix 3), the public spending regression gives a significant coefficient, indicating that there is a non-linear relationship which implies that the relationship is at least squared. This study still claims a positive relationship between democracy and total public spending as both the regression including fixed effects and the regression including control variables indicate a positive relationship, but does consider that there might be a bias in the magnitude of the coefficient.

To further understand the nuances of public spending and elaborate on the priorities by the governments, the same regressions are also ran on educational, health care and military spending. All three univariate regressions in table 3 are significant, where health care and military spending displays relationships in line with the predictions, while educational spending is negatively related to variation in degree of democracy. Interestingly do democracies in this region however overall has a lower military spending as the coefficient is significantly negative in model 3.

Table 3: Democracy and the composition of public spending in the Post-Soviet states²

Model	Educational spending				Health care spending				Military spending			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
Democracy (t-1)	-0.125*	0.023	-0.111	0.153	0.104***	-0.029	0.108***	0.039	-0.144*	0.574*	-0.179***	0.511***
	(0.070)	(0.195)	(0.073)	(0.402)	(0.026)	(0.068)	(0.017)	(0.062)	(0.077)	(0.288)	(0.056)	(0.155)
Country fixed effect	no	yes	no	yes	no	yes	no	yes	no	yes	no	yes
Time fixed effect	no	no	yes	yes	no	no	yes	yes	no	no	yes	yes
Constant	16.361***	15.920***	16.318***	18.874***	9.396***	9.523***	9.392***	10.385***	9.580***	7.103***	9.702***	5.343***
	(0.490)	(0.581)	(0.217)	(2.174)	(0.193)	(0.065)	(0.016)	(0.494)	(0.561)	(0.995)	(0.195)	(0.397)
R-square	0.028	0.000	0.022	0.177	0.059	0.001	0.065	0.102	0.017	0.098	0.027	0.230
N	126	126	126	126	239	239	239	239	151	151	151	151

Notes: Public spending is measured as a per cent of GDP (World Bank 2013:4) while educational spending (UNESCO Institute for Statistics 2013), health care spending (World Health Organization 2013) and military spending (World Bank 2013:4) are measured as per cent of total public spending. Democracy is measured on a scale from -10 (strongly autocratic) to +10 (strongly democratic) based on data from the Center for Systemic Peace (2012). Time period of the sample is 1991-2011. Robust standard errors are in parentheses. *** p < 0.01; ** p < 0.05; * p < 0.1

² See appendix 1a for a correlation chart and Appendix 3 for regressions including the variables democracy (t), democracy (t-1)², democracy (t-2) and democracy (t-3).

When controlling for both country and time fixed effects only military spending still displays a significant relationship, where a one unit increase in democracy increases military spending by 51 per cent. The strong positive impact of democracy on military spending is further enhanced by the positive relationship between democracy and total public spending. This result can be influenced by the fact that some of the democracies studied are in conflicts with neighbouring countries and hence may spend more on their military than a country in peace. Furthermore does the relatively democratic Russian Federation have high military spending, which could probably be explained by its attempt to power balance NATO. The strongly autocratic Turkmenistan and Uzbekistan is lacking data. Also, the conflicts with neighbouring countries mentioned in section 4.2 are often more affected by historical and ethnic conflicts than the democratic factor. Health care spending as per cent of public spending is positive when only controlling for time fixed effects but not when controlling for both time and country fixed effects. This implies that democracies generally have a higher level of health care spending than autocracies, but that there is no impact when the degree of democracy changes.

It is interesting that there is no difference in the public spending structure when it comes to education and health care between democracies and autocracies in the Post-Soviet states. This contradicts previous predictions and research, except from Avelino et al. (2005) who also find no relationship between health care spending and democracy. That there is no significant difference in educational and health care spending implies that a change in degree of democracy does not affect the share of public spending spent on human capital.

When taking the positive relation of general public spending and democracy into account, it can however be concluded that even though the share of educational and health care spending is the same, democracies spend more overall. Thus are the absolute numbers spent on education and health care higher in democracies, which is in line with the other studies mentioned in the literature overview. It is also possible that there could be differences when analysing different levels of education, which Brown and Hunter (2004), Kaufman and Segura (2001) and Stasavage (2005) have found. This study, however, limits educational spending to the overall spending and is therefore not able to draw any further conclusions on this. When including control variables (see appendix 4) similar results occur, though it is interesting to note that the positive relationship between democracy and total public spending becomes even stronger when including control variables, indicating that there are other effects not controlled by the fixed effects impacting the result although the relationship stays positive.

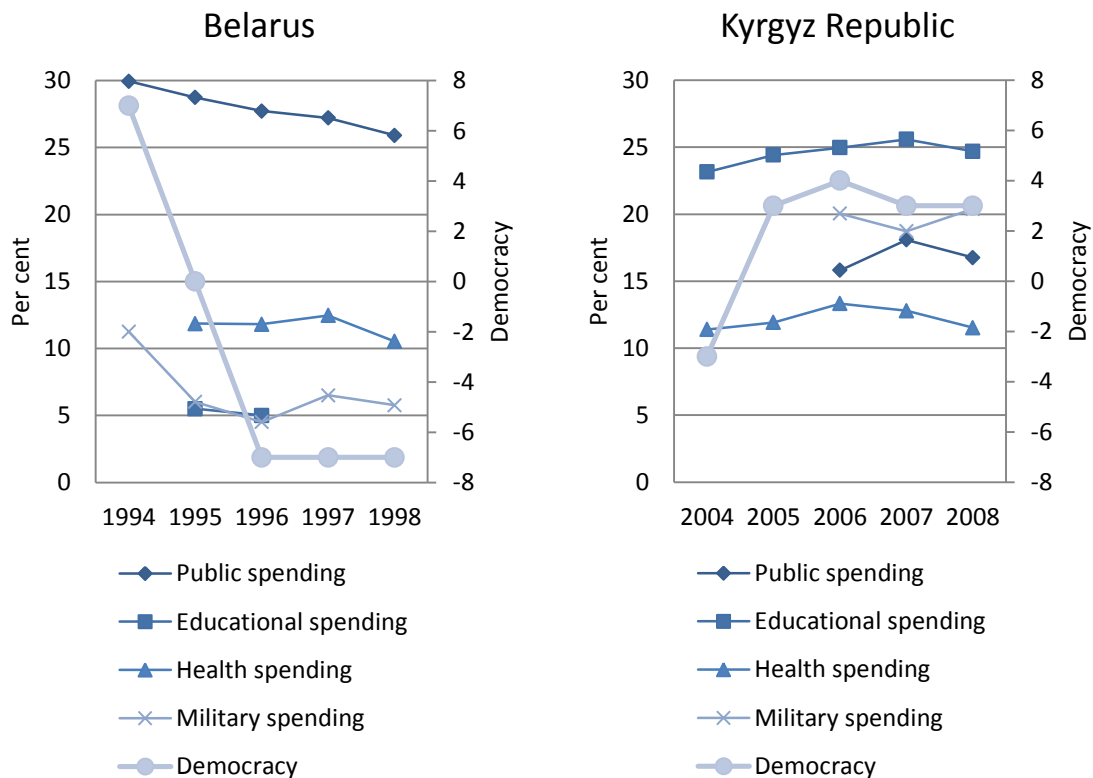
To conclude, the regression analysis displays a positive relationship between democracy and public

spending, as well as military spending. There was no relationship found when studying health care and educational expenditure, although democracies spend more in total on health care than autocracies.

5.2.3. Case Study of Belarus and the Kyrgyz Republic

To further test the results and to better explain the mechanisms behind the relationship, a case study is here conducted. The selection of cases was therefore based on the two countries that have experienced the largest positive versus negative change in democracy to contrast each other, Belarus' and the Kyrgyz Republic's. These two countries are the two countries that have undergone the most dramatic changes in degree of democracy and are therefore the most suited cases to test the hypothesis further and foremost to better explain the mechanisms behind the relationships by comparing the outcomes. The case study is focusing on the short-run to see the immediate change of a democratic shock and to complement the quantitative analysis.

Graph 2: Case study on democracy and public spending in Belarus and the Kyrgyz Republic



Notes: Public spending is measured as a per cent of GDP (The World Bank 2013:4), while health care (World Health Organization 2013) and military spending (The World Bank 2013:4) are measured as a per cent of public spending. Educational spending for Kyrgyz Republic is as a per cent of public spending while for Belarus educational spending as per cent of GDP is used due to data availability (UNESCO Institute for Statistics 2013). On the right hand side axis democracy is measured on a scale from -10 (strongly autocratic) to +10 (strongly democratic) based on data from the Center for Systemic Peace (2012). The studied years are the year when the democratic shock occurred and the following four years.

When studying the change of Belarus' and the Kyrgyz Republic's public spending and composition of public spending, one can observe a positive relationship between democracy and the different spending variables during the observed years. The scarce data in both cases needs to be considered when drawing conclusions. In the Belarus' case all spending have decreased on average over the five years, indicating that the decrease in democracy has been followed by a decrease in public spending, while Kyrgyz Republic's increased democracy has resulted in higher spending. That public, educational and health care spending increase with democracy is in line with the predictions and the results from previous research. However, in the previous regressions this relation was only revealed for total public spending.

During the studied period, the Belarusian economy was characterized by a high degree of state ownership, close trade interdependency with the Russian Federation and prevention of the emergence of oligarchs (Wilson 2007 p. 105). As Belarus was one of the wealthiest states of the Soviet Union, the country had favourable preconditions once independent (The World Bank 2003 p. 31). Between 1994-1996 GDP faced an annual negative growth of around -10 per cent, but then heavily recovered in 1996-1998 with a growth rate of around 10 per cent per year. A decrease in public spending as per cent of GDP could therefore also be an effect of an increased GDP. However, public spending in absolute numbers has decreased slightly over the studied period (The World Bank 2013:4). A monetary expansion following 1994 resulted in a twice as high net domestic credit of the national bank in two years, due to a lack of external sources (Antczak et al. 2000 p. 10). Still, Belarus has comparatively low interest expenditures and thus a greater proportion of public spending available for other components (The World Bank 2003 p. 37).

As command economy was re-established in Belarus with Lukashenko, an increased public sector could have been expected. The decrease in public spending following the decrease in democracy in Belarus could instead partly be explained by the tough economic conditions both domestically and in the Russian Federation. Due to the establishment of a tight economic and political relationship to the Russian Federation, Belarus was heavily affected by the Russian economic and financial crisis in 1998. Due to this, Belarus was forced to devalue, which heavily increased prices and inflation, and hence reduced the trade with the Russian Federation and other CIS countries (Antczak et al. 2000 p. 6). As previous studies have shown, autocratic regimes are more inclined to decrease public spending when facing economic setbacks, while democracies face a more sensitive elasticity.

The tax burden in Belarus was relatively high and complex compared to comparable countries, where the corporate income taxes dominated the levies on private persons due to a low income-level of the population (Antczak et al. 2000 p. 9-10). At the same time, the private sector was heavily subsidised

by the government (The World Bank 2003 p. 37). During 1994-1998, the tax revenues as per cent of GDP decreased by around 30 per cent (The World Bank 2013:4), constraining the possibilities of public spending. The high tax burden, but decreased tax revenues, could imply a declining willingness to pay taxes, a possible effect of decreasing democracy and thus trust in the government. However, due to scarce information on tax rates during this period, there could be other reasons for this.

Both educational, health care and military spending show decreasing trends during the studied period in Belarus. The educational data is however very scarce and therefore hard to draw conclusions on. Education in Belarus was, and still is, free up until higher education (Belarus.by 2013). The enrolment rate in primary education increased during the studied period, contradicting the earlier predictions that autocracies spend less on human capital, while the pupil-teacher ratio was held constant (The World Bank 2013:4), indicating an increased number of teachers. This all suggests that the cost of education for the government increased during this period. Graph 2 implies that the share of GDP spent on education slightly decreased 1995-1996 but as GDP increased heavily during these years the effect of the change in democracy is hard to conclude. Despite command economy, the share of private to total health care increased. This could partly explain the decreased public health care spending, but other factors need to be considered, such as the aging population's need for care (The World Bank 2013:4). The positive relationship between democracy and military spending contradicts the predictions, but is consistent with the results from the regressions. Belarus' close relationship and military-integration process with the Russian Federation (Wilson 2007 p. 107) could be an explanatory factor to why Belarus managed to decrease the military spending since Lukashenko seized power.

The Kyrgyz economy was, and still is, heavily dependent on gold exports and a majority of the labour force was located in the agricultural sector. The Kyrgyz Republic is a low-income country and one of the countries with worse comparative advantages and faced a hard time recovering after 1991 (CIA 2013:4). After the dissolution, the government has managed to transform the economy into a liberalized market economy with over 70 per cent of the farmland privately owned and with a liberalized foreign trade regime (International Development Association 2009 p. 1). Since 2005 the government has engaged in a poverty reduction and economic growth strategy and succeeded in balancing the fiscal deficit in 2006 (CIA 2013:4). Despite not having recovered to the same GDP per capita since the dissolution, the Kyrgyz Republic experienced a heavy increase in GDP growth in 2007-2008 due to the higher gold price internationally (The World Bank 2013:4 and CIA 2013:4). Overall during the studied years however, the GDP was kept relatively constant.

There is scarce data on public spending for the studied years in the Kyrgyz Republic, but a slight

positive trend can be observed. During this period the per cent of public spending spent on interest payments on public debt has decreased significantly (The World Bank 2013:4), while government debt was kept almost constant (Mogilevsky and Omorova 2011 p. 15), indicating a larger share available for other components of public spending. At the same time the tax revenues and inflation increased during the same period (The World Bank 2013:4), which could help explain the increased public spending and imply that the money spent was put on other components than interest payment.

Despite of a relatively high educational spending, the Kyrgyz school system displayed relatively poor results (Hou 2011 p.1). During the studied period, spending on tertiary education per student was reduced, contradicting the predictions that democracies spend more on human capital. Similarly as for Belarus, the enrolment rate in primary education was increased while the pupil-teacher ratio was held constant, indicating higher educational spending, *ceteris paribus*. Following a massive privatization of health care, the system was once again nationalized after the positive shift in democracy, which could imply an increase in health care spending. Demographically the dependency ratio has decreased (The World Bank 2013:4), which could indicate lower health care spending and overall contributing to explaining why only a small positive relationship is observed. In the Kyrgyz Republic case, the change in military spending is almost negligible as it recovers fast and the data is scarce. Still, it is relatively high compared to Belarus. With internal ethnic conflicts, weaker relationship to the Russian Federation during the studied period compared to Belarus (CIA 2013:4) and with no membership in NATO, the predictions indicate that these factors could explain the relatively high military spending.

This case study has analysed the mechanisms behind the relationship between democracy and public spending, focusing on the short-run changes following major shifts in democracy. The results imply that both Belarus and the Kyrgyz Republic have, despite both evolving from the Soviet Union, very different economic premises. Belarus came out as one of the wealthiest countries after the dissolution, while the Kyrgyz Republic still struggles as a low-income country. Even though the public spending has decreased over the studied period Belarus still spent almost twice as large share of GDP on public spending than the Kyrgyz Republic, something that could partly be explained by the relatively high degree of state ownership in Belarus. The great public spending and the government control of the market could be an effect of the low degree of democracy. With autocratic regimes, the government is more prone to manifest its power and favour the elite by controlling a large part of the market.

5.3. Comparison of the Results

Overall, the case study displays similar results as the regressions. When it comes to public and military spending there is a positive relationship both in the regressions and the case study. The case study displays a slight positive relationship between educational and health care spending and democracy, while the regressions show no significant differences. One explanation to this could be that in the short-run the government can have a budgetary deficit while in the long-run they need to balance the budget and are therefore more constrained to changes. The larger change in spending in the short-run is thus in line with the theoretical considerations.

The regression results in table 2 reveal a significantly positive parabolic relationship between democracy and public spending in the region. The result in the case study confirms this and is in line with previous research. However, robust conclusions in the Kyrgyz case cannot be drawn upon due to scarce data. This strengthens the theoretical predictions that democracies tend to prioritize the majority of the citizens and hence spend more when democratized. Another reason for this could be that democratization often leads to better legislations and institutions, enabling better tools for collecting tax and through its higher credibility face a greater willingness to pay tax. This in turn leads to higher tax revenues and eases the budget constraint on public spending. It is interesting to note that both the short-run case study and the regressions illustrate a positive relationship between democracy and public spending.

The theory predicts that democracies tend to allocate more resources to strengthen human capital, but this is not confirmed by the regression results. They instead show no significant differences between democracies and autocracies when the degree of democracy changes. Graph 2 indicates a positive relationship in the Kyrgyz case, where the share of public spending allocated on education increases with democracy, while the scarce data in Belarus suggests a negative slope when democracy decreases. This on the other hand is in line with previous predictions.

There is a positive relationship between the level of democracy and health care spending, but no significant impact on health care spending with a change in democracy. The case study implies a slight positive relationship in both cases between health care spending and democracy. The results for Belarus and the Kyrgyz Republic are weak, but still display a positive relationship, indicating that in these cases an increase in democracy increases spending on health care, in line with the argument that democracies favour the majority. This might partly be explained by the changed health care systems where Belarus' share of private health care has increased while the Kyrgyz Republic displays the opposite trend with a higher share of public health care during the studied period (Appendix 5).

Contradicting the predictions both the regression results and the case study show a positive relationship between military spending and democracy, though the Kyrgyz case is hard to interpret due to scarce data. These regression results suggest that Post-Soviet democratization leads to higher military spending. Since the results are not compatible with previous studies, a conclusion is that the findings in this study could be explained by the regional context. One reason could be that autocracies to a greater extent have a close relationship to the Russian Federation and therefore do not have to rearm and spend as much on military. Another explanation could be that some of the democracies are in conflict either internally or with neighbouring countries and thus have a higher military spending. There is also the problem that data is lacking for some of the most autocratic regimes in the sample and that governments do not always report credible figures of their military accounts.

6. Conclusion

The degree of democracy affects the welfare of a country by enhancing the population's ability to impact the government's priorities. A government in a country with a higher degree of democracy is expected to prioritize the majority of the population to a higher extent than autocracies, through for example spending on education and health care. By performing a cross-country quantitative study the effect of degree of democracy on public spending has been studied in the Post-Soviet context. To complement these findings, a case study on Belarus and the Kyrgyz Republic has been conducted to study the short-run variation when a major democratic shift occurs. Due to limited similar studies on the Post-Soviet region, this study contributes with new understanding to the current knowledge gap.

To conclude, this study finds a positive relationship between the variation in degree of democracy and public and military spending both in the longer perspective and in the studied short-run cases, where the degree of democracy has shifted. Thus can variations in public spending and military spending be explained by changes in a country's degree of democracy in the Post-Soviet region. The insignificant results on educational and health care spending implies that a change in degree of democracy does not affect the share of public spending spent on human capital, although the absolute numbers spent on these components are higher in democracies.

This study has focused on the variation in public spending, but does not consider the actual quality of the output delivered. Therefore, a study on the variation in quality of public outputs could further contribute to the understanding. Also, since weak democracies often deliver scarce data, it would be interesting to conduct a similar study in the future when possibly more data is available to further

test these results. Other entries for similar studies could be to study other components in the composition of public spending or break down the democracy measure and determine which factors have the greatest impact on public spending. It could also be interesting to investigate whether there is a larger change or impact in the earlier or later period following the Soviet period by breaking down the results into different time sections. This as the conditions have changed, both the global environment and the domestic economic set up.

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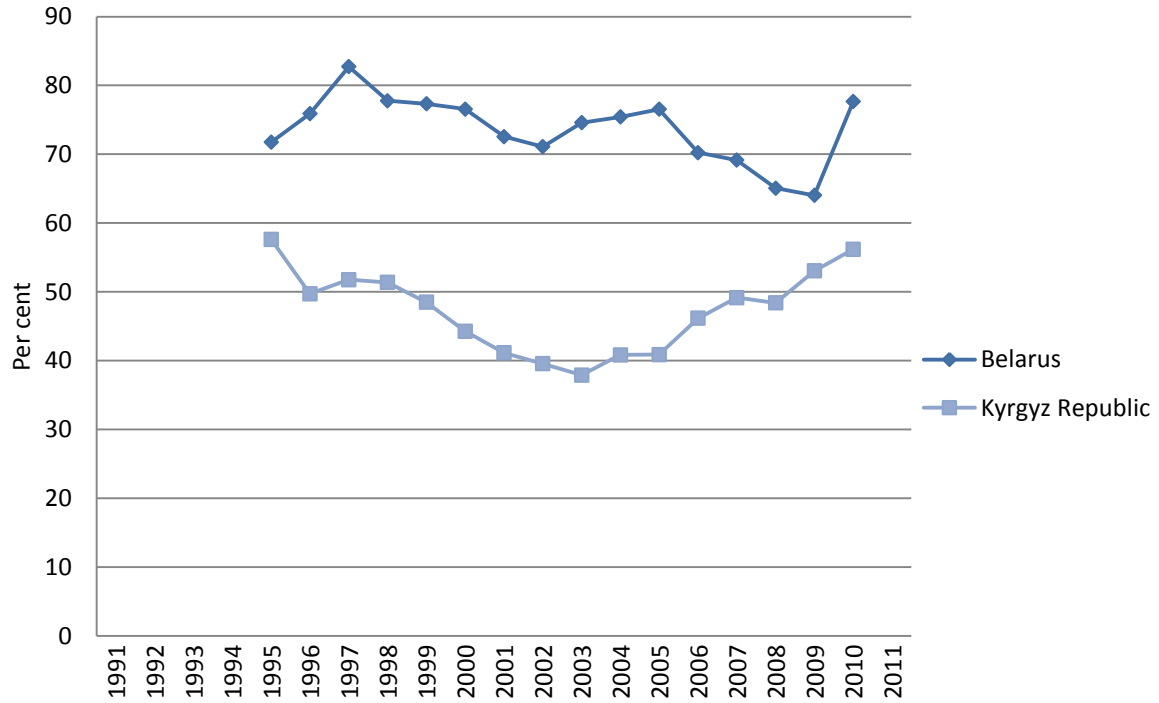
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Appendix 1: Overview of Measurements

Variable	Definition	Source
Public spending	Cash payments for operating activities of the government in providing goods and services. It includes compensation of employees (such as wages and salaries), interest and subsidies, grants, social benefits, and other expenses such as rent and dividends.	The World Bank
Educational spending	Total public expenditure (current and capital) on education expressed as a percentage of the Gross Domestic Product (GDP) in a given year. Public expenditure on education includes government spending on educational institutions (both public and private), education administration, and transfers/subsidies for private entities (students/households and other private entities).	UNESCO
Health care spending	Social health insurance funds, central and local government recurrent and capital spending, as well as external borrowing and grants related to the health system.	WHO
Military spending	Current and capital expenditures on the armed forces, including peacekeeping forces; defense ministries and other government agencies engaged in defense projects; paramilitary forces, if these are judged to be trained and equipped for military operations; and military space activities. Such expenditures include military and civil personnel, including retirement pensions of military personnel and social services for personnel; operation and maintenance; procurement; military research and development; and military aid (in the military expenditures of the donor country).	The World Bank (SIPRI)
Democracy	Competitiveness of executive recruitment, openness of executive recruitment, constraints on chief executive, regulation of participation and competitiveness of participation.	Center for Systemic Peace, Polity IV

Appendix 2: Public Health Care Expenditure (per cent of total health care expenditure)



Notes: The data is collected from the World Health Organization (2013) and measures public health care expenditures as per cent of total health care expenditures.

Appendix 3: Additional Regressions

Model	Public spending				Educational spending				Health care spending				Military spending			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
Democracy (t)	-0.030 (0.091)				-0.116* (0.069)				0.103*** (0.026)				-0.138* (0.075)			
Democracy (t-2)		0.179 (0.144)				0.191 (0.397)				0.020 (0.052)				0.431** (0.145)		
Democracy (t-3)			0.043 (0.119)				0.114 (0.322)				0.053 (0.048)				0.414*** (0.133)	
Democracy (t-1)^2				0.056* (0.028)				-0.034 (0.047)					-0.011 (0.017)			0.106 (0.083)
Country fixed effect	No	Yes	Yes	Yes	No	Yes	Yes	Yes	No	Yes	Yes	Yes	No	Yes	Yes	Yes
Time fixed effect	No	Yes	Yes	Yes	No	Yes	Yes	Yes	No	Yes	Yes	Yes	No	Yes	Yes	Yes
Constant	25.032*** (0.619)	11.85*** (1.341)	25.640*** (1.507)	8.891*** (1.594)	16.345*** (0.491)	18.758*** (2.162)	19.010*** (1.952)	20.962*** (3.034)	9.399*** (0.192)	10.405*** (0.500)	10.159*** (0.548)	9.538*** (1.003)	9.541*** (0.563)	4.402*** (1.036)	4.496*** (0.850)	2.750 (3.216)
R-square	0.001	0.738	0.761	0.737	0.024	0.179	0.176	0.178	0.059	0.010	0.109	0.104	0.016	0.233	0.238	0.229
N	158	147	143	154	126	126	126	126	239	239	239	239	151	151	151	151

Notes: Lagged democracy is measured on a scale -10 (strongly autocratic) to +10 (strongly democratic) based on data from the Center for Systemic Peace (2012). Public spending is measured as a per cent of GDP (The World Bank 2013:4), while education (UNESCO Institute for Statistics 2013) health care (World Health Organization 2013) and military spending (World Bank 2013:4) are measured as a per cent of public spending.

Appendix 4: Additional Regressions including control variables

Model	Public spending			Educational spending			Health care spending			Military spending		
	(6)	(7)	(8)	(6)	(7)	(8)	(6)	(7)	(8)	(6)	(7)	(8)
Democracy (t-1)	0.219*	0.272*	0.265*	-0.384	-0.384	-0.296	0.044	0.024	0.022	0.616**	0.537*	0.483*
	(0.118)	(0.147)	(0.144)	(0.261)	(0.297)	(0.297)	(0.059)	(0.074)	(0.075)	(0.264)	(0.292)	(0.251)
Democracy (t-1)^2			0.060*			-0.031			-0.018			0.089
			(0.029)			(0.046)			(0.020)			(0.072)
GDP per capita (logged)	1.781	-0.178	0.535	-13.400***	13.319***	-13.131**	0.065	-0.917	-0.858	3.957	3.414	2.763
	(2.813)	(3.290)	(3.389)	(4.207)	(4.199)	(0.4331)	(0.966)	(0.953)	(1.020)	(4.961)	(0.158)	(3.797)
GDP per capita growth	-0.017	-0.000	-0.002	0.043	0.046	0.044	-0.030	0.001	-0.001	0.030	0.092	0.088
	(0.080)	(0.084)	(0.081)	(0.036)	(0.032)	(0.034)	(0.026)	(0.021)	(0.022)	(0.076)	(0.158)	(0.154)
Age dependency old		0.744	0.698		0.025	0.131		0.489**	0.522***		0.442	0.229
		(0.532)	(0.535)		(0.509)	(0.555)		(0.174)	(0.164)		(0.964)	(0.861)
Urban population		0.372	0.317		-0.110	-0.130		-0.111	-0.114		-0.542*	-0.466
		(-0.511)	(0.497)		(0.780)	(0.763)		(0.161)	(0.165)		(0.304)	(0.347)
Country fixed effect	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Time fixed effect	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Constant	5.491	-19.771	-12.720	138.414***	143.669**	142.612**	10.068	15.281	15.376	-27.438	1.859	3.319
	(23.022)	(33.922)	(30.476)	(37.140)	(58.517)	(60.913)	(7.806)	(13.829)	(14.013)	(41.347)	(43.727)	(43.740)
R-square	0.736	0.742	0.748	0.452	0.452	0.421	0.172	0.167	0.176	0.235	0.257	0.291
N	152	152	152	126	126	126	238	238	238	150	150	150

Notes: Lagged democracy is measured on a scale -10 (strongly autocratic) to +10 (strongly democratic) based on data from the Center for Systemic Peace (2012). Public spending is measured as a per cent of GDP (The World Bank 2013:4), while education (UNESCO Institute for Statistics 2013) health care (World Health Organization 2013) and military spending (World Bank 2013:4) are measured as a per cent of public spending. GDP per capita is measured as the purchasing power parity (PPP) converted to international dollars, GDP per capita growth as the annual percentage growth rate of GDP per capita, age dependency as the population over 65 as per cent of working-age population, and urban population as the per cent of the total population living in urban areas (The World Bank 2013:4).

The choice of control variables are based on previous research as well as available data. Logged GDP per capita is measured in PPP dollars and controls for the level of economic development which is expected to be positively correlated to public spending. The annual growth rate of GDP per capita is also included to control for economic volatility, which might impact public spending. The old age dependency ratio is included as an older population is expected to demand more care and thus a higher public spending, especially health care spending. The percentage of the population living in urban areas is expected to be a good measure for industrialization and is thus also relevant to include. Due to limited data in the region the variables inflation and unemployment are not included, though they might explain part of the size and composition of public spending.

Both GDP per capita and GDP per capita growth were expected to influence public spending though none of them are significant in these regressions. It is only for educational spending that a negative relationship is found with the logged GDP per capita. As expected does the old age dependency affect the size of health care spending positively, though still no correlation between degree of democracy and both educational and health care spending is found. It is important to note that these models do not attempt to fully explain the relationship between democracy and public spending and there might thus be other explanatory variables than these.

Appendix 5: Correlation Between All Variables

	Democracy (t-1)	Public spending	Educational Spending	Health care spending	Military Spending	GDP per capita growth	GDP per capita	Age dependency old	Urban population
Democracy (t-1)	1.000								
Public spending	-0.118	1.000							
Educational spending	-0.093	0.037	1.000						
Health care spending	0.044	0.062	0.594	1.000					
Military spending	-0.151	-0.079	-0.337	-0.487	1.000				
GDP per capita growth	0.006	0.033	-0.247	-0.285	0.2194	1.000			
GDP per capita	0.260	0.031	-0.181	0.236	-0.325	0.105	1.000		
Age dependency old	0.628	-0.133	-0.262	0.069	-0.329	0.260	0.612	1.000	
Urban population	0.344	-0.005	-0.243	0.024	-0.299	0.252	0.703	0.841	1.000