The growth of public health expenditures in OECD countries: do government ideology and electoral motives matter?

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Abstract

This paper empirically evaluates whether government ideology and electoral motives influenced the growth of public health expenditures in 18 OECD countries over the 1971-2004 period. The results suggest that incumbents behaved opportunistically and increased the growth of public health expenditures in election years. Government ideology did not have an influence. These findings indicate (1) the importance of public health in policy debates before elections and (2) the political pressure towards re-organizing public health policy platforms especially in times of demographic change.

Keywords: public health expenditures, health policies, government ideology, partisan politics, electoral cycles, panel data

JEL Classification: H51, I18, D72, C23

1. Introduction

In modern economies, the health sector plays a central role in social policy, and the health policy responsibilities are correspondingly extensive. Politicians design the health insurance system, subsidize hospitals, regulate the pharmaceutical market, etc. So far only a few studies examined the political economy aspects of health policy. Scholars have, however, frequently analyzed the influence of political determinants on overall social expenditures (e.g., Iversen 2001, Kittel and Obinger 2003, Dreher 2006a, Potrafke 2009a). The empirical results suggest, among others, that leftist governments increased overall social spending till the end of the 1980s; but this partisan effect disappeared in the 1990s. Decomposing social expenditures and focusing on subcategories such as health expenditures in order to identify compensating effects thus emerges as a worthwhile endeavor. Schmidt (1999) concludes from an analysis of OECD countries that the influence of government ideology on health is weaker than in other fields of social policy because health is a particularly important and special good. The demographic change and rising inequality have, however, contributed to health policy becoming a more polarizing issue. In particular, the question of inter- and intragenerational redistribution has become significant in developed countries. As a consequence, the political parties need to adjust their platforms and policies, and self-interested incumbents may well consider whether to use the keen public interest in health policy to improve their re-election prospects by increasing health expenditures before elections.

Health care expenditures (HCE) have steadily risen in OECD countries and have therefore attracted a great deal of attention in the political discourse and in the scientific debate. The cause of this increase in expenditures remains somewhat unclear (for surveys of the literature see Gerdtham and Jönsson 2000 and Okunade et al. 2004). Three strands of the literature can be distinguished. The first strand identifies a positive correlation between HCE and GDP growth in OECD countries and shows that GDP explains a high percentage of the variation of HCE (e. g. Newhouse 1977, Parkin et al. 1987, Gerdtham and Jönsson 1991, Gerdtham et al. 1992, Hitiris

and Posnett 1992, also Leu 1986, Culyer 1989). The second strand refines the econometric techniques and tests for panel unit roots, cointegration and structural breaks etc. (e. g. Hansen and King 1996, 1998, McCoskey and Selden 1998, Carrion-i-Silvestre 2005, Jewell et al. 2003, Narayan 2006, Herwartz and Theilen 2003). Introducing the third strand of literature, Gerdtham and Jönsson (2000) encourage testing for "new" explanatory variables. For example, Baumol's (1967) growth model of 'unbalanced growth' implies that HCE is driven by wage increases that exceed productivity growth (Hartwig 2008). The relative price of medical care offers a ready explanation for the rise in HCE in OECD countries (Hartwig 2010). The lion's share of total HCE is public, implying that political factors could also play an important role in explaining the steady increase in HCE.

In this paper, I empirically evaluate how political forces influence the growth of public HCE. The results suggest that incumbents behaved opportunistically and increased the growth of public health expenditures in election years. Government ideology did not have an influence. These findings indicate (1) the importance of public health in policy debates before elections and (2) the political pressure towards re-organizing public health policy platforms especially in times of demographic change.

The paper is organized as follows: section 2 discusses the theoretical background (political business cycles, the partisan approach and the role of government in health policies) and derives the hypotheses to be tested. Section 3 presents the data and specifies the empirical model. Section 4 reports the regression results, investigates their robustness and discusses their implications. Section 5 concludes.

2. Theoretical background and hypotheses

2.1. Political business cycles, partisan approach and government types

The political business cycle approaches and the partisan theory explain how politicians influence macroeconomic outcomes. One implication of the political business cycle theories is that all incumbent politicians will implement the same expansionary economic policy before elections. In other words, political ideology retires to the background, and policies converge. The theories on political business cycles either assume adaptive (Nordhaus 1975) or rational expectations (Rogoff and Sibert 1988, Rogoff 1990) of economic actors. In the traditional approaches with adaptive expectations, opportunistic policymakers can take advantage of an exploitable Phillips curve trade-off. Opportunistic policymakers can fool the naive voters and stimulate the economy immediately before each election. In the approaches with rational expectations, informational asymmetries between politicians and voters take center stage in explaining electoral cycles. The incumbent exploits his information advantage to signal his economic competence before elections. The distinction in traditional and rational political business cycle approaches does not affect the final result of boosting the economy by use of expansionary fiscal and monetary policies before elections for electoral reasons. Shi and Svensson (2006) develop a moral hazard model of political competition and show that politicians may behave opportunistically even if most voters know the government's policy, but some voters are uninformed. The more voters (ex ante) fail to distinguish pre-electoral manipulations from incumbent competence, the more the incumbent profits from boosting expenditures before an election. Alt and Lassen (2006) point out that the higher the transparency of the political process, the lower the probability that politicians behave opportunistically.

The partisan approach, on the other hand, focuses on the influence of party ideology and shows to what extent leftwing and rightwing politicians will provide policies that reflect the preferences of their partisans. The leftist party appeals more to the labor base and promotes expansionary policies, whereas the rightwing party appeals more to capital owners, and is

therefore more concerned with reducing inflation. This holds for both branches of the partisan theory - the classical approach (Hibbs 1977) and the rational expectations approach (Alesina 1987).[2] For a survey of the literature see, for example, Alesina et al. (1997).[3]

Coalition governments have different spending preferences than single party governments. Government expenditures are expected to be higher the more parties form the government because decision costs increase with the number of decision makers ("common pool problem" see, for example, Weingast et al. 1981 and the early veto player theory by Tsebelis 1995). Most recent applications of the veto player theory point out that policy stability increases with the number of veto players, i.e. coalition partners (Tsebelis 2002). Overall, the influence of coalition size on government spending remains an empirical matter. As coalition partners need to reach agreements on how to spend the tax revenue, the type of government (number of coalition partners, majority versus minority government) is likely to also influence government expenditures.

2.2 The role of government in health policies

Theoretical political economy approaches to health policy have so far not addressed the influence of electoral motives and government ideology; they rather deal with the design of health insurance systems and their financing (see e.g., Breyer 1995, Breyer and Haufler 2000, Kifmann 2005, Breyer et al. 2009). Formal models that explain the interaction of politicians, their party ideologies, elections, coalition governments and health policy do not appear to exist. Many scholars, however, illustrate the role of government in health policies and the model by De Donder and Hindricks (2007) portrays the interaction of a leftist and a rightwing party in designing a social insurance system.

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[2] For combinations of the political business cycle and the partisan approaches in empirical studies see, for example, Frey and Schneider (1978a, 1978b).
[3] For recent empirical studies on political business cycles and partisan cycles see, for example, Vergne (2009) and Potrafke (2011).

Immergut (1992) describes how politicians implement different health policies and comes to the following conclusion: "National health insurance symbolizes the great divide between liberalism and socialism, between the free market and the planned economy….Political parties look to national health insurance programs as a vivid expression of their distinctive ideological profiles and as an effective means of getting votes…National health insurance, in sum, is a highly politicized issue" (Immergut 1992: 1). She provides a comprehensive scheme of the role of government in health policies and divides the role of government into that of a payer, regulator, owner and employer. The government gives subsidies to private organizations or levies payroll taxes to pay for public HCE.[4] Government regulation affects insurers, patients, doctors and hospitals. The public sector also functions as an employer, for example, in hospitals. Poterba (1995) distinguishes between three possible instruments in health policy: price subsidies, government mandates, and public provision. As compared to subsidies, mandates do not affect the government's budget, whereas public provision gives governments greater control over the provided services, but may cause inefficiencies due to the monopolistic supply.

In line with the partisan approach, leftist governments are expected to increase the role of government in health policy. De Donder and Hindricks (2007) examine the political economy of social insurance policy and demonstrate that in a two party model, the leftwing party proposes more social insurance than the rightwing party. The rightwing party attracts the richer voters, and voters with smaller health risks, and the leftwing party attracts the poorer voters, and voters with higher health risks.

Institutions also influence governments' health policy. In particular, interest group activities influence political decisions. These veto players restrict the politicians' room to maneuver, but governing parties and their respective networks are able to conduct staffing policies which influence the veto players in favor of the government's interests. A further potential concern occurs in federal states if counties have certain policy responsibilities (for

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[4] Immergut (1992: 42 ff.) distinguishes between three kinds of programs: mutual fund subsidies, national health insurance and national health service.

example regarding hospitals). The federal governments, however, are able to affect decisions in the counties by, for example, negotiating or determining global budgets for hospitals and general subsidy levels etc. On the whole, the most important health policy responsibilities such as designing health insurance remain with the federal governments.

Overall, I expect that incumbents will increase the growth of public health expenditures in election years to become re-elected and that leftist governments will increase the growth of public health expenditures compared to rightwing governments in order to accommodate their clientele. The influence of minority governments and the size of a coalition government remain to be measured empirically.

3. Data and empirical strategy

3.1 Data

I use data provided by the OECD Health Data Base (2007). The data set contains yearly data for public HCE of 18 OECD countries. The countries included are Australia, Austria, Canada, Denmark, Finland, Germany, Iceland, Ireland, Japan, Luxembourg, the Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, the United Kingdom and the USA. The observation period runs from 1970 to 2004 (in levels). The panel is mostly balanced. Figure 1 illustrates that, on average[5], public HCE as a share of GDP increased from 3.6% in 1971 to 6.8% in 2004. The USA spent much less than the average for a long time, but they spent as much as the average in 2004. In Sweden, however, the share of public HCE on GDP was much higher than on average. In Australia and New Zealand, public HCE strongly increased in the early 1970s and were more volatile over the entire 1971-2004 period than on average.

Figure 2 shows the shares of public expenditures on total HCE and stresses the meaning of public HCE: the share was about 70% on average. Sweden had a very high share between 80% and 90%, while only 40% of the total HCE were public expenditures in the USA. The share of

public expenditures in New Zealand was especially high in the 1980s. In Australia, the government always spent somewhat less for public HCE than on OECD average. In conclusion, the lion's share of HCE is public, which makes this measure an important indicator.

3.2 The empirical model

The dynamic panel data model has the following form:

$$\Delta \log \text{Public HCE}_{it} = \Sigma_j \, \alpha_j \, \text{Political Variable}_{ijt} + \Sigma_k \, \beta_k \, \Delta \log X_{ikt} + \gamma \, \Delta \log \text{Public HCE}_{it-1}$$

$$+ \, \eta_i + \varepsilon_t + u_{it}$$

$i = 1,\ldots,18; \, j = 1,\ldots,5; \, k = 1,\ldots,7; \, t = 1,\ldots,34$

where the dependent variable $\Delta \log \text{Public HCE}_{it}$ denotes the growth rate of public HCE (per capita, real terms). In the next paragraph I describe the political variables "Political Variable$_{ijt}$" and their coding in detail. $\Sigma_k \, \beta_k \, \Delta \log X_{ikt}$ contains the exogenous control variables. Since there is no consensus about which explanatory variables should be included, I select a relatively large number of explanatory variables in different regression specifications. I shall first consider public HCE as a share of social expenditures. I follow the related studies on social expenditures by including the growth rate of real GDP per capita ($\Delta \log \text{GDP}_{it}$), the growth rate of the unemployment rate ($\Delta \log \text{Unemployment}_{it}$), and the growth rate of the dependency ratio measured as the share of the citizens aged above 64 and below 14 ($\Delta \log \text{Dependency Ratio}_{it}$). Thus, the general economic situation, the situation of the labor market, and the demographic development are taken into account. In addition, further control variables can be considered to avoid potential omitted variable bias. For a long time, GDP was the only generally accepted explanatory variable for the rise of total HCE (per capita). Hartwig (2008) has shown that total

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[5] Note that there are not always data available for all the 18 countries from 1971 to 2004. I adjust the average respectively. In any event, taking averages does not change the inference of the rise in public HCE.

HCE are driven by wage increases that are larger than productivity growth. His application requires nominal data. In comparison, I do not examine growth of total HCE but growth of public HCE. To capture the influence of wage increases on HCE I include the growth rate of the compensation of employees (per capita and in real terms). I include the growth rate of the sum of private HCE (per capita and in real terms) in order to control for the interaction with the private and the public health sector. Public HCE is also one of the functional components of government expenditures (COFOG). Dreher et al. (2008a, 2008b), Shelton (2007), Sanz and Velázquez (2007) and Gemmell et al. (2008) examine the composition of government expenditure and I follow this literature to include further explanatory variables. First, I control for total population in the individual countries which complements the dependency ratio. Second, globalization could also influence public HCE. Therefore, I follow Dreher et al. (2008a, 2008b) and include the growth rate of the KOF index of globalization (for details see Dreher 2006b and Dreher et al. 2008b). Panel unit root tests indicate that these variables are stationary (see appendix). Δlog Public HCE$_{it-1}$ describes the lagged dependent variable. Lastly, η_i represents a (potential) fixed country effect, ε_t is a temporal effect and u_{it} describes an error term. I follow the recommendation of the OECD not to convert variables into PPPs in international comparisons.[6]

Political Variable$_{ijt}$ is in the centre of my analysis. I distinguish between a variable controlling for the effect of election years, the ideological party composition of the governments, the number of coalition partners and whether the respective governments had a majority in parliament (minority government).

The variable Election$_{it}$ takes the exact timing of the elections into account. Following Franzese (2000), it is calculated as

$$\text{Election}_{it} = [(M\text{-}1) + d/D]/12$$

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[6] See Ahmad et al. (2003).

where M is the month of the election, d is the day of the election and D is the number of days in that month. In all other years, its values are set to zero. Therefore, I directly control for fluctuations and the fact that the election dates differ between and in the individual countries (see also section 4.1).

An important challenge in testing for the influence of government ideology in an OECD panel is the heterogeneity of the parties and parliamentary systems in the various nation states. The question is which governments should be labeled leftwing or rightwing – especially when there are more than two parties in government with different ideological roots. I employ the government ideology index proposed by Potrafke (2009a), which is based on the index of governments' ideological positions by Budge et al. (1993) and updated by Woldendorp et al. (1998, 2000). This index places the cabinet on a left-right scale with values between 1 and 5. It takes the value 1 if the share of governing rightwing parties in terms of seats in the cabinet and in parliament is larger than 2/3, and 2 if it is between 1/3 and 2/3. The index is 3 if the share of centre parties is 50%, or if the leftwing and rightwing parties form a coalition government that is not dominated by one side or the other. The index is symmetric and takes the values 4 and 5 if the leftwing parties dominate. Potrafke's (2009a) coding is consistent across time but does not attempt to capture differences between the party-families across countries. Years in which the government changed are labeled according to the government that was in office for the longer period, e.g., when a rightwing government followed a leftwing government in August, this year is labeled as leftwing. The coding of the ideology variable gives rise to the expectation that the growth of public HCE varies positively with the ideology index.

The influence of the type of government is tested by three variables whereas previous studies used just one. Roubini and Sachs (1989) constructed an index of power dispersion which distinguishes between the number of coalition partners and whether the government was a minority government. Unfortunately, this procedure mixes the quantitative aspect (the number of parties in the coalition) with a qualitative aspect (minority versus majority government, see Edin

and Ohlsson 1991, De Haan and Sturm 1994). Therefore, I first use two variables controlling for the number of parties in government. The variable Coalition (2 or 3 parties) assumes the value 1 for parliamentary governments with two or three coalition partners, and 0 otherwise. The variable Coalition (4 or more parties) assumes the value 1 for parliamentary governments with four or more coalition partners, and 0 otherwise.

I also include a dummy variable to control for the influence of minority governments. The dummy variable assumes the value 1 when the government does not have a majority in parliament, and 0 otherwise.

I now turn to discussing my choice of the panel data estimation methods. First, taking growth rates of the dependent variable eliminates time-invariant fixed effects in levels. But in case of different time trends in each country, taking growth rates eliminates the time-invariant country effects, but not the individual time components. This suggests that the least squares dummy variable estimator (fixed-effects) is used to estimate growth rates. Random effects could also be present because I do not examine all OECD countries. In addition, I apply heteroskedasticity and autocorrelation consistent (HAC) Newey-West type (Newey and West 1987, Stock and Watson 2008) standard errors and variance-covariance estimates, because the Wooldridge test (Wooldridge 2002: 176-177) for serial correlation in the idiosyncratic errors of a linear panel-data model implies the existence of arbitrary serial correlation. In the context of dynamic estimation, the common fixed-effect estimator is biased in a short panel. The estimators taking into account the resulting bias can be broadly grouped into a class of instrumental estimators and a class of direct bias corrected estimators (see Behr 2003, for example, for a discussion). In accordance with large sample properties of the GMM methods, e.g., the estimator proposed by Arellano and Bond (1991) will be biased in my econometric model with N=18. For this reason, bias corrected estimators are more appropriate. I apply Bruno's (2005a, 2005b) bias corrected least squares dummy variable estimator for dynamic panel data models with small N.[7]

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[7] I choose the Blundell-Bond (1998) estimator as the initial estimator in which the instruments are collapsed as suggested by Roodman (2006). This procedure makes sure to avoid using invalid and too many instruments (see

4. Results

4.1 Basic scenario: 1971 to 2004

Table 1 illustrates the regression results for the 1971-2004 period. I can reject the null hypothesis of the F-Test that all the fixed time and country effects are zero. Furthermore, I cannot reject the null hypothesis of the Hausman-Test that the difference in coefficients is not systematic. Hence, in this case, the random effects estimator (RE) is efficient and consistent (columns 1, 3, and 5). Columns (2), (4) and (6) refer to the model that includes a lagged dependent variable (DYN). Table 1 reports the coefficients and t-statistics (in absolute terms) for these six equations.

The results in Table 1 illustrate that the inclusion of different sets of control variables does not affect the results referring to the political determinants. The control variables have the expected signs and their influence is robust across the different econometric specifications (columns 3 to 6). The positive elasticity of real per capita income on public HCE corroborates that governments increase public HCE when the economy is growing. The estimated coefficients imply that public HCE increased by about 0.4% when real per capita GDP increased by 1%. In contrast, the growth rates of the dependency ratio and the unemployment rate do not turn out to be statistically significant in columns (3) and (4). The regression results in columns (5) and (6) show that the growth rate of the unemployment rate is statistically significant at the 10% and 5% level if the growth rate of the real compensation of employees is included in the regressions. The growth rate of the real compensation of employees enters the regressions with the expected positive sign and is statistically significant at the 1% level. The coefficient of the growth rate of GDP per capita remains positive, but does not turn out to be statistically significant. The reason is the correlation between the growth rate of GDP per capita and the growth rate of

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Roodman 2006 and 2009 for further details). Following Bloom et al. (2007) I undertake 50 repetitions of the procedure to bootstrap the estimated standard errors. Bootstrapping the standard errors is common practice applying this estimator. The reason is that Monte Carlo simulations demonstrated that the analytical variance estimator performs poorly for large coefficients of the lagged dependent variable (see Bruno 2005b for further details). The results do not qualitatively change with more repetitions such as 100, 200 or 500 or when the Arellano-Bond (1991) estimator is chosen as initial estimator.

compensation of employees. Private HCE had the expected negative influence on public HCE, i.e. they function as a substitute. The estimated coefficients imply that public HCE decreased by about 0.05% when private HCE increased by 1%. In contrast, the growth rate of total population and the growth rate of the KOF index of globalization do not turn out to be statistically significant which indicates that globalization does not have a negative influence on the welfare state. The lagged dependent variable is statistically significant at the 1% level and the coefficient reveals an elasticity of about 0.18.

The results show that policy influenced the growth of public HCE over the 1971-2004 period. All the specifications report a positive and statistically significant influence of the election year variable. The effect is somewhat weaker when further control variables are used. The results in Table 1 thus provide strong evidence for an electoral cycle: politicians increased the growth of public health spending in election years in the 1971-2004 period, and thus, behaved opportunistically. Numerically, the regression results suggest that the growth rate of public HCE increased by about 2% in election years.

Government ideology did not influence the growth of public HCE in the 1971-2004 period. The coefficients of the government ideology variable have the expected positive sign but do not turn out to be statistically significant. Moreover, the results suggest that coalition governments did not influence the growth of public HCE (the coefficient of the coalition type dummy 4 or more parties is statistically significant at the 10% level in column 5, however). Minority governments also did not influence the growth of public HCE.

The electoral effects may depend on whether elections were part of the regular electoral cycle or whether they were irregular (early). Shi and Svensson (2006) examine political budget cycles and point out that the election timing might be endogenous. But according to Brender and Drazen (2005), there are two conceptual problems with Shi and Svensson's (2006) presumption. First, it is not easy to distinguish between systems in which electoral dates are fixed and systems where early elections may be called. In the same manner, early elections seem to be the rule rather

than the exception. Furthermore, there are countries in which the government may call early elections, but rarely does so. Second, "there is no clear theoretical presumption about whether fiscal manipulation will be stronger or weaker when election dates are effectively predetermined" (Brender and Drazen 2005: 1282). In any event, distinguishing between regular and irregular elections appears to be reasonable. To follow up this idea, I use Shi and Svensson's (2006) data on regular and early election years from 1975 to 1995[8] and extend the respective data from 1971 to 1974[9] and from 1996 to 2004 using several volumes of the Political Handbooks and following Shi and Svensson's (2006: 1374) identification strategy. An election date is classified as regular if either (i) the election is held on the fixed date (year) specified by the constitution; or (ii) the election occurs in the last year of a constitutionally fixed term for the legislature; or (iii) the election is announced at least a year in advance. Overall, I identify 63.8% of the election dates as regular.

Table 2 points out that the growth of public HCE increased strongly when elections were early. The coefficient of the regular election year variable remains positive, but does not turn out to be statistically significant at conventional significance levels. In general, early elections are called in uncertain and polarized political circumstances. In contrast to fiscal policy, the endogeneity argument does not appear to apply in health policy. It is implausible that early elections are called exactly because of contested public health policies. In fact, one expects high polarization between two competing political blocks when early elections are called and incumbents are likely to implement expansionary public health policies to get re-elected. Therefore, I interpret the findings reported in Table 2 to strongly support the electoral cycle hypothesis.

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[8] I thank Min Shi and Jakob Svensson for providing their data.
[9] Even the Political Handbook from 1976 does not exactly identify the general elections in Finland and Japan 1972 as well as the election in Canada in 1974 as early. They are highly expected to be early, but theoretically, they could have

4.2 Different policy periods: the 1970s and 1980s versus the 1990s

The influence of political determinants may well change across time which implies that one should analyze specific time periods seperately. Beginning with Kittel and Obinger (2003), panel regressions were conducted with relatively short samples. This strategy is motivated by the momentous historical events in the 1971-2004 period. In 1990, the "Iron Curtain" fell. Garrett (1998: 1) believes that "…one should be recitent to conclude differently about the 1990s because of the highly idiosyncratic nature of the decade in Europe". Most of the European economies went into a recession after 1989. In Germany, interest rates increased sharply as a consequence of the German Unification. This slowed down economic activity throughout the continent – especially in the countries whose currencies were pegged to the Deutsche Mark. Finland and Sweden, for example, decided to peg their exchange rates to the Deutsche Mark and had recessions and high unemployment in the early 1990s. The 1991 Gulf War added further instability and uncertainty to global markets. I follow the strategy of treating the 34 years covered in my basic scenario as two distinct historical periods and distinguish between the sub-periods 1971-1990 and 1991-2004.[10] To address this issue, I have included a "Post-Soviet" dummy variable that takes on the value zero in the 1971-1990 period and one in the 1991-2004 period. Moreover, I include the interaction of the political variables and this "Post-Soviet" dummy in order to identify potential differences of the political determinants before and after the fall of the Iron Curtain. I normalize (mean zero, variance one) the political variables and "Post-Soviet" dummy before interacting. Including the "Post-Soviet" dummy variable requires excluding one of the temporal effect variables. Table 3 reports the regression results and indicates again that random effects are more appropriate than fixed country effects.

As can be seen from Table 3, the coefficients of the election variable still have a positive sign and the government ideology variable still lacks statistical significance. The coefficients of the interaction terms between the government ideology variable and the "Post-Soviet" dummy

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been announced one year in advance. Then I would have to label them as regular. However, this would not affect my inferences.

have a negative sign but are statistically significant only at the 5% level in columns (3) and (5). The government ideology variables and the interaction terms do not turn out to be statistically significant when the lagged dependent variable is included (columns 2, 4 and 6) as well as in column (1). The coefficients of the interaction terms between the coalition type (4 or more parties) variable and the "Post-Soviet" dummy have a negative sign and are statistically significant at the 5% level in columns (1) and (3) and at the 10% level in columns (4) and (5). The marginal effects of the political variables have to be interpreted conditionally on the interaction with the "Post-Soviet" dummy (see Friedrich 1982). In principle, there are two sensible ways to evaluate the marginal effects. I follow Dreher and Gassebner (2007), evaluating the marginal effects at the minimum as well as the maximum of the interacted variable, i.e., the "Post-Soviet" dummy (Table 4). Using this method one can distinguish between the impacts of the political variables on the growth of public HCE before and after communism collapsed. If one chooses to evaluate the marginal effects at the average level of the "Post-Soviet" dummy, the statistical significance of these average effects corresponds to the respective t-statistics of the political variables in Table 3.

The results in Table 4 suggest that policy changed slightly in the aftermath of the fall of the Iron Curtain. Electoral cycles in the growth of public HCE mainly occurred in the 1971-1990 period. The marginal effects of the election year variables do not turn out to be statistically significant in the 1991-2004 period. The ideological orientation of the government appears to have very slightly changed: the coefficients of the Ideology variable are positive in the 1971-1990 period but are only statistically significant at the 10% level in columns (3) and (5). The coefficients mostly have negative signs in the 1991-2004 period but only the coefficient in column (5) is statistically significant at the 10% level. Furthermore, regarding the type of government variables, the results demonstrate that more encompassing coalitions did not decrease spending in the 1971-1990 period but somewhat in the 1991-2004 period. The marginal effect is statistically significant at the 5% level in columns (1), (3) and (5). I interpret this effect to mean that more encompassing coalitions are expected to have broader majorities in parliament

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[10] The conclusions also hold when I consider the sub-periods 1971 to 1989 and 1990 to 2004.

and therefore were in a position to decrease the growth of public HCE and conduct more responsible economic policies. The effects tell us that a coalition consisting of 4 or more parties decreased the growth rate of public HCE by about 0.8% compared to a single party government in the 1991-2004 period.

Overall, the results for the 1971-1990 and for the 1991-2004 periods suggest that small policy shifts occurred in the observation period. In this respect, my results accord with the evidence provided by the related literature on social expenditures. It is important to note, however, that the analysis does not take into account that party ideologies may have changed.[11] Overall, the results seem to be in accordance with the claim that health is a special good in the sense that government ideology hardly matters in providing public health care.

4.3 Further robustness tests and discussion

The results derived from the different model specifications indicate that the reported political effects are robust, i.e. they are not sensitive to the inclusion/exclusion of particular explanatory variables. In line with the related literature, the dependency ratio did not turn out to be significant.[12] In further specifications (not shown), I use the share of the population aged 65 and above (old age population) and the share of the population aged 15 and below instead of the dependency ratio (Shelton 2007). Both variables have a negative influence on public HCE, but do not change the political effects at all. Alternatively, I include the old age population in thousands, not as a share. This specification does not change the inferences regarding the political variables. I also replace the KOF index of globalization by trade-openness. Trade-openness does not turn out to be statistically significant and the political effects remain unchanged. Using the economic,

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[11] Potrafke (2009b) developed a dynamic index of voter polarization and uses German data to illustrate the concept. If it were possible to construct such a dynamic index for all OECD countries, one could evaluate in more depth whether the growth of public HCE was not induced by government ideology.
[12] The demographic change just started in the considered 1971-2004 period. Hence the regression result does not necessarily imply that the increasing share of older people does not give rise to higher public HCE.

social and political KOF sub indices of globalization instead of the overall index does not change the conclusions either.

To control for contemporaneous correlation across the countries I applied panel corrected standard errors according to Beck and Katz (1995, 1996). Results do not change at all when panel corrected standard errors are applied.

The reported effects could depend on idiosyncratic circumstances in individual countries. I therefore test whether the results are sensitive to the inclusion/exclusion of particular countries. This kind of sensitivity analysis also highlights the historical background and hence provides further interesting insights. The results concerning electoral cycles in public HCE are not driven by the inclusion of one specific individual country. Excluding Australia, however, strongly reduces the influence of the election year variable. In some specifications, it even fails statistical significance at the 10% level. The t-statistic of the Ideology variable also dramatically decreases when Australia is excluded. This finding is perfectly in line with evidence from case studies: DeVoe's (2003) case study of the 1973 Australian Community Health Program (CHP) illustrates that health has indeed been a very political issue in Australia. She states that "in the 1969 and 1972 federal elections, a revitalized Australia Labor Party (ALP), led by Gough Whitlam and focused on social and political change, began to talk seriously about health care reform…Soon after the ALP victory in 1972, community health advocates outlined the CHP as a way to "expand and co-ordinate community health services" and to give grants in support of "alternative methods of delivering health care" " (DeVoe 2003: 78 f.). Considering the last decades in general, "the center of gravity has shifted back and forth between the public and private sectors as control of the commonwealth (federal) government has alternated between Labour and Coalition (right-of-center) parties" (Tuohy et al. 2004: 368). Public health was also an important issue in election campaigns. DeVoe (2003: 93 f.): "By October 1969, an Australian Gallup poll reported that 54% of Australians polled preferred the Labor Party proposal for a "free" system of basic medical and

hospital care with a compulsory levy, compared with only 37.6% who preferred the Liberal Party's voluntary health insurance schemes."

Excluding Portugal turns the Ideology variable statistically significant at the 10% level and thus implies that rightwing governments increased the growth of public HCE in Portugal. In Portugal, however, overall social expenditures were for a long time below the Southern European average. In 1984, the conservative government reorganized social protection and the anti-poverty policies received a boost after Portugal entered the EU in 1986: in the 1986-1995 period, not only public HCE dramatically increased but overall social expenditures increased from 11.8% to 18.1% as a share of GDP under a rightwing government (see Capucha et al. 2006).

Countries such as the UK and the USA neither impair nor strengthen the econometric results. At first glance, this might be surprising since the governments lead by Margret Thatcher and Ronald Reagan are well known for their free market policies (Thatcherism and Reaganomics). But in the UK, support for the public provision of health care (and retirement pensions) run high across all social sectors at the end of the 1980s: 85% of all professionals and managers and 87% of unskilled workers believed that the government should bear responsibility for health care. Therefore, a slight reduction of public expenditure in that area could only be accomplished at high electoral costs. The conservative Thatcher government stressed the need to keep medical care universal and free. As a result, public health expenditures went up under the Thatcher government by about 35% in real terms, higher than the total increase in GDP (Boix 1998: 192-194). After overall public spending had increased in the course of the recession at the beginning of the 1980s, these rightwing governments in the UK and USA eventually curbed social transfers and cut public spending on capital formation and industrial subsidies. However, spending for social affairs was not reduced. "Strict electoral calculations partially explain the Conservatives' conscious rejection of any substantial reduction in core welfare programs to achieve their overall goal of lower public expenditure. Popular support for the welfare state was just too strong" (Boix 1998: 192).

5. Conclusion

Incumbents behaved opportunistically and increased the growth of public health expenditures in election years in OECD countries in the 1971-2004 period, whereas government ideology did not influence the growth of public health expenditures in this period. This finding is in line with the related empirical literature that ideology did not affect budgetary affairs in the last two decades, but ideology-induced effects can be identified in non-budgetary affairs. For example, market-oriented governments have deregulated product markets in OECD countries in the 1980-2003 period (Potrafke 2010), and government ideology has had a strong influence on political alignment with the U.S.: leftwing governments were less sympathetic to US positions (Potrafke 2009c). The distinctly different alignments of leftist and rightwing governments with the U.S. reflect sources of ideological association that transcend issues of economic policy.

The demographic change will have a distinct influence on health policies in the future. Political economic models have not really dealt with this novel phenomenon so far. A more encompassing theory is required to portray how electoral motives and government ideology influence public health policy in the course of demographic change. In most OECD countries, the number of pensioners and thus of people who receive benefits from the public health system increases while the number of younger citizens who pay contributions to the public health systems decreases. Leftwing and rightwing parties need to adjust their policy platforms to the demographic change, and the public health systems in OECD countries need to be reformed to remain sustainable. A prime question will be, whether leftwing and rightwing political parties will offer different policy platforms on redistribution and deductibles in the public health system.

Health care reforms, however, require majorities in the electorate. Pensioners and people who receive benefits from the public health system are not likely to vote for reforms that decrease their own benefits (although the old generation cannot extort the young generation boundlessly, see Breyer and Stolte 2001 on the feasibility of pension reform). A second and yet

open question is whether pensioners and benefit recipients would be willing to forgo benefits in favor of keeping public health systems financially affordable.

Public health has been an important topic in the public debate and in election campaigns. In the 2008 US election campaign, for example, a significant aspect of Barack Obama's platform was to propose a compulsory health insurance system. In the first one and a half years after his election, Obama has however not had sufficient support in his own democratic party to introduce a compulsory health insurance system. In Germany, reforms of the public health system were intensively debated before the federal elections in 2005 and 2009. These examples nicely illustrate my findings: (1) the importance of public health in policy debates before elections and (2) the political pressure towards re-organizing public health policy platforms.

Appendix: panel unit root tests

In order to test for stationarity of the time series, I apply a battery of panel unit root tests. The advantage of the panel unit root tests compared to the univariate counterparts is their greater statistical power. However, the tests to a panel also relate to asymptotic theory and therefore loose power in small samples. Breitung and Pesaran's (2008) overview on unit roots and cointegration in panels points out that the respective tests refer to samples where the time dimension (T) and the cross section dimension (N) are relatively large. As is common in the literature on HCE, however, I carefully apply the battery of respective tests. First, I test whether the time series are cross-section independent (see, for example, Pesaran 2004 and Ng 2006). I apply Pesaran's (2004), Frees (1995) and Friedman's (1937) test statistics using STATA 10 (see De Hoyos and Sarafidis 2006). The test statistics provide mixed results on whether cross section dependence is present or not. Therefore, I apply first generation panel unit root tests that do not take into account cross section dependence. Moreover, I apply Pesaran's (2007) second generation panel unit root test that does take into account cross section dependence.

The following tables report the results of the panel unit root tests on the public HCE (per capita) and the tests on the respective series of GDP per capita, unemployment, the dependency ratio, compensation of employees, private health care expenditures per capita, the KOF index of globalization and total population. They refer to the test on the growth rates because I use the variables in growth rates in the econometric model. I applied the Levin et al. (2002), Im et al. (2003) and the Fisher tests referring to Maddala and Wu (1999) and Choi (2001) tests. The results were obtained using Eviews 5.1. Unlike STATA 10, Eviews 5.1. allows the application of the respective tests on unbalanced panels; it considers an automatic lag length selection by using Information Criteria, and also contains the Breitung (2000) test. Regarding the first three tests listed in the table, maximum lag lengths are automatically selected based on the Schwarz Information Criterion. The remaining two tests use the Bartlett kernel for the Newey-West bandwidth selection. The probabilities for the Fisher tests are computed using an asymptotic Chi-square distribution. All other tests assume asymptotic normality (See Hartwig 2008: Appendix).

The results of the Pesaran (2007) test were obtained using STATA 10 and refer to test regressions in which I included one lag. The inferences do not change at all when I include more lags in the test regression. The test regressions in growth rates include a constant but no linear deterministic trend.

Table 5: Results of the panel unit root tests. Public HCE, GDP and unemployment

	log(public HCE)			log(GDP)			log(unemployment)		
Ho: Unit root in first diff.	Stat.	Prob.	Obs.	Stat.	Prob.	Obs.	Stat.	Prob.	Obs.
Levin, Lin & Chu t*	-12.228	0.000	569	-12.634	0.000	626	-11.664	0.000	601
Im, Pesaran & Shin W-stat	-12.339	0.000	569	-12.900	0.000	626	-14.281	0.000	601
ADF-Fisher Chi-square	213.130	0.000	569	226.319	0.000	626	256.242	0.000	601
PP-Fisher Chi-square	213.917	0.000	580	238.900	0.000	627	232.198	0.000	607
Pesaran	-7.593	0.000	561	-7.995	0.000	592	-9.234	0.000	576

log(public HCE) = log of public HCE per capita, log(GDP) = log of GDP per capita, log(unemployment) = log of unemployment rate

Table 6: Results of the panel unit root tests. Dependency ratio, compensation of employees, private HCE

	log(dependency_ratio)			log(comp_employees)			log(private HCE)		
Ho: Unit root in first diff.	Stat.	Prob.	Obs.	Stat.	Prob.	Obs.	Stat.	Prob.	Obs.
Levin, Lin & Chu t*	-1.491	0.068	616	-11.180	0.000	595	-14.304	0.000	593
Im, Pesaran & Shin W-stat	-1.610	0.054	616	-11.428	0.000	595	-15.698	0.000	593
ADF-Fisher Chi-square	41.305	0.250	616	196.266	0.000	595	288.938	0.000	593
PP-Fisher Chi-square	37.856	0.387	616	187.375	0.000	598	330.776	0.000	601
Pesaran	-0.802	0.206	582	-9.689	0.000	578	-10.479	0.000	571

log(dependency_ratio) = log of the dependency ratio, log(comp_employees) = log of compensation of employees, log(private HCE) = log of private HCE per capita

Table 7: Results of the panel unit root tests. Population and KOF index of globalization

	log(population)			log(IOG)		
Ho: Unit root in first diff.	Stat.	Prob.	Obs.	Stat.	Prob.	Obs.
Levin, Lin & Chu t*	-3.764	0.001	628	-19.369	0.000	593
Im, Pesaran & Shin W-stat	-6.715	0.000	628	-18.897	0.000	593
ADF-Fisher Chi-square	123.386	0.000	628	340.025	0.000	593
PP-Fisher Chi-square	113.297	0.000	628	350.362	0.000	593
Pesaran	-5.359	0.000	593	-9.363	0.000	576

log(population) = log of (total) population, log(IOG) = log of the KOF index of globalization

Tables 5-7 report the results of different unit root tests and demonstrate that we can always reject the null hypotheses of a unit root in growth rates except for the dependency ratio. Overall, I conclude from these tests that the panel data in growth rates are stationary.

References

Ahmad N, Lequiller F, Marianna P, Pilat D, Schreyer P, Wölfl A 2003. Comparing labour productivity growth in the OECD area: the role of measurement. *OECD – STI Working Paper, No. 14/03.*

Alesina A 1987. Macroeconomic policy in a two-party system as a repeated game. *Quarterly Journal of Economics 102* (3); 651-678.

Alesina A, Roubini N, Cohen G D 1997. *Political cycles and the macroeconomy.* The MIT Press: Cambridge.

Alt J E, Lassen D D 2006. Fiscal transparency, political parties, and debt in OECD countries. *European Economic Review 50*; 1403-1439.

Arellano M, Bond S 1991. Some tests of specification for panel data: Monte Carlo evidence and an application to employment equations. *Review of Economic Studies 58*; 277–297.

Baumol W J 1967. Macroeconomics of unbalanced growth: The anatomy of urban crisis. *American Economic Review 57* (3); 415-426.

Beck N, Katz J N 1995. What to do (and not to do) with time-series-cross-section data. *American Political Science Review 89*(3), 634-647.

Beck N, Katz J N 1996. Nuisance vs. substance: Specifying and estimating time-series cross section models. *Political Analysis 6*(1), 1-36.

Behr A 2003. A comparison of dynamic panel data estimators: Monte Carlo evidence and an application to the investment function. Discussion paper 05/03, Economic Research Centre of the Deutsche Bundesbank.

Bloom D E, Canning D, Mansfield, R K, Moore M 2007. Demographic change, social security systems, and savings. *Journal of Monetary Economics 54*; 92-114.

Blundell R W, Bond S R 1998. Initial conditions and moment restrictions in dynamic panel data models. *Journal of Econometrics 87*(1), 115–143.

Boix C 1998. *Political parties, growth and equality – Conservative and social democratic economic strategies in the world economy.* Cambridge University Press: Cambridge.

Breitung J 2000. The local power of some unit root tests for panel data. In Baltagi, B (eds.), Advances in Econometrics, Vol. 15: Nonstationary panels, panel cointegration, and dynamic panels. JAI Press: Amsterdam; 1990. 161-178.

Breitung J, Pesaran M H 2008. Unit Roots and cointegration in panels. In Matyas L, Sevestre P (eds), The econometrics of panel data: fundamentals and recent developments in theory and practice. Kluwer Academic Publishers: Dordrecht; 2008, 279-322.

Brender A, Drazen A 2005. Political budget cycles in new versus established democracies. *Journal of Monetary Economics* 52 (7); 1271-1295.

Breyer F 1995. The political economy of rationing in social health insurance. *Journal of Population Economics* 8 (2); 137-148.

Breyer F, Haufler A 2000. Health care reform: Separating insurance from income redistribution. *International Tax and Public Finance* 7 (4-5); 445-461.

Breyer F, Stolte K 2001. Demographic change, endogenous labor supply, and the feasibility of pension reform. *Journal of Population Economics* 14 (3), 409-424.

Breyer F, Zweifel P, Kifmann M 2009. *Health Economics*. Springer-Verlag; Berlin Heidelberg; 2nd edition.

Bruno G S F 2005a. Approximating the bias of the LSDV estimator for dynamic unbalanced panel data models. *Economics Letters* 87 (3); 361-366.

Bruno G S F 2005b. Estimation and inference in dynamic unbalanced panel data models with a small number of individuals. *Stata Journal* 5 (4); 473-500.

Budge I, Keman H, Woldendorp J 1993. Political data 1945-1990. Party government in 20 democracies. *European Journal of Political Research* 24 (1); 1-119.

Capucha L, Bomba T, Fernandes R, Matos G 2006. Portugal – a virtuous path towards minimum income? In: Ferrera M (eds.) *Welfare state reform in Southern Europe – Fighting poverty and social exclusion in Italy, Spain, Portugal and Greece*. Routledge: London and New York. (pp. 204-265).

Carrion-i-Silvestre, J L 2005. Health care expenditure and GDP: Are they broken stationary? *Journal of Health Economics* 24 (5); 839-854.

Choi, I 2001. Unit root tests for panel data. *Journal of International Money and Finance* 20 (2); 249-272.

Culyer A J 1989. Cost containment in Europe. *Health Care Financing Review* (Annual Supplement); 21-32

De Donder P, Hindriks J 2007. Equilibrium social insurance with policy-motivated parties. *European Journal of Political Economy* 23 (3); 624-640.

De Haan J, Sturm J-E 1994. Political and institutional determinants of fiscal policy in the European community. *Public Choice* 80 (1-2); 157-172.

De Hoyos R E, Sarafidis V 2006. Testing for cross-sectional dependence in panel data models. *Stata Journal* 6(4); 482-496.

DeVoe J 2003. A policy transformed by politics: The case of the 1973 Australian Community Health Program. *Journal of Health Politics, Policy and Law* 28 (1); 77-108.

Dreher A 2006a. The influence of gloablization on taxes and social policy – an empirical analysis of OECD countries. *European Journal of Political Economy* 22 (1); 179-201.

Dreher A 2006b. Does globalization affect growth? Evidence from a new index of globalization. *Applied Economics* 38 (10); 1091-1110.

Dreher A, Gassebner M 2007. Greasing the wheels of entrepreneurship? The impact of regulations and corruption on firm entry. *CESifo Working Paper No 2013.*

Dreher A, Sturm J-E, Ursprung H W 2008a. The impact of globalization on the composition of government expenditures: Evidence from panel data. *Public Choice* 134 (3-4); 263-292

Dreher A, Gaston N, Martens P 2008b. *Measuring globalization – Gauging its consequences.* Springer: Berlin.

Edin P-A, Ohlsson H 1991. Political determinants of budget deficits: Coalition effects versus minority effects. *European Economic Review* 35 (8); 1597-1603.

Franzese R 2000. Electoral and partisan manipulation of public debt in developed democracies, 1956-1990. In: Strauch R, von Hagen J (eds.) *Institutions, politics and fiscal policy.* Kluwer Academic Press: Dordrecht, 2000; 61-83.

Frees E W 1995. Assessing cross-sectional correlation in panel data. *Journal of Econometrics* 69 (2); 393-414.

Frey B S, Schneider F 1978a. An empirical study of politico-economic interaction in the United States. *Review of Economics and Statistics* 60 (2); 174-183.

Frey B S, Schneider F 1978b. A politic-economic model of the United Kingdom. *Economic Journal* 88 (June); 243-253.

Friedman M 1937. The use of ranks to avoid the assumption of normality implicit in the analysis of variance. *Journal of the American Statistical Association* 32 (200); 675-701.

Friedrich R J 1982. In defence of multiplicative terms in multiple regression equations. *American Journal of Political Science* 26(4), 797-833.

Garrett G 1998. *Partisan politics in the global economy.* Cambridge University Press: Cambridge.

Gemmell N, Kneller R, Sanz I 2008. Foreign investment, international trade and the size and structure of public expenditures. *European Journal of Political Economy* 24 (1); 151-171.

Gerdtham U-G, Jönsson B 1991. Conversion factor instability in international comparisons of health care expenditure. *Journal of Health Economics* 10 (2); 227-234.

Gerdtham U-G, Jönsson B 2000. International comparisons of health expenditure: Theory, data and econometric analysis. In: Culyer, A J, Newhouse J P (eds.) *Handbook of Health Economics*, Volume 1 A, Elsevier: Amsterdam; 11-53.

Gerdtham U-G, Löthgren M 2000. On stationarity and cointegration of international health expenditure and GDP. *Journal of Health Economics* 19 (4); 461-475.

Gerdtham U-G, Søgaard J, Andersson F, Jönsson B 1992. An econometric analysis of health care expenditure: A cross-section study of the OECD countries. *Journal of Health Economics* 11 (1); 63-84.

Hansen P, King A 1996. The determinants of health care expenditure: A cointegration approach. *Journal of Health Economics* 15 (1); 127-137.

Hansen P, King A 1998. Health care expenditure and GDP: Panel data unit root test results – comment. *Journal of Health Economics* 17 (3); 377-381.

Hartwig J K 2008. What drives health care expenditure? – Baumol's model of 'unbalanced growth' revisited. *Journal of Health Economics* 27 (3); 603-623.

Hartwig J K 2010. Can Baumol's model of unbalanced growth contribute to explaining the secular rise in health care expenditure? – An alternative test. *Applied Economics,* forthcoming.

Herwartz H, Theilen B 2003. The determinants of health care expenditure: testing pooling restrictions in small samples. *Health Economics* 12 (2); 113-124.

Hibbs D A Jr 1977. Political parties and macroeconomic policy. *American Political Science Review* 71 (4); 1467-1487.

Hitiris T, Posnett J 1992. The determinants and effects of health expenditure in developed countries. *Journal of Health Economics* 11 (2); 173-181.

Im K S, Pesaran M H, Shin Y 2003. Testing for roots in heterogenous panels. *Journal of Econometrics* 115 (1); 53-74.

Immergut E M 1992. *Health politics – Interests and institutions in Western Europe.* Cambridge University Press: Cambridge.

Iversen T 2001. The dynamics of the welfare state expansion: Trade openness, deindustrialization, and partisan politics. In: Pierson P (eds.) *The new politics of the welfare state.* Oxford University Press: New York; 45-79.

Jewell T, Lee J, Tieslau M, Strazicich M C 2003. Stationarity of health expenditures and GDP: evidence from panel unit root tests with heterogeneous structural breaks. *Journal of Health Economics* 22 (2); 313-323.

Kifmann M 2005. Health insurance in a democracy: why is it public and why are premiums income-related? *Public Choice* 124 (3); 283-308.

Kittel B, Obinger H 2003. Politicial parties, institutions, and the dynamics of social expenditure in times of austerity. *Journal of European Public Policy* 10 (1); 20-45.

Levin A, Lin C F, Chu C 2002. Unit root tests in panel data: asymptotic and finite-sample properties. *Journal of Econometrics* 108 (1); 1-24.

Leu R E 1986. The public-private mix and international health care costs. In: Culyer A, Jönsson J B (eds.) *Public and Private Health Care Services: Complementarities and Conflicts.* Oxford: Basil Blackwell; 41-63.

Maddala G S, Wu S 1999. A comparative study of unit root tests with panel data and a new simple test. *Oxford Bulletin of Economics and Statistics* 61; 631-652.

McCoskey S K, Selden T M 1998. Health care expenditures and GDP: Panel data unit root test results. *Journal of Health Economics* 17 8§9; 369-376.

Narayan P K 2006. Examining structural breaks and growth rates in international health expenditures. *Journal of Health Economics* 25 (5); 877-890.

Newey W K, West K D 1987. A simple, positive semi-definite, heteroskedasticity and autocorrelation consistent covariance matrix. *Econometrica* 55 (3); 703-708.

Newhouse J P 1977. Medical-care expenditure: a cross-national survey. *Journal of Human Resources* 12 (1); 115-125.

Ng S 2006. Testing cross-section correlation in panel data using spacings. *Journal of Business and Economics Statistics* 24 (1); 12-23.

Nordhaus W D 1975. The political business cycle. *Review of Economic Studies* 42 (2); 169-190.

Okunade A A, Karakus M C, Okeke C 2004. Determinants of health expenditure growth of the OECD countries: jackknife resampling plan estimates. *Health Care Management Science* 7 (3); 173-83.

Parkin D, McGuire A, Yule B 1987. Aggregate health care expenditures and national income – Iis health care a luxury good? *Journal of Health Economics* 6 (2); 109-127.

Pesaran H M 2004. General diagnostic tests for cross section dependence in panels. *Cambridge Working Paper in Economics* 0435.

Pesaran H M 2007. A simple panel unit root test in the presence of cross section dependence. *Journal of Applied Econometrics* 22 (2); 265-312.

Poterba J M 1995. Government intervention in the markets for education and health care: how and why? *NBER Working Paper* No. 4916.

Potrafke N 2009a. Did globalization restrict partisan politics? An empirical evaluation of social expenditures in a panel of OECD countries. *Public Choice* 140(1-2), 105-124.

Potrafke N 2009b. *Konvergenz in der deutschen Finanz- und Sozialpolitik?*
LIT Verlag, Hamburg/Münster.

Potrafke N 2009c. Does government ideology influence political alignment with the U.S.?
An empirical analysis of voting in the UN General Assembly.
Review of International Organizations 4 (3), 245-268.

Potrafke N 2010. Does government ideology influence product market deregulation?
Empirical evidence from OECD countries. *Public Choice* 143(1-2), 135-155.

Potrafke N 2011. Political cycles and economic performance in OECD countries:
Empirical evidence from 1951-2006. *Public Choice,* forthcoming.

Rogoff K 1990. Equilibrium political budget cycles. *American Economic Review* 80 (1); 21-36.

Rogoff K, Sibert A 1988. Elections and macroeconomic policy cycles.
Review of Economic Studies 55 (1); 1-16.

Roodman D 2006. How to do xtabond2: An introduction to "Difference" and "System" GMM
in Stata. *Center for Global Development. Working Paper* 103.

Roodman D 2009. A note on the theme of too many instruments.
Oxford Bulletin of Economics and Statistics 71(1), 135-158.

Roubini N, Sachs J D 1989. Political and economic determinants of budget deficits in the
industrial democracies. *European Economic Review* 33 (5); 903-938.

Sanz I, Velázquez F, 2007. The role of aging in the growth of government and social welfare
spending in the OECD. *European Journal of Political Economy* 23 (4); 917-931.

Schmidt M G 1999.Warum die Gesundheitsausgaben wachsen. Befunde des Vergleichs
demokratisch verfasster Länder. *Politische Vierteljahresschrift* 40 (2); 229-245.

Shelton C A 2007. The size and composition of government expenditure.
Journal of Public Economics 91 (11-12); 2230-2260.

Shi M, Svensson J 2006. Political budget cycles: do they differ across countries and why?
Journal of Public Economics 90 (8-9); 1367-1389.

Stock J H, Watson M W 2008. Heteroskedasticity-robust standard errors for
fixed-effects panel-data regression. *Econometrica* 76(1); 155-174.

Tsebelis G 1995. Decision making in political systems: veto players in presidentialism,
parliamentarism, multicameralism and multipartyism.
British Journal of Political Science 25; 289-325.

Tsebelis G 2002. *Veto players – How political institutions work.*
Princeton: Princeton University Press.

Tuohy C H, Flood C M, Stabile M 2004. How does private finance affect public health care
systems? Marshalling the evidence from OECD nations.
Journal of Health Politics, Policy and Law 29 (3); 360-396.

Vergne C 2009. Democracy, elections and allocation of public expenditures in developing
countries *European Journal of Political Economy* 25 (1), 63-77.

Weingast B R, Shepsle K A, Johnson C 1981. The political economy of benefits and costs: a
neoclassical approach to distribution politics.
Journal of Political Economy 89 (4); 642-664.

Woldendorp J, Keman H, Budge I 1998. Party government in 20 democracies: an update
(1990-1995). European Journal of Political Research 33 (1); 125-164.

Woldendorp J, Keman H, Budge I 2000. *Party government in 48 democracies (1945-1998):
composition, duration, personnel*. Kluwer Academic Publishers: Dordrecht.

Wooldridge J M 2002. *Econometric analysis of cross section and panel data.*
Cambridge: MIT Press.

Figure 1: Public HCE in relation to GDP. 1971-2004.
(average of the 18 countries, Australia, New Zealand, Sweden and the USA)
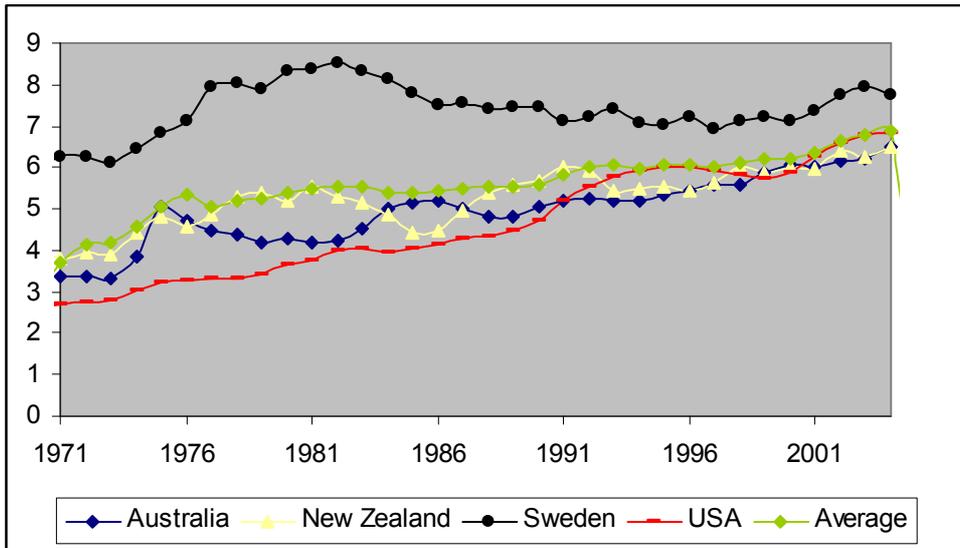
Source: OECD Health Data Base (2007)

Figure 2: Public in relation to total HCE. 1971-2004.
(average of the 18 countries, Australia, New Zealand, Sweden and the USA)
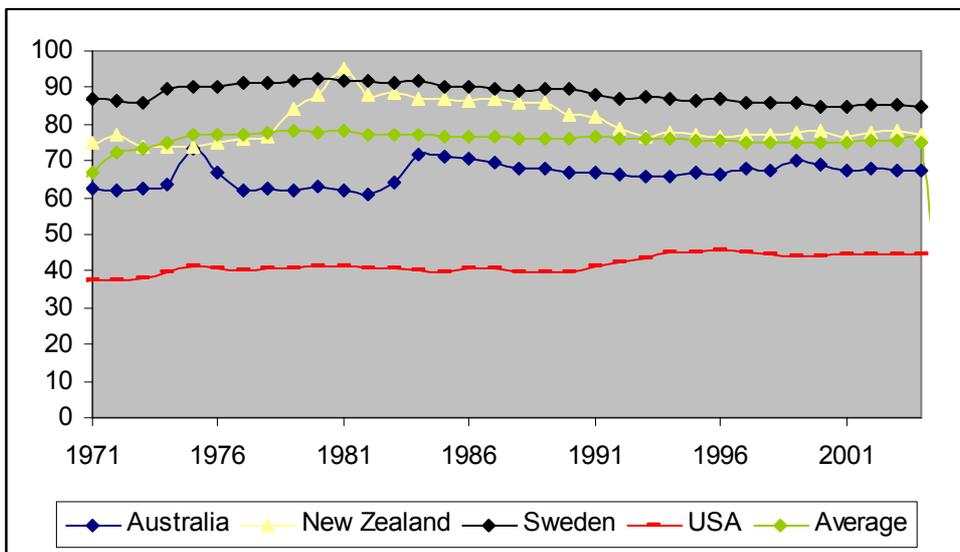
Source: OECD Health Data Base (2007)

Table 1. Regression Results. 1971-2004. Dependent Variable: Δlog Public HCE (per capita).

	(1) RE	(2) DYN	(3) RE	(4) DYN	(5) RE	(6) DYN
Election	0.0210***	0.0226***	0.0183**	0.0196***	0.0138*	0.0173**
	[2.63]	[3.07]	[2.31]	[2.87]	[1.77]	[2.13]
Ideology	0.0026	0.0014	0.0028	0.0019	0.0014	0.0013
	[1.15]	[0.43]	[1.21]	[0.68]	[0.66]	[0.53]
Coalition (2 or 3 parties)	-0.0022	-0.0052	-0.0009	-0.0016	-0.0003	0.0011
	[0.36]	[0.72]	[0.13]	[0.21]	[0.08]	[0.17]
Coalition (4 or more parties)	-0.0071	-0.0039	-0.0048	0.0018	-0.0102*	0.0055
	[0.92]	[0.29]	[0.57]	[0.14]	[1.71]	[0.40]
Minority Government	-0.0011	-0.0035	-0.0038	-0.0057	-0.0008	-0.0015
	[0.15]	[0.49]	[0.53]	[0.67]	[0.16]	[0.18]
Δlog GDP (per capita)			0.4702***	0.3804**	0.2293	0.061
			[3.44]	[2.50]	[1.60]	[0.42]
Δlog Dependency Ratio			-0.0071	0.0614	0.0158	0.1215
			[0.04]	[0.25]	[0.09]	[0.49]
Δlog Unemployment			0.0039	0.0102	0.0267*	0.0276**
			[0.25]	[0.77]	[1.75]	[2.13]
Lagged Dependent Variable		0.1854***		0.1785***		0.1702***
		[4.03]		[3.78]		[3.68]
Δlog Comp. of Employees					0.5385***	0.5229***
					[4.15]	[5.80]
Δlog Private HCE					-0.0469*	-0.0511***
					[1.83]	[4.17]
Δlog Population					0.1612	0.1324
					[0.41]	[0.21]
Δlog Index of Globalization					-0.0423	-0.0304
					[0.59]	[0.39]
Fixed Country Effects	No	Yes	No	Yes	No	Yes
Temporal Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	588	571	579	564	578	563
R-squared	0.20		0.24		0.31	
Number of n	18	18	18	18	18	18

Notes: Absolute value of t statistics in brackets (absolute values); * significant at 10%; ** significant at 5%; *** significant at 1%. The regressions in columns (1), (3) and (5) are estimated with heteroskedasticity and autocorrelation consistent (HAC) Newey-West type standard errors.

Table 2. Regression Results. 1971-2004. Dependent Variable: Δlog Public HCE (per capita). Regular and early elections.

	(1) RE	(2) DYN	(3) RE	(4) DYN	(5) RE	(6) DYN
Election (regular)	0.0154	0.0145	0.0116	0.0108	0.0088	0.0077
	[1.57]	[1.61]	[1.22]	[1.24]	[0.98]	[0.81]
Election (early)	0.0302**	0.0354***	0.0295**	0.0339***	0.0219*	0.0330***
	[2.45]	[3.04]	[2.34]	[3.23]	[1.76]	[3.42]
Ideology	0.0026	0.0012	0.0028	0.0017	0.0015	0.0011
	[1.14]	[0.37]	[1.21]	[0.61]	[0.70]	[0.45]
Coalition (2 or 3 parties)	-0.0030	-0.0063	-0.0015	-0.0027	-0.0006	-0.0001
	[0.47]	[0.91]	[0.24]	[0.37]	[0.14]	[0.02]
Coalition (4 or more parties)	-0.0066	-0.0038	-0.0038	0.0022	-0.0099*	0.0058
	[0.85]	[0.28]	[0.45]	[0.17]	[1.66]	[0.43]
Minority Government	-0.0020	-0.0050	-0.0053	-0.0079	-0.0014	-0.0038
	[0.29]	[0.71]	[0.71]	[0.96]	[0.26]	[0.46]
Δlog GDP (per capita)			0.4720***	0.3923**	0.2357	0.0745
			[3.41]	[2.58]	[1.64]	[0.52]
Δlog Dependency Ratio			-0.0162	0.0530	0.0107	0.1089
			[0.08]	[0.22]	[0.06]	[0.45]
Δlog Unemployment			0.0042	0.0111	0.0273*	0.0286**
			[0.27]	[0.84]	[1.80]	[2.20]
Lagged Dependent Variable		0.1894***		0.1821***		0.1742***
		[4.16]		[3.82]		[3.81]
Δlog Comp. of Employees					0.5380***	0.5229***
					[4.15]	[5.81]
Δlog Private HCE					-0.0470*	-0.0521***
					[1.84]	[4.26]
Δlog Population					0.1713	0.1669
					[0.43]	[0.27]
Δlog Index of Globalization					-0.0441	-0.0345
					[0.61]	[0.44]
Fixed Country Effects	No	Yes	No	Yes	No	Yes
Temporal Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	588	571	579	564	578	563
R-squared	0.20		0.24		0.31	
Number of n	18	18	18	18	18	18

Notes: Absolute value of t statistics in brackets (absolute values); * significant at 10%; ** significant at 5%; *** significant at 1%. The regressions in columns (1), (3) and (5) are estimated with heteroskedasticity and autocorrelation consistent (HAC) Newey-West type standard errors.

Table 3. Regression Results. 1971-2004. Dependent Variable: Δlog Public HCE (per capita). Post-Soviet policy changes.

	(1) RE	(2) DYN	(3) RE	(4) DYN	(5) RE	(6) DYN
Election	0.0064***	0.0069***	0.0047*	0.0059***	0.0041*	0.0052**
	[2.66]	[2.98]	[1.95]	[2.76]	[1.76]	[2.05]
Ideology	0.002	0.0009	0.0015	0.0014	0.0010	0.0010
	[0.98]	[0.31]	[0.75]	[0.55]	[0.49]	[0.44]
Coalition (2 or 3 parties)	-0.0018	-0.0032	-0.0006	-0.0013	-0.0008	0.0001
	[0.56]	[0.88]	[0.27]	[0.36]	[0.35]	[0.04]
Coalition (4 or more parties)	-0.0027	-0.0017	-0.0032*	0.0002	-0.0034**	0.0012
	[1.29]	[0.43]	[1.79]	[0.06]	[2.08]	[0.32]
Minority Government	-0.0008	-0.0022	-0.0013	-0.0031	-0.0007	-0.0009
	[0.27]	[0.67]	[0.55]	[0.78]	[0.27]	[0.23]
Post-Soviet Dummy	-0.0186*	-0.0262***	-0.0133	-0.0232**	-0.0062	-0.0157*
	[1.75]	[2.63]	[1.29]	[2.30]	[0.60]	[1.91]
Election* Post-Soviet Dummy	-0.0025	-0.0030	-0.0026	-0.0031	-0.0016	-0.0023
	[1.08]	[1.36]	[1.08]	[1.57]	[0.71]	[1.23]
Ideology* Post-Soviet Dummy	-0.0031	-0.0016	-0.0042**	-0.0024	-0.0047**	-0.0033
	[1.57]	[0.73]	[2.18]	[0.99]	[2.53]	[1.36]
Coalition (2 or 3 parties)* Post-Soviet Dummy	0.0006	0.0014	-0.0004	0.0011	-0.0013	1×10^{-5}
	[0.27]	[0.55]	[0.18]	[0.41]	[0.60]	[0.01]
Coalition (4 or more parties) *Post-Soviet Dummy	-0.0038**	-0.0030	-0.0039**	-0.0031*	-0.0031*	-0.0024
	[2.08]	[1.31]	[2.05]	[1.70]	[1.89]	[1.21]
Minority Government* Post-Soviet Dummy	0.0031	0.0028	0.0030	0.0027	0.0027	0.0023
	[1.49]	[1.33]	[1.39]	[1.24]	[1.24]	[1.11]
Δlog GDP (per capita)			0.5987***	0.3856**	0.2387*	0.0763
			[4.59]	[2.55]	[1.67]	[0.52]
Δlog Dependency Ratio			0.1049	0.0965	0.1142	0.1859
			[0.55]	[0.39]	[0.64]	[0.75]
Δlog Unemployment			0.0108	0.0117	0.0270*	0.0283**
			[0.68]	[0.88]	[1.76]	[2.10]
Lagged Dependent Variable		0.1825***		0.1735***		0.1658***
		[4.03]		[3.68]		[3.62]
Δlog Comp. of Employees					0.5304***	0.5146***
					[4.11]	[5.52]
Δlog Private HCE					-0.0462*	-0.0503***
					[1.79]	[4.02]
Δlog Population					0.1134	0.0278
					[0.29]	[0.04]
Δlog Index of Globalization					-0.0500	-0.0343
					[0.70]	[0.44]
Fixed Country Effects	No	Yes	No	Yes	No	Yes
Temporal Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	588	571	579	564	578	563
R-squared	0.22		0.26		0.32	
Number of n	18	18	18	18	18	18

Notes: Absolute value of t statistics in brackets (absolute values); * significant at 10%; ** significant at 5%; *** significant at 1%. The regressions in columns (1), (3) and (5) are estimated with heteroskedasticity and autocorrelation consistent (HAC) Newey-West type standard errors.

Table 4. Marginal Effects.

		(1) RE	(2) DYN	(3) RE	(4) DYN	(5) RE	(6) DYN
Election	1971-1990	0.008**	0.009***	0.007**	0.009***	0.006*	0.007***
		[2.50]	[3.54]	[2.01]	[3.65]	[1.68]	[2.69]
	Average	0.006***	0.007***	0.005*	0.006***	0.004*	0.005**
		[2.66]	[2.98]	[1.95]	[2.76]	[1.76]	[2.05]
	1991-2004	0.003	0.003	0.002	0.002	0.002	0.002
		[1.08]	[0.87]	[0.53]	[0.67]	[0.66]	[0.66]
Ideology	1971-1990	0.005	0.002	0.005*	0.003	0.005*	0.004
		[1.54]	[0.62]	[1.76]	[1.01]	[1.77]	[1.29]
	Average	0.002	0.001	0.002	0.001	0.001	0.001
		[0.98]	[0.31]	[0.75]	[0.55]	[0.49]	[0.44]
	1991-2004	-0.002	0.001	-0.003	-0.001	-0.005*	-0.003
		[0.60]	[0.25]	[1.31]	[0.37]	[1.80]	[0.76]
Coalition (2 or 3 parties)	1971-1990	-0.002	-0.004	-2×10^{-4}	-0.002	3×10^{-4}	1×10^{-4}
		[0.53]	[1.00]	[0.08]	[0.53]	[0.08]	[0.03]
	Average	-0.002	-0.003	-0.001	-0.001	-0.001	1×10^{-4}
		[0.56]	[0.88]	[0.27]	[0.36]	[0.35]	[0.04]
	1991-2004	-0.001	-0.001	-0.001	1×10^{-4}	-0.002	1×10^{-4}
		[0.35]	[0.33]	[0.41]	[0.02]	[0.87]	[0.04]
Coalition (4 or more parties)	1971-1990	5×10^{-4}	0.001	7×10^{-5}	-0.003	-7×10^{-4}	0.003
		[0.22]	[0.21]	[0.04]	[0.80]	[0.41]	[0.80]
	Average	-0.003	-0.002	-0.003*	2×10^{-4}	-0.003**	0.001
		[1.29]	[0.43]	[1.79]	[0.06]	[2.08]	[0.32]
	1991-2004	-0.007**	-0.005	-0.008**	-0.003	-0.007**	-0.002
		[2.06]	[1.13]	[2.34]	[0.76]	[2.43]	[0.36]
Minority Government	1971-1990	-0.003	-0.005	0.004	-0.005	-0.003	-0.003
		[0.85]	[1.26]	[1.06]	[1.14]	[0.83]	[0.66]
	Average	-0.001	-0.002	-0.001	-0.003	-0.001	-0.001
		[0.27]	[0.67]	[0.55]	[0.78]	[0.27]	[0.23]
	1991-2004	0.003	0.001	0.002	5×10^{-5}	0.003	0.002
		[0.95]	[0.26]	[0.92]	[0.01]	[0.95]	[0.43]

Notes: Absolute value of t statistics in brackets (absolute values); * significant at 10%; ** significant at 5%; *** significant at 1%.

Appendix Table A1. Descriptive Statistics and Data Sources

Variable	Obs	Mean	Std. Dev	Min	Max	Source
Public HCE (per capita)	619	18437.21	48549.44	72	270994	OECD Health Data Base (2007)
Election	619	0.17	0.30	0	0.967	Own Calculation
Election (regular)	619	0.11	0.25	0	0.952	Shi and Svensson (2006)/ Own Calculation
Election (irregular)	619	0.06	0.21	0	0.967	Shi and Svensson (2006)/ Own Calculation
Ideology	617	2.86	0.92	1	4	Potrafke (2009a)
Coalition (2 or 3 parties)	630	0.42	0.49	0	1	Own Calculation
Coalition (4 or more parties)	630	0.08	0.27	0	1	Own Calculation
Minority Government	616	0.24	0.43	0	1	Own Calculation
GDP (real terms, per capita, local currencies)	629	328307.90	822872.10	4647.21	4104613	Worldbank (2007)
Dependency ratio	619	52.66	5.97	42.6	73.5	OECD Health Data Base (2007)
Unemployment rate	615	5.84	4.12	0.1	23.9	OECD Health Data Base (2007)
Comp. of Employees	629	170817.80	434028.20	2382	2145271	OECD Health Data Base (2007)
Private HCE	618	4690.30	12094.43	37.80042	60617.99	OECD Health Data Base (2007)
Population	629	35399.85	59860.66	205	293657	OECD Health Data Base (2007)
KOF index of (overall) globalization	630	68.06	13.41	33.98	91.99	KOF – Swiss Economic Institute, Dreher (2006b)

Data description and sources

Variable	Description	Source
Public health care expenditures	Public expenditure on health Public current expenditure on health Public investment on medical facilities Public expenditure on - personal health care - medical services - curative and rehabilitative care - long-term nursing care - ancillary services - services not allocated by function - in-patient care - curative and rehabilitative in-patient care - long-term nursing in-patient care - day care - curative and rehabilitative day care - long-term nursing day care - out-patient care - physician services - dental services (all other public expenditure on out-patient care) - home health care - curative and rehabilitative home care - long-term nursing home care - ancillary services - clinical laboratory - diagnostic imaging - patient transport and emergency rescue (All other public miscellaneous ancillary services) - medical goods - pharmaceuticals and other medical non-durables - prescription medicines - over-the-counter medicines - other public medical non-durables - therapeutic appliances and other medical durables - collective health care - prevention and public health - health administration and insurance - preventive-curative health care - health R&D - long term care - current health and LTC expenditure - social services of LTC - hospitals' services - services of nursing and residential care facilities - services of ambulatory health care providers (for) retail sale and other providers of medical goods - services of public health organisations - services of public health administration - health services of other industries per capita, constant prices, national currencies	OECD Health Data Base (2007)
Gross domestic product (per capita)	GDP per capita is gross domestic product divided by midyear population. GDP at purchaser's prices is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the	Worldbank (2007)

	products. It is calculated without making deductions for depreciation of fabricated assets or for depletion and degradation of natural resources. Data are in constant local currency.	
Unemployment Rate	Total unemployment, % of labor force	OECD Health Data Base (2007)
Dependency Ratio	Population ages 15 to 64 is the percentage of the total population that is in the age group 15 to 64.	OECD Health Data Base (2007)
Compensation of Employees	The total remuneration in cash, or in kind, payable by enterprises to employees in return for work done by the latter during the accounting period (this includes contributions, paid or imputed, in respect of their employees to social security schemes and to private pension, family allowance, casualty insurance, life insurance and similar schemes). per capita, NCU at 2000 GDP price level	OECD Health Data Base (2007)
Private health care expenditures	Private expenditure on health Private current expenditure on health Private investment on medical facilities Private expenditure on • personal health care • medical services • curative and rehabilitative care • long-term nursing care • ancillary services • services not allocated by function • in-patient care • curative and rehabilitative in-patient care • long-term nursing in-patient care • day care • curative and rehabilitative day care • long-term nursing day care • out-patient care • physician services • dental services • (all other Private expenditure on out-patient care) • home health care • curative and rehabilitative home care • long-term nursing home care • ancillary services • medical goods • pharmaceuticals and other medical non-durables • prescription medicines • over-the-counter medicines • other Private medical non-durables • therapeutic appliances and other medical durables • collective health care • prevention and public health • health administration and insurance • preventive-curative health care • long term care • current health and LTC expenditure • social services of LTC • hospitals' services • services of nursing and residential care facilites • services of ambulatory health care providers • (for) retail sale and other providers of medical goods • services of Private health organisations • services of Private health administration	OECD Health Data Base (2007)

	• health services of other industries per capita, constant prices, national currencies	
Population	Total population (in thousands)	OECD Health Data Base (2007)
KOF Index of Globalization	The KOF Index of Globalization was introduced in 2002 (see Dreher, 2006a). The overall index covers the economic, social and political dimensions of globalization. It defines globalization to be the process of creating networks of connections among actors at multi-continental distances, mediated through a variety of flows including people, information and ideas, capital and goods. Globalization is conceptualized as a process that erodes national boundaries, integrates national economies, cultures, technologies and governance and produces complex relations of mutual interdependence. More specifically, the three dimensions of the KOF index are defined as: ♦ *economic globalization*, characterized as long distance flows of goods, capital and services as well as information and perceptions that accompany market exchanges; ♦ *political globalization*, characterized by a diffusion of government policies; and ♦ *social globalization*, expressed as the spread of ideas, information, images and people.	Dreher (2006b), Dreher et al. (2008b)