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**Partisan Cycles and Pre-Electoral Uncertainty**

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*Dresden Discussion Paper in Economics No. 1/03*

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## Partisan Cycles and Pre-Electoral Uncertainty

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### Abstract:

Rational partisan theory of political business cycles suggests differences in inflation under left-wing and right-wing governments. It also suggests temporary post-electoral booms after election of left-wing governments and temporary recessions after election of right-wing ones. However, the core hypothesis that post-electoral booms and recessions depend upon the degree of pre-electoral uncertainty has rarely been tested. Using pre-electoral polling data, we provide empirical evidence in favor of the hypothesis of the existence of rational partisan cycles. We also show that - in line with most previous empirical studies - there is little evidence for partisan cycles under adaptive expectations.

JEL-Classification: E 32

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## 1. Introduction

The aim of traditional business cycle theory is to develop policy proposals for a welfare maximizing government in order to smooth or eliminate cyclical fluctuations of aggregate activity. The critique of the assumption of welfare maximizing governments by the proponents of *New Political Economy*<sup>1</sup> led to a completely different perspective on business cycle theory. Building on Downs' (1957) idea of applying the market model to politics and to model politicians as agents maximizing their personal utilities, a new type of business cycle model, the so-called "politico-economic models of business cycles", evolved. In these models politicians (or governmental institutions) are identified as sources of macroeconomic instabilities. Over the last 25 years a variety of different politico-economic business cycle theories have been developed and tested empirically. Most of these models can be assigned to one of two subgroups: the "opportunistic" or the "partisan models".

The opportunistic models assume that the government is primarily interested in being reelected. Famous opportunistic models are those of Nordhaus (1975) and McRae (1977), which both start out from the assumption of adaptive expectations within the private sector. By making use of - at least temporarily - existing money illusion of the private sector the government actively creates business cycles in order to generate a situation in which it is likely to be reelected by short-sighted voters. The later opportunistic models of Cukierman and Meltzer (1986), Rogoff and Sibert (1988), Rogoff (1990), Persson and Tabellini (1990) and Herrendorf and Neumann (1997) are based on the assumption of rational expectations. In rational expectations models of political business cycles the basic reason for the incentive of the government to generate macroeconomic fluctuations is some kind of informational asymmetry between the private and the public sector.

In partisan models, governments of different political parties represent different interests, depending on the preferences of the groups they were supported by in the election. In contrast to opportunistic governments, partisan governments are not primarily interested in winning the next election.

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<sup>1</sup> Compare Arrow (1951), Dahl and Lindblom (1953), Downs (1957) and Buchanan and Tullock (1962).

In this article we will focus solely on partisan theory. Using data from OECD countries we test for partisan theory under both, adaptive and rational expectations. Our analysis is based on work by Alesina and Roubini (1992) who use panel regressions to uncover partisan effects of unemployment, output and inflation. Our analysis differs from most previous studies in several respects. First, we use monthly data (instead of yearly or quarterly) to be able to match election dates and macroeconomic effects more accurately. Second, we take the problem of non-stationary time-series into account. Third and most important, we use pre-electoral polling data to test how far pre-electoral uncertainty has a significant effect on the macroeconomic outcome as suggested by rational partisan theory instead of focussing solely on those elections which led to a change in government as Alesina and Roubini (1992) and the majority of other studies did.

The implications of partisan theory under adaptive and under rational expectations are the same as far as the predicted pattern of inflation is concerned. Our empirical analysis supports the hypothesis of partisan differences in the inflation rate under left-wing and right-wing governments. However, we find virtually no evidence in favor of partisan theory under adaptive expectations concerning the predicted pattern of unemployment rates. In contrast to that, pre-electoral uncertainty turns out to be a significant factor of the post-electoral development of unemployment, as rational partisan theory implies. We interpret our empirical findings as supportive of partisan theory under rational expectations.

In section 2 we will give a brief overview on adaptive and rational partisan theory. Section 3 deals with a condensed review of the empirical findings in respect to adaptive and rational partisan theory. In this context we will highlight some shortcomings of the existing empirical work on partisan theory, especially the fact that the central theoretical innovation of rational partisan theory, that partisan effects depend on *ex ante* electoral uncertainty, has rarely been tested. In section 4 we present the results of a panel regression of OECD countries to test for partisan effects. Section 5 draws some conclusions and makes some suggestions for future research.

## 2. Partisan theory

Soon after the Nordhaus-model was published, partisan theory started to develop. Hibbs (1977) denies the view that politicians are primarily interested in being reelected. As a consequence, the thesis of converging political programs resulting from the *median voter theorem* does not hold here. Instead it is assumed that different parties prefer different programs for ideological reasons. These political programs are closely related to the preferences of the people who support the party. After winning an election, the politicians will realize a partisan-policy that favors their supporters.

### 2.1. PARTISAN THEORY UNDER ADAPTIVE EXPECTATIONS

Hibbs' model (1977) employs a stable Phillips curve trade-off between unemployment and inflation which results from the assumption of adaptive price expectations and money illusion.<sup>2</sup> The inflation rate is assumed to be a policy instrument of the government. By fixing the inflation rate the government can influence unemployment (and aggregate output) systematically.

The typical assumption of partisan theory is that both left-wing and right-wing governments are interested in low inflation and low unemployment but to a different extent. While left-wing governments are supposed to put relatively more weight on the goal of low unemployment, right-wing governments are more concerned with the goal of stable prices.<sup>3</sup> In consequence, left-wing and right-wing governments choose different combinations of inflation and unemployment and thus different points on the Phillips curve. Left-wing governments choose relatively high inflation rates and thereby end up

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<sup>2</sup> By Okun's law the model can be rewritten in terms of aggregate output instead of unemployment.

<sup>3</sup> Hibbs (1977) argues that the major group of supporters of right-wing parties comes from the upper middle class. This group regularly holds considerable amounts of nominally fixed assets and is likely to suffer from cold progression in progressive tax systems. That is why the upper middle class is comparatively inflation averse. The supporters of left-wing governments typically have lower incomes and lower wealth, in addition to which human capital takes a large proportion of their wealth. Thus, supporters of left-wing governments have relatively less to lose in inflationary times. Because of their lower level of nominal wealth and the fact that their jobs are typically less secure than those of the upper middle class the supporters of left-wing governments are more concerned with the goal of high employment.

with relatively low unemployment rates, while right-wing governments accept higher degrees of unemployment to guarantee more price stability.

In summary, under adaptive partisan theory we should be able to observe partisan differences in inflation and unemployment that depend on the political orientation of the current government.

## 2.2. RATIONAL PARTISAN THEORY

The paradigm of rational expectations has had a major influence on economic theory, even political business cycle theory. Alesina (1987,1988) was the first to develop partisan models of business cycles under the assumption of rational expectations of the private sector. From a modelling point of view, rational partisan theory is based upon the models of time inconsistency of Kydland and Prescott (1977) and Barro and Gordon (1983a,b). As is well known, these models end up with an *inflationary bias*, i.e. a suboptimal high but fully anticipated inflation rate. The magnitude of the bias depends on the weights the monetary authority assigns to the goals of price stability and high employment as well as on the ambitious employment target the monetary authority tries to reach. Since, as has been discussed earlier, left-wing governments put more weight on the ambitious output target, they generate higher inflation rates than right-wing governments. Thus, the implications of Hibbs' (1977) and Alesina's (1987,1988) models do only slightly differ with respect to partisan differences in inflation.<sup>4</sup>

However, the two models have different implications for the pattern of unemployment (output). In Alesina's (1987,1988) model the case for political business cycles results from pre-electoral uncertainty about the election outcome. In wage negotiations well before elections, trade unions have to build some expectation of the election outcome in order to decide on the wage rate optimally. They will anticipate some weighted average of inflation rates under left-wing and right-wing governments. The anticipated inflation

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<sup>4</sup> Under rational expectations, the inflation rate under right-wing (left-wing) governments tends to decrease (increase) slightly in the course of the term of office. This is due to the fact that in the election period the optimal choice of the inflation rate also depends on the preferences of the competing party while this is not the case in non-election-periods. While we do not test for this effect directly it is consistent with the empirical test we apply.



rate turns out to be wrong whenever the election outcome has not been expected with certainty. Thus, when a right-wing government wins the election, the anticipated inflation rate turns out to be too high resulting in a post-electoral recession (i.e. an increasing unemployment rate and a decreasing aggregate output). Analogously, a public vote for a left-wing government should cause a post-electoral boom. Moreover, the magnitude of recessions and booms should be positively correlated to the degree of the electoral surprise (i.e. the post-electoral effect on unemployment (output) should be more pronounced when the election result was somewhat unexpected by the public). In non-election periods, therefore, there is no uncertainty about the government's type and the inflation rate is correctly anticipated. Obviously, unemployment equals its natural rate in these periods.

While the empirical implications of rational partisan theory with respect to inflation are somewhat similar as under adaptive expectations (left-wing governments generate higher inflation rates than right-wing governments), the expected patterns for unemployment obviously differ. According to rational partisan theory we should be able to observe short-term recessions soon after (at least somewhat) unexpected elections of right-wing governments and short-term booms after unexpected elections of left-wing governments. The magnitude of these booms and recessions should depend positively on the electoral surprise of the election outcome.

### **3. A review of previous empirical results**

During the last 25 years, political business cycle theory has been subject to many empirical studies.<sup>5</sup> In the following we will briefly review the basic results of empirical studies dealing with partisan theory.

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<sup>5</sup> For an overview on the results of empirical studies on political business cycles see e.g. Belke (2000).

### 3.1. PARTISAN THEORY UNDER ADAPTIVE EXPECTATIONS

As shown in the previous section, partisan theory under adaptive expectations implies that left-wing governments generate higher inflation rates and lower unemployment throughout the whole period of office than right-wing governments.

With respect to partisan differences in inflation rates, Alesina and Rosenthal (1995) find significant evidence for the United States in support of partisan theory under adaptive expectations. For the same country, however, Haynes (1995) finds differences in inflationary patterns which are not statistically significant. Similarly, Alesina and Roubini (1992) find marginally insignificant partisan effects of inflation in a panel analysis of 18 OECD countries. For a smaller subsample of 8 so-called "bi-partisan-countries" with very pronounced left-wing and right-wing parties, the partisan effects turn out to be significant. Significant partisan effects of inflation were also discovered in the studies by Alesina (1989), Neumann (1989) and Paldam (1979). Berger and Woitek (1997) find no robust evidence in favor of partisan differences in inflation in German data and a study for Chile by Edwards (1993) rejects significant partisan differences in inflation.

There is also a considerable number of empirical studies trying to discover partisan differences in monetary policy instruments. Chappell and Keech (1988) find significant partisan effects with respect to the growth of the monetary aggregate  $M_1$ . Similar results were obtained by Alesina and Sachs (1988), Alesina (1988) and Havrilesky (1987). Studying the voting behavior of the members of the Federal Open Market Committee (FOMC), McGregor (1996) concludes that partisan effects played a major role herein. A similar analysis by Lang and Welzel (1992) for Germany comes to the same result. On the other hand Vaubel (1993) was not able to discover partisan behavior of German Bundesbank.

Hibbs (1977) finds evidence for permanent partisan effects of unemployment in the United States and the United Kingdom. Most other studies were not able to find permanent differences in unemployment or output (see e.g. Berger and Woitek (1997)). In

their panel analysis of 18 OECD countries Alesina and Roubini (1992) find significant partisan effects neither of unemployment nor of output growth.

Altogether we might conclude that the empirical support towards partisan theory under adaptive expectations is quite weak. While significant partisan effects towards inflation (or the underlying instruments of monetary policy) were often discovered, there is virtually no evidence in favor of permanent partisan differences in unemployment or output growth.

### 3.2. PARTISAN THEORY UNDER RATIONAL EXPECTATIONS

Since the implications of rational partisan theory with respect to inflation are the same as under adaptive expectations, we can refer to the studies summarized in the previous subsection for empirical results on inflation.

There are several empirical studies which try to discover temporary partisan effects of unemployment (and/or output) for the United States. The studies by Alesina (1988), Alesina and Sachs (1988), Chappell and Keech (1988), Sheffrin (1989), Alesina, Londregan and Rosenthal (1991), Klein (1996) and Alesina and Rosenthal (1995) all find evidence they interpret as being in line with rational partisan theory. There are also a number of single country studies which reject temporary partisan effects of unemployment, e.g. Alogoskoufis and Philippopoulos (1991) for Greece; Annett (1993) for Ireland; Crosby, Brown and Malady (1995) for Australia and Berger and Woitek (1997) for Germany. Sheffrin (1989), Haynes and Stone (1994) and Zaleski (1992) reject rational partisan theory for U.S. data. In their panel analysis of 18 (inflation) respective 14 (unemployment) OECD countries Alesina and Roubini (1992) report results they interpret as supportive to partisan theory under rational expectations.

Altogether the empirical evidence towards rational partisan theory is somewhat mixed. We suppose this to be due to several shortcomings which shall be addressed in the following.

First, it should be noted that a large part of the empirical evidence in favor of rational partisan theory was obtained on the basis of U.S. data. This is especially true for evidence

on the predicted pattern of unemployment rates and output. Sheffrin (1989, p. 251) states: „The theory of rational partisan business cycles should apply to other democracies besides the United States. However, there have been few tests of the theory outside the United States with its relatively scarce number of observations.”<sup>6</sup> This critique is still valid. Especially multi-country studies, such as that conducted by Alesina and Roubini (1992), are very scarce.

Second, most of the studies use low-frequency data (annual, quarterly). It might be suspected that doing so causes considerable biases in most empirical designs. This can easily be shown at the example of annual data. When one is trying to discover temporary effects in unemployment, when exactly the election took place plays an important role, i.e. the results will depend heavily on whether the elections took place in January or in December. To be able to design an empirical analysis properly it is therefore highly useful to use monthly data.<sup>7</sup>

Third, most of the empirical studies do not test for stationarity of the times series of unemployment and inflation (see Belke (2000)). Thus, it is possible that a considerable proportion of the results in favor of rational partisan theory is in fact the result of spurious correlation.<sup>8</sup>

Last but by far not least, most empirical studies of temporary partisan effects on unemployment (output) are misspecified. The majority of studies investigates whether the election of a right-wing government caused a post-electoral temporary recession and whether the appointment of a left-wing government induced a temporary boom. In their panel study, Alesina and Roubini (1992, p. 669) argue that these studies are misspecified because „... for long periods of time in many countries in the sample certain parties repeatedly won elections with virtually no political uncertainty”. Therefore they decide to concentrate on those elections which led to a change in government orientation, i.e. changes from left-wing to right-wing governments or the other way round. Obviously it

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<sup>6</sup> For a similar opinion compare Belke (2000).

<sup>7</sup> See Berger and Woitek (1997), p. 181 for a similar view.

<sup>8</sup> We will address the problem of stationarity and spurious correlation in the next section in more detail.

is also possible that it comes as a surprise for a government to be reelected. Similarly a change in government might have been expected by the public. Thus, the test by Alesina and Roubini (1992) is not an adequate test of rational partisan theory. This fact is even implicitly admitted by the authors when they state „Rather than trying to estimate the degree of political uncertainty in every period, which would be rather difficult, we have chosen to estimate a somewhat weaker form of RPT, testing for temporary effects on real variables after actual changes of governments”. In his critical survey of empirical work on partisan theory Hibbs (1992, p. 366) therefore concludes „Oddly, the RPT’s central theoretical innovation - partisan effects depend on ex ante electoral uncertainty - never has been tested”. Since Hibb’s (1992) critique only a few attempts have been made to include electoral uncertainty explicitly in the analysis. Regularly these studies make use of pre-electoral polling data. Belke (1996) finds evidence in favor of rational partisan theory for Germany and the United States. Similar results were obtained by Alesina, Roubini and Cohen (1997) for the United States.<sup>9</sup>

#### 4. Empirical results

We will now turn to a multi-country study of partisan theories of the business cycle. Similar to Alesina and Roubini (1992) we conduct so-called panel-regressions to study the existence of partisan effects. In contrast to Alesina and Roubini (1992), we use more highly frequent (monthly) inflation and unemployment data and explicitly consider the properties of the time series of inflation and unemployment. With respect to rational partisan theory we apply a more direct test of the hypothesis of post-electoral business cycles caused by pre-electoral uncertainty about the election result by using polling data.

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<sup>9</sup> We will discuss these studies in more detail in the next section.

#### 4.1. DATA

The choice of our sample is primarily due to the availability of monthly data for inflation and unemployment.<sup>10</sup> Because of incomplete time series, Greece and New Zealand had to be excluded from the analysis.<sup>11</sup> To run empirical tests of Partisan theory it is necessary to classify governments into left- and right-wing ones. While this is comparatively easy to do in countries with pure two-party systems the classification is somewhat more problematic when coalition governments were in office. In the latter case we decided to classify the government according to the party the head of government is coming from. We had to exclude some further countries from the analysis due to certain features of the political landscape or the institutional setting. First, countries without a democratically legitimated government should not enter the sample. That is why the time series of Spain and Portugal are not considered before 1977:06 and 1975:04, respectively. Second, the tests require a minimum degree of political stability in the countries under consideration. Since Portugal went through as many as 10 different governments during its first 7 years of democracy we further restricted the Portuguese sample to a starting point of 1982:04. Because of its generally low degree of political stability we also deleted Italy completely from the sample. Since most of the empirical tests require both left- and right-wing governments in the sample we thirdly excluded those countries where the government orientation did not change at all (Japan, Switzerland).<sup>12</sup> Belgium was excluded because we found no reasonable way to classify the governments (primarily due to the fact that most of the time there were coalitions of the major left-wing and right-wing parties). Last but not least the sample period of all countries which actually take part in the EMU was

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<sup>10</sup> We did not consider aggregate output since output data are regularly not available on a monthly basis. The analysis of instrument variables such as monetary aggregates or interest rates are beyond the scope of this paper.

<sup>11</sup> It should be noted that missing data in the time series were closed via linear interpolation.

<sup>12</sup> While it is principally possible to leave these countries in the sample when running panel regressions we decided not to do so since we feel more comfortable with having at least one observation of every type of government in the sample.

restricted to the end of 2000<sup>13</sup> since the governments of these countries transferred their monetary authorities to a supranational institution, the European Central Bank.

We use the consumer price index (CPI, all items) to calculate the monthly inflation rate. The inflation sample consists of 17 OECD countries. The raw CPI data had to be extracted from various databases. The sample periods and the sources of the CPI data are shown in table I. We used Census X12 to seasonally adjust the CPI time series.<sup>14</sup> The monthly reported year-on-year inflation rate was calculated as

$$w_{P_t} = \frac{P_t - P_{t-12}}{P_{t-12}} \quad (1)$$

with  $P_t$  being the consumer price index at time  $t$ .

Similar to the CPI data, monthly standardized unemployment rates<sup>15</sup> had to be taken from several different sources (compare table II). To exclude seasonal effects we again used seasonally adjusted time series.

Besides economic data we also used political data on election dates, election outcomes and party preferences. The data on election dates, outcomes and party preferences come from various country-specific sources (compare table III). Additional information on election results was taken from Caramani (2000) and several internet pages.<sup>16</sup> To classify the relevant parties with respect to their party preferences (left or right) we primarily used Ismayr (1999) and von Beyme (1985).

#### 4.2. PARTISAN DIFFERENCES IN INFLATION RATES

We will first focus on partisan differences with respect to the inflation rate. According to both, partisan theory under both adaptive and rational expectations, we should be able to observe permanently higher inflation rates under left-wing than under right-wing governments. To get a first impression on the empirical relevance of this hypothesis we

<sup>13</sup> We did not restrict the sample to the exact beginning of EMU (which was 1.1.1999) since national monetary policies affected macroeconomic variables with a time lag.

<sup>14</sup> We used EViews 4.0 for this purpose. All following empirical tests were also done with EViews.

<sup>15</sup> Unemployment rates for Norway were available on a quarterly basis only. We transformed the time series to a monthly one via linear interpolation.

<sup>16</sup> See the following internet-pages: [www.bundestag.de](http://www.bundestag.de), [www.gallup.com](http://www.gallup.com), [www.electionworld.org](http://www.electionworld.org) and [www.klipsan.com/elecnew.htm](http://www.klipsan.com/elecnew.htm).

Table I. Sample data for CPI-inflation.

Country	Data source	Sample period
Australia (AUS)	Australian Bureau of Statistics	1952:01-2001:10
Austria (AUT)	OSTAT	1957:01-2000:00
Canada (CAN)	International Financial Statistics (IMF)	1957:01-2001:08
Denmark (DEN)	Main Economic Indicators (OECD)	1960:01-2001:09
Finland (FIN)	International Financial Statistics (IMF)	1957:01-2000:00
France (FRA)	International Financial Statistics (IMF)	1957:01-2000:00
Germany (GER)	Federal Statistical Office	1952:01-2000:00
Iceland (ICE)	Main Economic Indicators (OECD)	1976:01-2001:10
Ireland (IRE)	Main Economic Indicators (OECD)	1962:01-2000:00
Luxembourg (LUX)	International Financial Statistics (IMF)	1957:01-2000:00
Netherlands (NET)	International Financial Statistics (IMF)	1957:01-2000:00
Norway (NOR)	International Financial Statistics (IMF)	1957:01-2001:09
Portugal (POR)	International Financial Statistics (IMF)	1957:01-2000:00
Sweden (SWE)	Main Economic Indicators (OECD)	1962:01-2000:00
Spain (SPA)	International Financial Statistics (IMF)	1977:06-2000:00
United Kingdom (UK)	International Financial Statistics (IMF)	1957:01-2001:08
United States (USA)	Bureau of Labor Statistics	1950:01-2001:10

Table II. Sample data for unemployment.

Country	Data Source	Sample period
Australia (AUS)	Australian Bureau of Statistics	1966:08-2001:10
Austria (AUT)	OSTAT	1960:01-2000:12
Canada (CAN)	Main Economic Indicators (OECD)	1962:01-2001:10
Denmark (DEN)	Main Economic Indicators (OECD)	1960:01-2001:09
Finland (FIN)	Central Statistic Office Finland	1960:01-2000:12
France (FRA)	INSEE	1967:12-2000:12
Germany (GER)	Deutsche Bundesbank	1952:01-2000:00
Iceland (ICE)	Statistics Iceland	1976:01-2001:10
Ireland (IRE)	Main Economic Indicators (OECD)	1960:01-2000:12
Netherlands (NET)	Main Economic Indicators (OECD)	1970:01-2000:12
Norway (NOR)	Main Economic Indicators (OECD)	1972:01-2001:08
Portugal (POR)	Main Economic Indicators (OECD)	1983:01-2000:12
Sweden (SWE)	Main Economic Indicators (OECD)	1970:01-2000:10
Spain (SPA)	Main Economic Indicators (OECD)	1977:06-2000:12
United Kingdom (UK)	Department of Unemployment UK	1971:01-2001:10
United States (USA)	Main Economic Indicators (OECD)	1950:01-2001:10



Table III. Sources of political data.

Country	Source
Australia	Banks (1994)
Austria	Pelinka (1999)
Canada	Banks (1994)
Denmark	Nannestad (1999)
Finland	Auffermann (1999)
France	Kempf (1999)
Germany	Ismayr (1999)
Iceland	Eythorsson and Jahn (1999)
Ireland	Elvert (1999)
Luxembourg	Schroen (1999)
Netherlands	Lepszy (1999)
Norway	Groß and Rotholz (1999)
Portugal	Merkel and Stiehl (1999)
Sweden	Jahn (1999)
Spain	Barrios (1999)
United Kingdom	Sturm (1999)
United States	Banks (1994)

do some descriptive analysis via comparing the inflation rates under left-wing and right-wing governments on a country base. Since inflation (as well as other macroeconomic variables) responds slowly to policy changes we study various lags ( $x=0,3,6,9$  and 12 months). Table IV shows the results for the countries in the sample for a lag of  $x=3$  months.<sup>17</sup> Column 2 contains the average inflation rate in the given country. Columns 3 and 4 show the average inflation rate under right-wing respective left-wing governments (number of observations in parentheses). To test whether the differences we found are significant we first test for equalities of variances (column 5) and then run a t-test on the significance of the mean inflation rates under left-wing and right-wing governments. The t-value of this test is reported in column 6, the referring level of significance in column 7. The last column 8 summarizes whether the findings are in line with the hypothesis of permanent partisan differences in the inflation rate.<sup>18</sup>

<sup>17</sup> We do not report the results for the other four lags, here. The results do only differ slightly.

<sup>18</sup> The used symbols should be interpreted as follows: "+" means that the observed difference in inflation rates is in line with theory, but insignificant. Accordingly "-" indicates that the observed difference contradicts to partisan theory. A "++" or "--" indicates that the findings are significant to the  $\alpha=90\%$ -confidence-level.

Table IV. CPI inflation under left-wing and right-wing governments (x=3)

country	$\emptyset$	$\emptyset$ r-w g.	$\emptyset$ l-w g.	sig. var.	t-value	sig. inf	theory- conform
AUS	5.32	4.56 (395)	6.89 (191)	0.03	-6.65	0.00	++
AUT	3.79	3.12 (154)	4.07 (362)	0.00	-4.57	0.00	++
CAN	4.46	3.33 (183)	5.06 (341)	0.00	-5.96	0.00	++
DEN	5.92	5.96 (165)	5.90 (324)	0.01	0.14	0.89	-
FIN	6.06	4.79 (242)	7.19 (274)	0.00	-6.43	0.00	++
FRA	5.66	6.18 (363)	4.43 (153)	0.07	4.54	0.00	--
GER	2.89	2.13 (395)	4.56 (181)	0.00	-16.81	0.00	++
ICE	22.93	17.82 (194)	32.47 (104)	0.01	-5.58	0.00	++
IRE	7.43	5.89 (305)	10.53 (151)	0.00	-8.41	0.00	++
LUX	3.74	7.22 (65)	3.23 (451)	0.04	11.49	0.00	--
NET	3.97	3.53 (348)	4.89 (168)	0.00	-5.29	0.00	++
NOR	5.47	5.49 (178)	5.46 (347)	0.00	0.10	0.92	-
POR	9.84	9.19 (120)	10.68 (93)	0.00	-1.38	0.17	+
SWE	5.92	8.03 (108)	5.27 (350)	0.00	7.06	0.00	--
SPA	7.71	9.05 (110)	6.80 (161)	0.00	3.96	0.00	--
UK	6.44	5.71 (347)	7.87 (177)	0.00	-4.47	0.00	++
USA	4.04	4.10 (344)	3.97 (266)	0.00	0.53	0.60	-

The evidence is somewhat mixed. In 9 out of 17 countries, we find differences in the inflation rate that are significantly in line with partisan theory (Australia, Austria, Canada, Finland, Germany, Iceland, Ireland, the Netherlands and United Kingdom). We also find significantly contradicting results in 4 countries (France, Luxembourg, Sweden

and Spain). For Denmark, Norway, Portugal and the United States we find no significant differences in the inflation rate under left- and right-wing governments.

However, the results of this descriptive test have to be interpreted very carefully. Since most of the countries in our sample are engaged in international trade and considerable financial linkages exist between these countries, we should take international interdependencies, e.g. imported inflation, into account.

It is also quite likely that the (relatively long) time series of CPI inflation (and unemployment) are subject to structural breaks, e.g. in consequence of the 1970's oil price crises. More than 75% of the countries in the sample are EU members and most of them started qualifying for the EMU in the early 1990s. According to the Maastricht Treaty's inflation criterion several countries had a strong incentive to lower their inflation rate in order to be allowed to take part in the European Monetary Union. While the problem of structural breaks can generally be solved by analyzing appropriate subperiods of the whole sample period, the remaining periods are often quite short. To be able to discover partisan effects at least some observations for both basic types of governments have to be available. Due to the fact that political elections and changes in government are relatively rare events, it is often impossible to divide the country samples into shorter sub-samples without structural breaks.

In addition, when testing for unit-roots in the time series of monthly reported year-on-year CPI inflation it becomes obvious that the results of the often applied and above presented descriptive test might be misleading. An ADF-test reveals that for 15 out of 17 time series the hypothesis of unit-roots cannot be rejected at a 90%-significance-level (exceptions are the United Kingdom and Norway). Thus, when one is using the earlier described time series of monthly reported year-on-year CPI inflation in regression analysis, the problem of spurious correlations might occur (compare e.g. Harvey (1990), p. 59).

Our empirical design builds up on Alesina and Roubini's (1992) approach to pool the data. We then run pooled least squares (PLS) regressions with fixed effects. By doing so we allow for long-term country-specific effects while assuming the other parameters of

the model to be constant and equal across all countries in the sample. Structural breaks can then be captured by additional dummy variables without causing the data set to shrink below a critical level. To correct for international dependencies we follow Alesina and Roubini (1992) and add the average CPI inflation rate of the G7 countries<sup>19</sup> as additional regressor to the panel regressions.<sup>20</sup>

The problem of non-stationarity can be solved by using the first differences of the monthly reported year-on-year inflation rates, which are regularly stationary. The major disadvantage of doing so is that all information on the absolute level of inflation is lost. Since it is primarily the level of inflation which we are interested in, we decided to solve the problem by different means. The problem of non-stationarity of the monthly reported year-on-year inflation rate is at least partially due to the method of calculating year-on-year inflation rates. This problem does not occur when using monthly inflation

$$w_{P_t} = \frac{P_t - P_{t-1}}{P_{t-1}}. \quad (2)$$

ADF-tests reveal that for all countries in the sample but Iceland<sup>21</sup> the hypothesis of a unit-root can be rejected at a 90%-confidence-level. Different from Alesina and Roubini (1992) we therefore use monthly inflation for our empirical test.

Thus, we end up with the following panel regression equation<sup>22</sup>

$$\begin{aligned} w_{P_t}^i = & \alpha_1 \cdot w_{P_{t-1}}^i + \dots + \alpha_n \cdot w_{P_{t-n}}^i \\ & + \alpha_{n+1} \cdot D^{AUS} + \dots + \alpha_m \cdot D^{USA} + \alpha_{m+1} \cdot D_t^{EMU} \\ & + \alpha_{m+2} \cdot w_{P_t}^{G7} + \alpha_{m+3} \cdot D_{t-x}^{Partisan,i} + \epsilon_t^i \end{aligned} \quad (3)$$

<sup>19</sup> The CPI data of the G7 countries were taken from OECD's Main Economic Indicators. Since there are no data for the average CPI inflation rate of the G7 countries before 1963 the sample for the panel regression is a little bit smaller than in the descriptive test.

<sup>20</sup> Even if the G7-variable is quite powerful we decided to enter it into the regression equation since there is no other obvious way to correct for international dependencies.

<sup>21</sup> We decided not to delete Iceland from the sample since the test on unit-roots was only marginally significant. The basic results of all following tests are not influenced by this decision.

<sup>22</sup> Principally, the regression could also be run with appropriate instrument variables (e.g. monetary aggregates or interest rates) instead of inflation. In this paper we focus exclusively on the final target-variable inflation. One could also think about estimating a structural model including other variables that can be supposed to influence inflation. However, we think the country-specific effects to be captured adequately by the country dummies and the lag structure of the endogenous variable. The international interdependency is captured by the G7-variable.

with  $w_{P_t}^i$  being the monthly CPI inflation rate at time  $t$  in country  $i$ ,  $w_{P_t}^{G7}$  being the average monthly reported monthly inflation rate of the G7-countries,  $x$  being the time-lag of changes in monetary policy and  $\epsilon_t$  being the unexplained residual.  $D^{AUS}$  is one of the country dummies which is defined as

$$D^{AUS} := \begin{cases} 1 & ; \text{ for observations from Australia} \\ 0 & ; \text{ else.} \end{cases} \quad (4)$$

The country dummies are used to capture country specific effects as they, for example, result from different levels of central bank independence.<sup>23</sup> The more independent a central bank is the less pronounced the political business cycles should be. The other country dummies (one for each country in the sample) are defined accordingly.  $D^{EMU}$  is a dummy variable covering the transitional phase to the EMU as well as the time since beginning of the EMU. It is defined as

$$D_t^{EMU,j} := \begin{cases} 1 & ; \text{ for } t > 1992 : 12 \\ 0 & ; \text{ else} \end{cases} \quad (5)$$

for each country  $j$  being in the European Union. Since the countries needed some time to react on the Maastricht Treaty we decided to define the EMU dummy from 1992:12 onwards. We also tested for several other dummies for possible structural breaks (as e.g. the end of Bretton Woods<sup>24</sup>) but they all turned out to be insignificant. The central partisan dummy variable  $D_t^{Partisan,i}$  is defined as

$$D_t^{Partisan,i} := \begin{cases} 1 & ; \text{ if a right-wing government is in office in period } t \\ -1 & ; \text{ if a left-wing government is in office in period } t \end{cases} \quad (6)$$

According to partisan theory under both adaptive and rational expectations we should find a significantly negative coefficient for the partisan dummy.

<sup>23</sup> Similarly to Alesina and Roubini (1992) we therefore do not include an additional proxy variable for central bank independence. Whenever the degree of central bank independence is subject to changes in the course of time it would be useful to include time-variant indices of central bank independence into the regression. However, we did not find appropriate time series of indices of central bank independence in the literature.

<sup>24</sup> Including the Bretton Woods dummy into the regressions, even though highly insignificant, does not change our results. The level of significance of the coefficient of the central partisan dummy slightly increases in this case. The results are also stable when we exclude all observations during the Bretton Woods regime, i.e. the begin of the sample period is set to 1971 or 1973.

Table V. Panel regression permanent partisan effects on inflation.

Variable	x=0	x=3	x=6	x=9	x=12
$w_{P_{t-1}}$	0.0997 (8.80)	0.0999 (8.82)	0.1001 (8.84)	0.0999 (8.82)	0.0100 (8.83)
$w_{P_{t-2}}$	0.2422 (22.19)	0.2423 (22.20)	0.2426 (22.23)	0.2424 (22.22)	0.2425 (22.23)
$w_{P_{t-3}}$	0.2944 (26.33)	0.2944 (26.34)	0.2946 (26.35)	0.2946 (26.36)	0.2947 (26.37)
$w_{P_t}^{G7}$	0.3422 (15.66)	0.3422 (15.66)	0.3423 (15.66)	0.3420 (15.65)	0.3425 (15.67)
$D^{EMU}$	-0.0381 (-2.25)	-0.03744 (-2.22)	-0.0363 (-2.16)	-0.0368 (-2.19)	-0.0356 (-2.12)
$D_{t-x}^{Partisan}$	-0.0123 (-1.98)**	-0.0119 (-1.92)**	-0.0100 (-1.62)	-0.0128 (-2.07)**	-0.0103 (-1.68)*
$D^{AUS}$	0.0468	0.0465	0.0459	0.0466	0.0459
$D^{AUT}$	-0.0235	-0.0235	-0.0229	-0.0241	-0.0231
$D^{CAN}$	0.0084	0.0083	0.0086	0.0078	0.0085
$D^{DEN}$	0.0407	0.0404	0.0401	0.0401	0.0398
$D^{FIN}$	0.0499	0.0496	0.0492	0.0492	0.0490
$D^{FRA}$	0.0324	0.0321	0.0311	0.0326	0.0313
$D^{GER}$	-0.0342	-0.0345	-0.0351	-0.0341	-0.0350
$D^{ICE}$	0.4350	0.4343	0.4328	0.4341	0.4328
$D^{IRE}$	0.0888	0.0882	0.0869	0.0883	0.0868
$D^{LUX}$	-0.0167	-0.0167	-0.0159	-0.0175	-0.0163
$D^{NET}$	-0.0042	-0.0044	-0.0054	-0.0039	-0.0052
$D^{NOR}$	0.0296	0.0294	0.0293	0.0288	0.0289
$D^{POR}$	0.1590	0.1583	0.1570	0.1581	0.1567
$D^{SPA}$	0.0975	0.0971	0.0968	0.0966	0.0964
$D^{SWE}$	0.0346	0.0345	0.0349	0.0338	0.0345
$D^{UK}$	0.0781	0.0777	0.0768	0.0781	0.0769
$D^{USA}$	0.0049	0.0045	0.0041	0.0045	0.0040
$r^2$	46.74	46.73	46.73	46.74	46.73

The regression results are shown in table V.<sup>25</sup> Three lags of the dependent variable were necessary to correct for autocorrelation.<sup>26</sup> For all lags (x=0,3,6,9,12) we find a negative coefficient for the partisan dummy. For the lags x=0,3,9 the partisan dummy is

<sup>25</sup> The table shows the estimated coefficients. The values in parentheses are the referring t-values. Significance levels for the central partisan dummy are reported as follows: '\*' for a 90%-significance-level, '\*\*' for 95% and '\*\*\*' for more than 99%.

<sup>26</sup> The number of lags of the dependent variable was determined via an inspection of the autocorrelation diagram. Following Stier (2001) we included all successive lags for which the partial autocorrelation was different from zero on a confidence-level of 95%.

significant at the 95%-confidence-level, for the lag  $x=12$  at the 90%-confidence-level. For the lag  $x=6$  the partisan dummy is marginally insignificant. The EMU-dummy as well as the average G7 CPI inflation rate turn out to be highly significant for all of the analyzed lags of the partisan dummy.<sup>27</sup>

Altogether, we interpret our empirical results with respect to inflation to be supportive of partisan theory. For 4 out of 5 lag structures we find statistically significant coefficients which are in line with partisan theory. For the lag  $x=6$  the coefficient is marginally insignificant. In contrast to the study of Alesina and Roubini (1992) we do not have to restrict our sample to a subsample of so-called bi-partisan countries (with very pronounced differences between left-wing and right-wing governments) to find significant partisan differences in the inflation rates.

#### 4.3. PARTISAN DIFFERENCES IN UNEMPLOYMENT

Since the implications of partisan theory under adaptive and under rational expectations differ with respect to the expected unemployment pattern it seems to be reasonable to split the analysis into two parts. We start out with a test of the existence of permanent partisan differences in unemployment, as predicted by partisan theory under adaptive expectations, and then turn to an analysis of temporary unemployment effects as they result from rational partisan theory. In partisan theory under both adaptive and rational expectations, partisan differences in unemployment finally result from monetary policy rather than fiscal policy. We therefore do not study fiscal policy instruments as is often done with respect to opportunistic political business cycle theory.

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<sup>27</sup> It is well known that the correlation between the error term and the lagged dependent variables might lead to inconsistent estimates of the parameters in dynamic fixed-effects models (Hsiao (1986)). However, Hsiao (1986) also showed that this problem does not occur in panel sets with large numbers of time-series observations per country. Since our shortest time series consists of more than 240 observations the parameter estimates of our model are consistent.

4.3.1. *Permanent effects*

Again we begin with some descriptive statistics. In table IV, we show the results of the comparison of unemployment rates under left-wing and right-wing governments in the sample countries for the case of a time lag of 6 months.<sup>28</sup>

Table VI. Unemployment rates under left-wing and right-wing governments (x=6)

country	$\emptyset$	$\emptyset$ r-w g.	$\emptyset$ l-w g.	sig. var.	t-value	sig. alq	theory- conform
AUS	6.18	5.08 (232)	7.53 (191)	0.19	-10.27	0.00	--
AUT	3.93	2.95 (137)	4.31 (355)	0.00	-7.65	0.00	--
CAN	7.65	8.68 (138)	7.23 (332)	0.00	6.31	0.00	++
DEN	7.12	7.63 (138)	6.37 (92)	0.59	6.29	0.00	++
FIN	5.67	6.36 (221)	5.11 (271)	0.00	3.12	0.00	++
FRA	7.68	6.36 (247)	9.86 (150)	0.00	-11.26	0.00	--
GER	5.84	6.61 (290)	4.54 (178)	0.00	5.46	0.00	++
ICE	1.55	1.99 (234)	0.79 (140)	0.00	8.24	0.00	++
IRE	10.49	9.45 (350)	13.07 (142)	0.00	-9.75	0.00	--
NET	5.76	6.59 (225)	4.49 (147)	0.00	10.12	0.00	++
NOR	3.26	2.91 (108)	3.41 (248)	0.00	-2.92	0.00	--
POR	6.38	6.15 (130)	6.73 (86)	0.00	-2.48	0.01	--
SWE	3.63	4.04 (108)	3.46 (273)	0.03	2.27	0.02	++
SPA	19.23	17.13 (110)	20.10 (161)	0.64	-7.91	0.00	--
UK	6.11	7.11 (347)	3.77 (177)	0.00	12.51	0.00	++
USA	5.94	6.68 (344)	5.16 (266)	0.00	12.32	0.00	++

<sup>28</sup> We also studied the lags of x=0,3,9,12 months without considerable differences in the results.



For 9 out of 16 countries we find significant unemployment differences which are in line with partisan theory under adaptive expectations (Canada, Denmark, Finland, Germany, Iceland, the Netherlands, Sweden, United Kingdom and the United States). In the remaining 7 countries (Australia, Austria, France, Ireland, Norway, Portugal and Spain) the unemployment rates under right-wing governments were significantly lower than under left-wing governments.

However, the descriptive analysis of unemployment differences suffers from the same problems as that on inflation rates in the last section. ADF-tests reveal that none of the time series of unemployment rates are stationary. Thus, they should not be used to run panel regressions. There are two possible solutions to this problem: on the one hand one might use the difference between the domestic unemployment rate and the average unemployment rate of the G7-countries as a left-hand variable. On the other hand we might work with the first differences in unemployment rates.

Alesina and Roubini (1992) decided to use the difference between the unemployment rates of the domestic country and the average of the G7-countries as a dependent variable. They state in this respect: „By taking the difference of domestic unemployment from a world weighted average, unit roots problems are somewhat mitigated, but certainly not eliminated” (Alesina and Roubini (1992), p. 287-288). Though Alesina and Roubini (1992) provide no formal test, their suspicion is right: the time-series of differences between domestic and world weighted average unemployment are not stationary, either (even if to a lesser extent than the time-series of unemployment rates themselves). Thus, we might find spurious correlations even when using the difference of a domestic and a world weighted average of unemployment as dependent variable. Neglecting this problem for the moment, we estimate the following panel regression:

$$\begin{aligned}
 (alq_t^i - alq_t^{G7}) &= \alpha_1 \cdot (alq_{t-1}^i - alq_{t-1}^{G7}) + \dots + \alpha_n \cdot (alq_{t-n}^i - alq_{t-n}^{G7}) \\
 &+ \alpha_{n+1} \cdot D^{AUS} + \dots + \alpha_m \cdot D^{USA} \\
 &+ \alpha_{m+1} \cdot D_{t-x}^{Partisan,i} + \epsilon_t^i
 \end{aligned} \tag{7}$$

with  $alq_t^i$  being the monthly reported unemployment rate at time  $t$  in country  $i$  and  $alq_t^{G7}$  being the monthly reported average unemployment of the G7-countries.<sup>29</sup> The country dummies and the partisan dummy (compare equation 6) are the same as in the inflation regressions. Theory predicts a positive sign of the coefficient of the partisan dummy. The regression results are summarized in table VII.<sup>30</sup>

Table VII. Panel regression permanent partisan effects on unemployment (difference to G7-countries).

Variable	x=0	x=3	x=6	x=9	x=12
$alq_{t-1}^i - alq_{t-1}^{G7}$	1.0033 (78.62)	1.0035 (78.63)	1.0015 (78.12)	1.0014 (77.75)	1.0013 (77.50)
$alq_{t-2}^i - alq_{t-2}^{G7}$	0.0958 (5.30)	0.0957 (5.29)	0.0959 (5.29)	0.0958 (5.26)	0.0955 (5.22)
$alq_{t-3}^i - alq_{t-3}^{G7}$	-0.1039 (-8.15)	-0.1040 (-8.15)	-0.1021 (-7.96)	-0.1019 (-7.91)	-0.1012 (-7.83)
$D_{t-x}^{Partisan}$	0.0035 (1.29)	0.0018 (0.65)	0.0021 (0.76)	0.0024 (0.87)	0.0027 (0.97)
$D^{AUS}$	0.0063	0.0065	0.0072	0.0071	0.0067
$D^{DEN}$	-0.0054	-0.0052	-0.0045	-0.0036	-0.0029
$D^{GER}$	0.0158	0.0161	0.0162	0.0164	0.0163
$D^{FIN}$	0.0146	0.0142	0.0149	0.0149	0.0139
$D^{FRA}$	0.0167	0.0170	0.0163	0.0163	0.0157
$D^{UK}$	-0.0029	-0.0023	-0.0032	-0.0034	-0.0037
$D^{IRE}$	0.0169	0.0175	0.0161	0.0164	0.0152
$D^{ICE}$	-0.0297	-0.0292	-0.0266	-0.0250	-0.0239
$D^{CAN}$	0.0105	0.0096	0.0010	0.0103	0.0091
$D^{NET}$	-0.0036	-0.0033	-0.0023	-0.0018	-0.0013
$D^{NOR}$	-0.0127	-0.0133	-0.0123	-0.0126	-0.0129
$D^{AUT}$	-0.0039	-0.0048	-0.0041	-0.0038	-0.0038
$D^{POR}$	-0.0056	-0.0054	-0.0069	-0.0109	-0.0116
$D^{SWE}$	-0.0010	-0.0106	-0.0084	-0.0087	-0.0068
$D^{SPA}$	0.0669	0.0659	0.0642	0.0649	0.0566
$D^{USA}$	-0.0038	-0.0038	-0.0038	-0.0041	-0.0042
$r^2$	99.73	99.73	99.73	99.73	99.73

<sup>29</sup> Different from weighted G7 CPI inflation there was no sufficient long time series available for weighted G7 unemployment. Instead we decided to calculate the time series for  $alq_t^{G7}$  on our own by using GDP figures of the G7 countries as weights. The referring (yearly) data are from OECD Main Economic Outlook. Due to data problems with respect to France and the United Kingdom the time series for  $alq_t^{G7}$  is based upon G5 until 1967:12 and upon G6 until 1971:01.

<sup>30</sup> We also tested for additional dummy variables, adjusting for possible structural breaks, but again none of them turned out to be significant.

Three lags of the dependent variable were necessary to correct for autocorrelation. While the coefficients of the partisan dummy for all lags  $x = 0, 3, 6, 9, 12$  are positive, none of the coefficients is significantly different from zero. Thus, we find no evidence in favor of partisan theory under adaptive expectations with respect to unemployment rates. Because of the earlier described problems of unit roots in the time series of the dependent variable the results might be biased.

We therefore decided to apply an additional test using first differences of unemployment rates. On a confidence-level of 90% the hypothesis of no unit-roots could not be rejected for the first differences of unemployment rates. While using the first differences is a proper solution from an econometric point of view we obviously have to adjust our test design to test for permanent partisan effects in unemployment rates due to the fact that we are now dealing with changes in unemployment instead of absolute levels of unemployment.

According to partisan theory under adaptive expectations, unemployment under left-wing governments should be permanently lower than under right-wing governments. Therefore we should be able find unemployment rising after a change from a left-wing government to a right-wing government and vice versa. It is important to underline that permanent partisan effects on unemployment are consistent with temporary changing growth rates of the unemployment rate. Thus, when estimating the panel regression

$$\begin{aligned}
 d(alq)_t^i &= \alpha_1 \cdot d(alq)_{t-1}^i + \dots + \alpha_n \cdot d(alq)_{t-n}^i \\
 &\quad + \alpha_{n+1} \cdot D^{AUS} + \dots + \alpha_m \cdot D^{USA} \\
 &\quad + \alpha_{m+1} \cdot d(alq)_t^{G7} + \alpha_{m+2} \cdot D_{t-x}^{GovChange,i} + \epsilon_t^i,
 \end{aligned} \tag{8}$$

a positive coefficient for the partisan dummy, covering changes of governmental orientation, would be in line with partisan theory under adaptive expectations. The partisan dummy  $D_t^{GovChange,i}$  is defined as

$$D_t^{GovChange,i} := \begin{cases} 1 & \text{in } K - 1 \text{ months after a change} \\ & \text{to a right-wing government in country } i \\ -1 & \text{in } K - 1 \text{ months after a change} \\ & \text{to a left-wing government in country } i \\ 0 & \text{else} \end{cases} \tag{9}$$

with  $K$  being the number of months the temporary partisan effect is supposed to last. Since we deal with temporary increases in the growth rate of unemployment we study the cases of  $K=12,18,24$ . The results for the case of  $K = 12$  are reported in table VIII.<sup>31</sup>

Table VIII. Panel regression permanent ( $K=12$ ) partisan effects on unemployment.

Variable	x=0	x=3	x=6	x=9	x=12
$d(alq)_{t-1}$	-0.0115 (-0.88)	-0.0114 (-0.87)	-0.0113 (-0.87)	-0.0110 (-0.84)	-0.0125 (-0.95)
$d(alq)_{t-2}$	0.0889 (6.84)	0.0893 (6.87)	0.0891 (6.86)	0.0885 (6.80)	0.0878 (6.72)
$d(alq)_{t-3}$	0.1667 (12.81)	0.1671 (12.84)	0.1669 (12.82)	0.1673 (12.83)	0.1673 (12.82)
$d(alq)_{t-4}$	0.0780 (6.04)	0.0784 (6.06)	0.0782 (6.05)	0.0788 (6.07)	0.0788 (6.06)
$d(alq)_{t-5}$	0.0837 (6.49)	0.0838 (6.51)	0.0837 (6.49)	0.0834 (6.45)	0.0822 (6.34)
$d(alq)_{t-6}$	0.0672 (5.19)	0.0672 (5.20)	0.0672 (5.19)	0.0665 (5.13)	0.0675 (5.19)
$d(alq)_t^{G7}$	0.3782 (13.37)	0.3787 (13.38)	0.3787 (13.38)	0.3789 (13.34)	0.3754 (13.16)
$D_{t-x}^{GovChange}$	0.0091 (1.31)	-0.0055 (-0.79)	-0.0006 (-0.09)	0.0013 (0.19)	0.0065 (0.94)
$D^{AUS}$	0.0045	0.0045	0.0045	0.0045	0.0042
$D^{DEN}$	-0.0041	-0.0045	-0.0044	-0.0485	-0.0051
$D^{GER}$	0.0095	0.0089	0.0091	-0.0092	0.0094
$D^{FIN}$	0.0085	0.0081	0.0083	0.0083	0.0084
$D^{FRA}$	0.0055	0.0050	0.0052	0.0053	0.0059
$D^{UK}$	-0.0008	-0.0013	-0.0011	-0.0011	-0.0012
$D^{IRE}$	-0.0057	-0.0056	-0.0056	-0.0057	-0.0057
$D^{ICE}$	-0.0006	-0.0005	-0.0005	-0.0003	-0.0012
$D^{CAN}$	0.0026	0.0025	0.0025	0.0025	0.0026
$D^{NET}$	0.0011	0.0006	0.0007	0.0010	0.0012
$D^{NOR}$	0.0012	0.0017	0.0016	0.0010	0.0000
$D^{AUT}$	0.0071	0.0007	0.0007	0.0007	0.0009
$D^{POR}$	-0.0071	-0.0078	-0.0075	-0.0076	-0.0062
$D^{SWE}$	0.0019	0.0019	0.0020	0.0017	0.0024
$D^{SPA}$	-0.0006	-0.0006	-0.0006	-0.0007	-0.0006
$D^{USA}$	-0.0016	-0.0015	-0.0015	-0.0015	-0.0015
$r^2$	12.63	12.62	12.60	12.58	12.51

<sup>31</sup> The results for the cases of  $K = 18$  and  $K = 24$  do not differ significantly from the case  $K = 12$ .

Six lags of the dependent variable were necessary to correct for autocorrelation. While for the lags  $x = 0$  and  $x = 12$  the coefficient is in fact positive, for the other 3 lags the coefficients are negative. None of the 5 coefficients turn out to be significant. Thus, we find no empirical evidence supporting partisan theory under adaptive expectations with respect to unemployment.

#### 4.3.2. *Temporary effects depending on electoral surprise*

Rational partisan theory implies, as it was shown earlier, temporary post-electoral shifts in unemployment due to pre-electoral uncertainty about the election outcome. The magnitude of these booms and recessions should, according to rational partisan theory, depend on the degree of uncertainty about the election result. Unemployment should fall back to its initial (natural) level as soon as wages have been adjusted to meet unexpected price-level shocks.

In order to test for rational partisan cycles in unemployment rates we run panel regressions of the type

$$\begin{aligned} d(alq)_t^i &= \alpha_1 \cdot d(alq)_{t-1}^i + \dots + \alpha_n \cdot d(alq)_{t-n}^i \\ &+ \alpha_{n+1} \cdot D^{AUS} + \dots + \alpha_m \cdot D^{USA} \\ &+ \alpha_{m+1} \cdot d(alq)_t^{G7} + \alpha_{m+2} \cdot SUR_{t-x}^i + \epsilon_t^i. \end{aligned} \quad (10)$$

The variable  $SUR_t^i$  is intended to cover the degree of *ex ante* electoral uncertainty in country  $i$ . Since electoral uncertainty is not directly observable, we use pre-electoral polling data to construct an indicator of electoral uncertainty. Sufficiently long time series<sup>32</sup> for pre-electoral polling data were available for 6 countries: Australia, France, Germany, Sweden, the United Kingdom and the United States of America. The sources of the polling data are shown in table IX.

Basically, the polling data from the different countries are quite similar. The data for Australia, Germany, the United Kingdom and Sweden are aggregated responses to the so-called „Sunday-question“: „For which party would you vote if there were a

<sup>32</sup> We included all countries into the sample for which polling data for at least 4 elections and at least 6 months before the election were available.

Table IX. Sources of pre-electoral polling data.

Country	Source	Data available since
Australia	Roy Morgan Research Center	1961
France	TNS SOFRES	1978
Germany	Institut für Demoskopie Allensbach	1961
Sweden	Sifo Consulting and Research	1968
United Kingdom	Market and Opinion Research International Ltd.	1979
United States	Gallup Company	1936

general election next Sunday?” In the United States the question slightly differs: Instead of asking for the preferred party the interviewees are asked to reveal their preferred Presidential candidate. For France no comparable data were available. We use polling data on the popularity of the current prime minister to assess pre-electoral uncertainty instead, thereby assuming that a high popularity of the current prime minister is a good proxy for a high probability of reelection (and vice versa).

Principally, there are different possibilities to make use of the polling data to assess the electoral surprise of an election result. Cohen (1993) developed a technique to convert the polling data into election probabilities using basic ideas of option pricing theory. Using this approach Alesina, Roubini and Cohen (1997) find supporting evidence for rational partisan effects on unemployment for the United States. While this is an adequate and elegant idea we found it hard to apply it to our country sample due to the fact that we deal not only with (more or less) pure two-party democracies. We therefore decided to choose a different way to deal with the polling data by constructing a variable  $SUR_t^i$

$$SUR_t^i := \begin{cases} \frac{V^{left}}{V^{right} + V^{left}} & \text{in } K \text{ months after the election of} \\ & \text{a right-wing government in country } i \\ \frac{V^{left}}{V^{right} + V^{left}} - 1 & \text{in } K \text{ months after the election of} \\ & \text{a left-wing government in country } i \end{cases} \quad (11)$$

capturing pre-electoral uncertainty, with  $K$  being the number of months the temporary partisan effect is supposed to last and  $V^{right,i}$  being the average vote share right-wing

parties got in polls during the 12 months<sup>33</sup> before the election.<sup>34</sup> By construction, we have  $0 \leq SUR_t^i \leq 1$  for the case of a right-wing government to be installed after an election and  $0 \geq SUR_t^i \geq -1$  for left-wing ones. The absolute value of the variable increases in the electoral surprise, i.e. the larger the relative vote share of the election-losing ideology was on average before the election. According to rational partisan theory the coefficient of the surprise-variable should be significantly positive.<sup>35</sup>

The results of the panel regressions for  $K = 12, 18, 24$  and the lags  $x = 0, 3, 6, 9, 12$  are shown in tables X, XI and XII. The coefficients of the surprise-variable are in line with rational partisan theory for all surprise periods  $K$  and all lags  $x$ . With the exceptions of the two most „extreme” cases  $K = 12, x = 0$  and  $K = 24, x = 12$  all coefficients are significant at least on a 90%-confidence-level, most of them even on higher levels of confidence.

We interpret these results as supportive of partisan theory under rational expectations. Thus, pre-electoral uncertainty seems to have a significant temporary impact on the post-electoral development of real activity.

Some remarks should be made with respect to the relatively low levels of  $r^2$  in the regressions. From a theoretical point of view, as we have argued earlier, partisan effects can be supposed to be the more pronounced in countries with highly dependent central banks. Thus, it may pay off to have a closer look at the degree of central bank independence in the sample countries. Cukierman (1994) developed an index of central bank independence, based on the legal rules concerning central banks during the 1980's. In his

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<sup>33</sup> For the United States the number of months that were included into the calculation of the average figures is sometimes below 12 months due to data problems. In this case we used the maximum number of available observations, which was at least 7 for all elections. For some countries more than one observation per month were available. We first calculated a monthly average in this case and then proceeded to calculate the yearly average in these comparatively rare cases.

<sup>34</sup> Especially Germany has experienced a significant number of coalition governments. Therefore it is not sufficient to concentrate on the major parties which are often easily to identify with left and right ideologies. For Germany we supposed good poll results for the Greens to increase the probability that a left-wing government will be elected. Since the Free Democrats (FDP) were often in coalition governments of different ideologies we added their vote share in the polls to the left-wing or the right-wing according to their pre-electoral statements on FDP's will to form a certain coalition or, if there was no such statement, to the ideology they later on decided to form a coalition with.

<sup>35</sup> One could also think about using the share of undecided voters to assess the degree of electoral uncertainty. However, we have no appropriate data available to do so.

Table X. Panel regression temporary (K=12) partisan effects on unemployment.

Variable	x=0	x=3	x=6	x=9	x=12
$d(alq)_{t-1}$	-0.1246 (-5.92)	-0.1253 (-5.95)	-0.1294 (-6.14)	-0.1267 (-6.00)	-0.1239 (-5.85)
$d(alq)_{t-2}$	0.0571 (2.71)	0.0551 (2.61)	0.0510 (2.42)	0.0502 (2.37)	0.0518 (2.44)
$d(alq)_{t-3}$	0.2353 (11.23)	0.2342 (11.17)	0.2321 (11.08)	0.2313 (10.99)	0.2311 (10.93)
$d(alq)_{t-4}$	0.1185 (5.69)	0.1175 (5.64)	0.1184 (5.69)	0.1160 (5.56)	0.1152 (5.49)
$d(alq)_{t-5}$	0.0902 (4.32)	0.0892 (4.29)	0.0906 (4.34)	0.0887 (4.24)	0.0879 (4.18)
$d(alq)_{t-6}$	0.0742 (3.55)	0.0738 (3.53)	0.0749 (3.58)	0.0741 (3.54)	0.0717 (3.41)
$d(alq)_t^{G7}$	0.5682 (14.16)	0.5779 (14.32)	0.5839 (14.43)	0.5851 (14.40)	0.5866 (14.37)
$SUR_{t-x}$	0.0151 (1.09)	0.0301 (2.17)**	0.0502 (3.61)***	0.0420 (3.01)***	0.0329 (2.35)**
$D^{AUS}$	0.0037	0.0037	0.0038	0.0038	0.0034
$D^{GER}$	0.0086	0.0088	0.0089	0.0088	0.0087
$D^{FRA}$	0.0041	0.0059	0.0059	0.0046	0.0038
$D^{UK}$	-0.0115	-0.0123	-0.0125	-0.0116	-0.0111
$D^{SWE}$	0.0011	0.0030	0.0042	0.0035	0.0038
$D^{USA}$	-0.0031	-0.0035	-0.0041	-0.0039	-0.0036
$r^2$	22.85	22.98	23.31	23.26	23.09

study of 68 countries the central banks of Germany (2nd) and the United States (6th), both part of our sample, are ranked on the top of independent central banks. The other four countries: the United Kingdom (37th), Australia (39th), France (44th) and Sweden (46th) are ranked in the (lower) midfield. During the 90's the United Kingdom, France and Sweden remarkably increased their degree of central bank independence, partly due to encouragement by the European Union. This development of the 1990's is not captured by the Cukierman-index. Altogether we therefore suppose the low explanatory power of the electoral surprise variable to be partially due to the high degree of central bank independence in the sample countries. However, the coefficients for the surprise-variable



Table XI. Panel regression temporary (K=18) partisan effects on unemployment.

Variable	x=0	x=3	x=6	x=9	x=12
$d(alq)_{t-1}$	-0.1277 (-6.06)	-0.1261 (-5.99)	-0.1269 (-6.02)	-0.1264 (-5.99)	-0.1234 (-5.83)
$d(alq)_{t-2}$	0.0539 (2.56)	0.0535 (2.54)	0.0521 (2.47)	0.0506 (2.39)	0.0529 (2.49)
$d(alq)_{t-3}$	0.2333 (11.15)	0.2322 (11.07)	0.2316 (11.03)	0.2318 (11.01)	0.2322 (10.98)
$d(alq)_{t-4}$	0.1178 (5.66)	0.1158 (5.55)	0.1168 (5.60)	0.1163 (5.57)	0.1158 (5.51)
$d(alq)_{t-5}$	0.0903 (4.33)	0.0879 (4.21)	0.0822 (4.22)	0.0874 (4.18)	0.0883 (4.19)
$d(alq)_{t-6}$	0.0747 (3.58)	0.0733 (3.51)	0.0725 (3.47)	0.0720 (3.44)	0.0718 (3.41)
$d(alq)_t^{G7}$	0.5717 (14.26)	0.5787 (14.34)	0.5826 (14.43)	0.5864 (14.43)	0.5860 (14.34)
$SUR_{t-x}$	0.0336 (2.94)***	0.0297 (2.59)***	0.0324 (2.83)***	0.0322 (2.81)***	0.0196 (1.70)*
$D^{AUS}$	0.0038	0.0037	0.0037	0.0038	0.0034
$D^{GER}$	0.0089	0.0089	0.0089	0.0088	0.0086
$D^{FRA}$	0.0043	0.0060	0.0060	0.0047	0.0037
$D^{UK}$	-0.0135	-0.0132	-0.0124	-0.0120	-0.0108
$D^{SWE}$	0.0033	0.0039	0.0042	0.0040	0.0036
$D^{USA}$	-0.0042	-0.0039	-0.0040	-0.0039	-0.0034
$r^2$	23.13	23.06	23.13	23.22	22.99

are significant, thereby indicating that even in countries with comparatively independent central banks significant partisan effects seem to exist.

We should also take into account that - due to the already described non-stationarity-problems - we use first differences of unemployment in our panel-regressions. Since the degree of autocorrelation in first differences is considerably lower than in unemployment levels the values of  $r^2$  are also lower.

Table XII. Panel regression temporary (K=24) partisan effects on unemployment.

Variable	x=0	x=3	x=6	x=9	x=12
$d(alq)_{t-1}$	-0.1264 (-6.00)	-0.1265 (-6.01)	-0.1262 (-5.98)	-0.1244 (-5.89)	-0.1229 (-5.80)
$d(alq)_{t-2}$	0.0545 (2.58)	0.0530 (2.51)	0.0531 (2.51)	0.0529 (2.50)	0.0540 (2.54)
$d(alq)_{t-3}$	0.2327 (11.10)	0.2319 (11.05)	0.2323 (11.05)	0.2334 (11.09)	0.2331 (11.02)
$d(alq)_{t-4}$	0.1165 (5.59)	0.1156 (5.55)	0.1166 (5.58)	0.1168 (5.58)	0.1167 (5.56)
$d(alq)_{t-5}$	0.0885 (4.24)	0.0870 (4.17)	0.08879 (4.19)	0.0877 (4.18)	0.0891 (4.23)
$d(alq)_{t-6}$	0.0731 (3.49)	0.0717 (3.43)	0.0723 (3.45)	0.0721 (3.44)	0.0722 (3.43)
$d(alq)_t^{G7}$	0.5793 (14.23)	0.5793 (14.35)	0.5819 (14.35)	0.5838 (14.36)	0.5852 (14.32)
$SUR_{t-x}$	0.0252 (2.51)**	0.0268 (2.67)***	0.0223 (2.21)**	0.0191 (1.90)*	0.0124 (1.23)
$D^{AUS}$	0.0034	0.0033	0.0034	0.0035	0.0032
$D^{GER}$	0.0090	0.0089	0.0087	0.0085	0.0084
$D^{FRA}$	0.0044	0.0061	0.0059	0.0045	0.0037
$D^{UK}$	-0.0136	-0.0132	-0.0122	-0.0113	-0.0105
$D^{SWE}$	0.0047	0.0046	0.0041	0.0034	0.0033
$D^{USA}$	-0.0041	-0.0041	-0.0038	-0.0036	-0.0033
$r^2$	23.04	23.07	23.01	23.06	22.85

## 5. Conclusions and outlook

While we find significant partisan differences in inflation rates under left-wing and right-wing governments we do not find permanent differences in unemployment rates. Therefore we have to reject the hypothesis of the existence of partisan cycles as they are predicted by models with adaptive expectations of the private sector for our sample of 16 countries.

However, we cannot reject the hypothesis of the existence of partisan cycles resulting from pre-electoral uncertainty on the election outcome for our sample of 6 OECD countries. As predicted by partisan theory under rational expectations we find significant temporary increases in the unemployment rate after unexpected elections of right-wing governments and temporarily decreasing unemployment rates after unexpected elections

of left-wing ones. While the electoral surprise has a significant effect on post-electoral development of unemployment, it turns not out to be the major explanation for the unemployment pattern. We suppose this to be due to the relatively high degree of central bank independence in the sample countries. Obviously, pre-electoral uncertainty regarding the election result is therefore a significant but surely not the only factor in determining the unemployment rate in the aftermath of elections.

For future research the analysis should be extended to a sample of countries with highly dependent central banks. A major obstacle to such an analysis is the lack of appropriate polling-data that can be used to create reasonable indices of electoral uncertainty.

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