Political Cycles and their Suboptimal Equilibrium

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Preface

Writing my Master Thesis is been one of the most challenging parts of my academic career. The scope and required quality pushed me to the limit and enforced me to learn and adapt my way of working. It has been a good learning experience that taught me a lot about my topic as well as conducting academic research. Cecilia Testa has been enthusiastic from the start and provided me with insightful help and critical advice. I am thankful for her assistance in the last stage of my Master.

Abstract

This work aims at providing new evidence on the existence of the so called "political business cycle" hypothesis, building on the work of Alesina and Roubini (1997). To this end, we build a new data-set for the period 1947-2010 including 18 OECD countries. In the United Sates, we find evidence of political cycles that support the rational partisan theory. Hence, after a change of regime from a Democratic (Republican) to a Republican (Democratic) administration, there is a temporarily decrease (increase) in output growth and increase (decrease) in unemployment. Nevertheless, such partisan effects seem to decrease in their size in the last two decades. Furthermore, for the United States, there is no partisan effect on the inflation rate for the entire sample period. Looking at 18 OECD countries, support is found for the rational partisan theory on output growth and unemployment. Contrary to the United States, in the 18 OECD countries there is significant evidence of partisan effects on the inflation rate. Hence, the inflation is permanently higher (lower) than the natural rate during a left (right) wing administration. In addition, we find evidence of a political business cycle in the form of a temporally increase in output growth before an election. This finding – which is primarily fueled by the last two to three decades - only indirectly supports the possible existence of an opportunistic policy maker.

Introduction

Politicians have the difficult and challenging task to steer a country's economic development into the right direction. This must happen on both the short and long run. Herein lies a great dilemma since regulation can have positive effects in the short run while the same regulation

might backfire in the long run. A government only spends around four years in office which makes long term policy making more difficult. Getting reelected thus provides a key role in being able to continue a given policy. Hence, getting reelected might overshadow the actual direction of policy making. Governments might - on the short run prior to the elections - stimulate the economy so to signal that they are doing a good job and deserve to get reelected, while this might backfire in the long run. Short term stimulation might fuel the economy by lowering taxes and/or increasing government spending. In the long run this can lead to a growing government's debt and might ask for cut backs and an increase in taxes so to keep the budget deficit and public debt in place. This leads to the main question of this Master Thesis: do elections have a negative influence on economic stability? In addition, might politicians base their policy making on getting reelected instead of doing what is best for a country's economic stability. This Thesis is organized as follows. In section 1 we present empirical literature on political cycles. Sections 2 and 3 describe the opportunistic and partisan theory. Section 4 describes the methodology. Sections 5 and 6 present the tests on the political cycles in the United States and the 18 OECD countries, respectively. In section 7 we conclude.

1 Literature review

Most studies on political cycles focus on individual countries though there are some that look at a multitude of countries. Alesina and Roubini (1997) conducted a multi-county study as well as a single-country study (United States). Using data on the postwar period for the United States (1947-1993) they find results that support the rational partisan theory. The found results are somewhat stronger for growth and unemployment than for inflation. Alesina and Roubini (1997) attribute this result to the many factors that influence inflation such as oil shocks and the exchange rate regime. Hardly any evidence is found that supports the opportunistic models. In the multicounty study (18 OECD countries) of Alesina and Roubini (1997), they find a political cycle that seems to appear fairly consistent. Left-wing governments expand the economy after being elected. This continues for around two years after which inflation expectations adjust and the economy returns to its natural rate of growth. Right-wing governments fight inflation when elected and by doing so tend to cause a recession. In the later years of a right-wing office term, the economy returns to its natural rate of growth with a level of inflation that remains low. Hibbs (1977) investigates political cycles in 12 West European and North American nations (United States and Canada) and finds that

low unemployment combined with high inflation is more present in countries that are regularly governed by left-wing parties. High unemployment combined with low inflation is more present in countries that are regularly governed by right-wing parties. A time series analysis that looks at the quarterly data of unemployment (1948-1972) for the United States and Great Britain suggests that the unemployment is lower with a Democratic or Labour government in office while the opposite holds for a Republican or Conservative government. Alt (1985) looks at political effects on unemployment in 14 western industrial nations between 1960 and 1983. The results are consistent with the partisan theory. Hence, unemployment decreases when a left-wing party is in office whereas unemployment increases when a right-wing party is in office. However, the main conclusions of Alt's article are that partisan effects on unemployment in open economies can only be satisfactorily estimated relative to the constraint imposed by the level of world economic activity, and that in addition to politicians' strategic incentives, political institutions and economic regime constraints also determine whether partisan effects on unemployment will be sustained, transitory, or absent (Alt 1985 p.1016). Alesina (1989) looks at several industrial economies over a period of 20 years during the seventies and eighties. Left and conservative political parties generally differ in real economic outcomes which are mostly transitory and concentrated at the beginning of the term in office. In addition, prior to elections both types of government may try to stay away from unpopular fiscal measures. In particular, Alesina (1989) finds evidence that points towards a budget balance that tends to deteriorate in election years. Alvarez et al. (1989) look at pooled annual time series data for 16 advanced industrial democracies between 1967 and 1984 and relate characteristics of labor markets to the success of partisan policies. A left-wing government can increase economic growth and reduce inflation and unemployment when the labor movements are densely and centrally organized, and right-wing governments can increase economic growth and reduce inflation and unemployment when the labor movements are weak (Alvarez et al. 1989 p. 539). Sheffrin (1989) on the other hand does not find much support for the rational partisan theory. Using a strict interpretation of the rational partisan theory and looking at countries besides the United States, he found that only eight of his fifteen countries had significant effects for the period of 1953 to 1986. Nevertheless, not all the countries had a significant effect that pointed in the direction of the rational partisan theory. Hence, some results were opposite to what is predicted by rational partisan theory. Alesina (1991) responded with a critical note on the paper written by Sheffrin. Alesina concludes: "Sheffrin's tests are neither "kind" or "unkind" to the "Rational Partisan Theory". They are largely unrelated to it". Sheffrin's sample period covers a time span were certain

parties or coalitions held power for long time periods which led to an overall stable political environment. This was predominately the case in the fifties and sixties, which covers half of Sheffrin's sample. In addition, the Bretton Woods fixed exchange rate system that lasted from 1953 to 1971 restricted political power even more. Hence, as Alesina points out: "Given the little amount of political and economic variability in the fifties and sixties, a more appropriate sample to test the RPT is one which relies more heavily on the post 1971 period". Furthermore, using quarterly data (as in the paper of Alesina and Roubini 1992) leads to more accurate results than using yearly data, as Sheffrin uses in his paper. Alesina and Roubini (1992) look at 18 OECD countries in the period from 1960 to 1987 and found results that are summarized as follows: "(a) The "political business cycle" hypothesis, as formulated in Nordhaus (1975) on output and unemployment is generally rejected by the data; (b) inflation tends to increase immediately after elections, perhaps as a result of pre-electoral expansionary monetary and fiscal policies; (c) they find evidence of temporary partisan differences in output and unemployment and of long-run partisan differences in the inflation rate as implied by the "rational partisan theory" by Alesina (1987); (d) they find virtually no evidence of permanent partisan differences in output growth and unemployment". The study from Paldam (1979) looks at 17 OECD countries over the period from 1948 to 1975 with focus on current growth, real growth and implicit price deflators. He found a policy generated cycle that translates itself into a pattern that does not reflect Nordhaus political business cycle. Nonetheless, Paldam found that a cycle exists where real growth is strongest in the second year after an election and inflation rises to its top three years after an election. This pattern is explained by the fact that tax rates have been hold unchanged leading up to an election and increase in the first year after an election. Governments activity increases in order to keep the promises made during the election period which lead to the high growth in the second year. Thereafter, government spending rises causing high inflation in the third year. Abrams and Iossifov (2006) find (for the period from 1957 to 2004), support for the view that Fed policy turns significantly more expansionary in the seven quarters prior to an election, but only when the Fed chairman and incumbent presidential party have partisan affiliations. Hence, only when the political party that is running up to an election appointed the current Fed president, a partisan-based opportunistic political monetary cycle is found. Ferris et al. (2006) look at the real growth in Canada and find substantial evidence that indicates the existence of a political cycle (this is less evident for inflation). Going deeper into the topic, they address the importance of finding an underlying mechanism that could be the source of the existence of a political cycle. Namely, opportunistic and partisan motives that could explain the existence of

the political cycle. Underlying mechanisms include size of government, the degree of political competition and government spending. They find that among many political factors, it is the level of political competition that plays an important role on both the short and long run in determining the convergence of public expenditure to its long run path defined by economic fundamentals alone (Ferris et al. 2006 p.27). The general idea that Ferris et al. implement is "one that may be applied in any situation where the key issue is the role of economics versus politics, is that any kind of overtly political factor can be said to play a distinct role in the evolution of public choices if it can be shown to lead to departures from a dynamic path defined by the evolution of economic fundamentals in a competitive political system". In addition, they point to the possibility of a reserve causality that could be the source of the found political cycle in Canada.

There is a substantial amount of research done on individual countries with the focus on political cycles. Alesina and Sachs (1988) look at data of the United States from 1948 to 1984. They find clear partisan effects that are mostly present at the beginning of a term. Hence, their results suggest that the partisan theory partly contributes to the explanation of part of the macroeconomic outcomes in the United States. Klein (1993) looks at data from 1855 to 1991 for the United States and finds evidence that confirms a post election downturn in growth, yet no significant pre election upturn in growth is found. Differences between right and left wing parties are significant and are explained by the rational partisan theory. Interestingly, restricting the sample period to later years only, the results become more significant. Hence, confirming that greater political control on the economy seem to have improved over time. Hayes (1995) links electoral and partisan cycles between economic performance and presidential popularity. Looking at data concerning the United States over the period from 1953 to 1990, he finds that - on average per electoral term - the Democrats popularity increases with the economic performance while the contrary holds for the Republicans. Nevertheless, looking at the period before an election (one quarter), economic performance increases Republican popularity while the contrary holds for the Democrats. In addition, Democrats performance in growth and unemployment is better than the Republicans while the opposite holds for inflation. Hibbs (1994) results show that Democratic administrations typically pursue more expansionary aggregate demand policies than Republican administrations which, as much previous research also has concluded, yield better (especially early term) real output performance and worse (especially late term) inflation performance. Contrary to the assumption of virtually all models in the politics and business

cycles literature, the regression estimates indicate that political authorities have taken a variable rather than fixed parameters view of the process generating real output growth and constraining aggregate demand policy (Hibbs 1994 p.16). Akhmed and Zhuravskaya (2004) use regional monthly data of Russia and find significant support for political cycles in budget spending and its composition. Overall, they find strong evidence of sizable opportunistic cycles in fiscal policies and no evidence of cycles in economic growth. The mixed evidence for opportunistic cycles in other studies, according to Akhmed and Zhuravskaya, is due to the use of quarterly or yearly data. They base this conclusion on the fact that they find results for the existence of opportunistic cycles in two months prior to the election. Serletis and Afxentiou (1998) find no credible evidence of a political cycle in Canada for the period from 1926 to 1994. They attribute this to the political heterogeneity of Canadian provinces, the difference in the economic agenda's of the federal government and the provincial governments, the overall relative political stability of the country, and the gradual loss of fiscal effectiveness that emanated from recent large budget deficits (Serletis and Afxentiou 1998 p.43). Alesina and Roubini (1992) neither find significant evidence for political cycles in Canada, though they point to a different reason than Serletis and Afxentiou (1998) do. In their regression estimations they find a strong correlation between the business cycle of the United States and Canada. Hence, Alesina and Roubini (1992) argue that Canada might not be seen as an independent observation since the US dummy in the equation of Canada is significant on a five percent confidence level. Kneebone and MCKenzie (2001) on the other hand do find an electoral cycle in which the preference of provincial governments to increase taxes is temporarily halted in election years. They also find evidence of opportunistic behavior in spending. They examine the fiscal policy choices of Canadian provincial governments and link these to partisan as well as opportunistic motives. Their pooled cross-section (cross-section for each fiscal variable is conducted over the 10 Canadian provinces) time-series and different time period (1966-1997) may account for the fact that they find result that are different than those of Serletis and Afxentiou (1998). Since the latter does not account for the political heterogeneity of Canadian provinces as well as including a period where political power was rigid, this probably influenced their result in a negative way. Alesina and Rosenthal (1989) find existence of partisan cycles in the United States: Republican administrations exhibit below-average, and Democratic administrations above-average, economic growth in the first half of each term, whereas in second half, the two see equal growth. Furthermore, they observe that voters tend to counterbalance the presidential policies by voting for the opposing party in de midterm elections of Congress. This in contrast

with the opportunistic idea that voter's would tend to reward an incumbent if the economy is performing well. Berger and Woitek (1997) look at monthly data of Germany (1950–1989). They do not find significant evidence for partisan or opportunistic models. Exceptions are unemployment and monetary aggregate M1, though the results are not compelling.

2 Opportunistic models

There are two models that explain the existence of "political cycles", namely the partisan model and the opportunistic model. The Opportunistic model (Nordhaus's political business cycle model) describes opportunistic policymakers that can take advantage of an exploitable Philips curve and face naïve voters who forget the past, are unaware of the policymakers incentives, and do not understand how the economy works. In particular, they do not take into account the trade-off between inflation and unemployment (Alesina and Roubini 1997 p. 15). Hence, policy makers tend to stimulate the economy close to an election while fighting the inflation that is the result of these pre-election expansive measurements. The politicians deal with naïve voters and thus get rewarded for their opportunistic behavior since the voters reward the incumbent party according to the economic performance close to the elections. The traditional opportunistic model with its naïve voters and identical politicians is unsatisfactory. A good model characterizes itself as both being simple as well as being able to represent some part of reality in a simplified, yet correct way. Therefore the rational opportunistic model is developed within which some of the assumptions made by the traditional model are adjusted. Voters are no longer naïve but rational and thus try to maximize their expected utility given their gathered information and competence. Hence, competence and the presence of asymmetric information are incorporated to make the rational opportunistic model better represent reality. Since voters are unaware of the competence of policy makers (this information is private and only known by the policy makers themselves), they are inclined to observe the economic performance as an indication of this ability. Thus, policy makers are incentivized to appear competent by being opportunistic which leads to decision making that is characterized by stimulating the economy before the election. This leads to comparable empirical implications, as in the traditional opportunistic model.

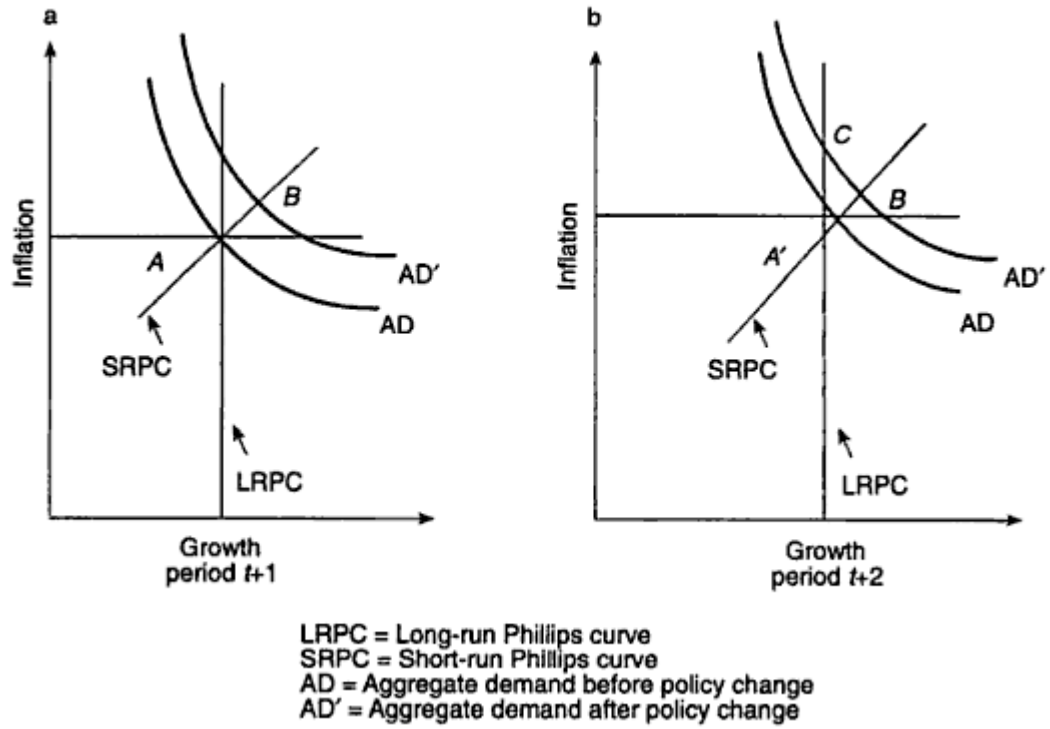

Figure 1
The Nordhaus-Lindbeck model at work (source: Alesina and Roubini 1997 p. 21)

Figure 1 shows how the traditional opportunistic model - proposed by Nordhaus and Lindbeck - works. Figure 1a shows the long run and short run Philips curve that respectively holds for $\pi_t = \pi_t^e$ and $\pi_t \neq \pi_{t-1} = \pi_t^e$. In point A where LRPC and SRPC cross, $\pi_t = \pi_{t-1} = \pi_t^e$ holds. Assuming that an election takes place at the end of period $t + 1$, we can clearly see that stimulating aggregate demand by manipulating monetary and/or fiscal policy will lead to increase in both inflation and growth. In point B, $\pi_{t+1} > \pi_t = \pi_{t+1}^e$ (expected inflation is higher than the actual inflation) and $y_{t+1} > \bar{y}$ (growth is above normal). Hence, moving the AD to AD' both growth and inflation increase, yet for the latter the rise is only moderate. Figure 1b shows the case in which the incumbent party - with its opportunistic policy making - gets reelected. In $t + 1$ there are incorrect expectations ($\pi_{t+1} > \pi_{t+1}^e$) which catches up in $t + 2$. Without any more expanding measures in $t + 2$, the economy moves to point C where inflation is higher, whereas growth is back at its natural rate, hence causing a possible recession due to necessary contractionary measures. Nevertheless, when the term of the incumbent administration is nearing its end, the economy will be back at point A in figure 1a. Hence, everything can be reenacted again.

2.1 Assumptions of the *traditional* opportunistic model

Alesina en Roubini (1997) describes the traditional opportunistic model with the following assumptions:

A.1 The economy is characterized by an expectation-augmented Philips curve. Specifically, the following formulation of the Philips curve is used:

$$y_t = \bar{y} + \gamma(\pi_t - \pi_t^e);\ \gamma > 0$$

Where y_t is the rate of GNP growth, π_t represents inflation rate, π_t^e represents the expected inflation, $\bar{y}$ stands for the natural rate of growth and γ is a positive parameter. The same formulation could be used for unemployment which would translate into the following formula:

$$u_t = \bar{u} - \gamma'(\pi_t - \pi_t^e);\ \gamma' > 0$$

Where u_t represents the unemployment rate and $\bar{u}$ stands for the natural rate of unemployment.

For simplification the following is assumed $\gamma = \gamma' = 1$ so that a simplified equation remains:

$$y_t = \bar{y} + \pi_t - \pi_t^e$$

A.2 Inflation expectations are adaptive:

$$\pi_t^e = \pi_{t-1} + \lambda(\pi_{t-1}^e - \pi_{t-1}) \text{ with } 0 < \lambda < 1$$

Hence, the expected inflation equals the past inflation if past expectations where right. If past expectations were incorrect, current expectations will adjust for past mistakes. The higher λ, the more severe the reaction will be with regard to past mistakes in forecasting. A low λ on the other hand translates itself into a current expected inflation that is almost the same as last period inflation and hence current inflation only depends for a small part on past mistakes in estimating inflation. Important here is that current expectations only depend on past observations and that not all available information gets incorporated in the expected inflation rate. The expected inflation thus does not depend on the public expectation of future policies. Hence, expectations are not rational and the expected inflation rate could be expressed as follows (recursive substitutions):

$$\pi_t^e = (1-\lambda)[\pi_{t-1} + \lambda\pi_{t-2} + \lambda^2\pi_{t-3} + \ldots]$$

This way y_t can be rewritten as follows:

$$y_t = \bar{y} + \pi_t - (1-\lambda)\sum_{j=0}^{\infty} \lambda^j [\pi_{t-j-1}]$$

The rewritten GNP growth shows that given past inflation, the incumbent party can attain the wanted growth by properly influencing the inflation.

A.3 Politicians are identical. They prefer to be in office rather than out of office.

A.4 In every election, only two candidates (parties) face each other: an incumbent and a challenger.

A.5 Voters like growth and dislike inflation and unemployment. They are retrospective: they vote in favor of the incumbent if the economy is doing well (low unemployment and inflation, high growth) during his term of office. Voters heavily discount the past. Thus, the economic performance immediately before an election affects voters' decisions more than the economic performance in the more distance past.

Following the approach that an incumbent political party will want to maximize their probability of getting reelected, the probability Q of getting reelected can be written as follows:

$$Q_t = Q(\pi_t, u_t, y_t, \pi_{t-i}, u_{t-i}, y_{t-i}, \dots, Z);\ \ i = 1 \dots n$$

Where n is the length that a political party is in office and Z is a vector of noneconomic variables that may influence the election and which is not correlated with the economic climate. Hence, there is some uncertainty about what will happen during the election. Because of this uncertainty, policymakers cannot perfectly determine what policy direction would yield them victory. Uncertainty expresses itself in two forms; economic (a policy choice will not automatically lead to the desired economic outcome) and polity (a certain economic climate will not necessary lead to the expected response of the people who are voting)

A.6 The policymaker controls a policy instrument deterministically related to aggregate demand.

The policy instruments are generalizeable within two categories; monetary (direct: supply of money, indirect: interest, inflation and unemployment) and fiscal (government expenditure and taxation).

A.7 The timing of the elections is exogenously fixed.

This does not hold for all the OECD countries, were elections can sometimes be called according to rules that are different across countries. For the United States however, the timing of elections is exogenously fixed.

2.2 Assumptions of the *rational* opportunistic model

Alesina and Roubini (1997) describe the rational opportunistic model with the following assumptions (Persson and Tabellini (1990) modified the assumptions of the Nordhaus model):

A.1 The economy is described by a Philips curve with a competence term:

$$y_t = \bar{y} + \pi_t - \pi_t^e + \varepsilon_t$$

Where ε_t represents the competence term and translates into a government's ability to handle problems and use the right policy measures.

$$\varepsilon_t = \mu_t + \mu_{t-1}$$
$$E(\mu_t) = 0 \quad \text{for every } t$$

From this it must be clear that it is assumed that competence is not weak and thus does not simply changes form one period to another. Furthermore, the moving average specification implies that competence at t gets determined by both the realized competence of the previous period (μ_{t-1}) as well as the current part (μ_t). The MA(1) specification makes it not viable for the competence of a incumbent to carry over more than two periods of time. Therefore, the competence of an incumbent vanishes when he loses the election (assuming that the challenger stays in office longer than two periods of time). The challengers competence on the other hand is assumed to be normalized at zero, in the election period.

Competence is assumed to have only two values: high $(\overline{\mu})$ or low $(\underline{\mu})$ with;

$$\mu_t = \overline{\mu} > 0 \text{ with probabilty } \rho$$
$$\mu_t = \underline{\mu} < 0 \text{ with probabilty } 1 - \rho$$

Hence,

$$E(\mu_t) = \rho\overline{\mu} + (1 - \rho)\underline{\mu} = 0$$

Specifying what the voters know and when they know this, yields the following: they know the distribution of μ_t and that the unconditional expectation of μ_t is zero. Voters learn the competence of the incumbent party yet with a one period delay. Hence, in period $t + 1$ voters can work out ε_t. In period t the value of μ_{t-1}, y_t and π_t^es are observed yet π_t is still unknown and is observable in period $t + 1$ and because of this μ_t and with this a crucial part of the competence, is learned with one period delay. The assumption that inflation is observed with a one period delay is crucial to the model. Assuming that both growth y_t and inflation π_t are observable in period t, would mean that competence would equal the following:

$$\varepsilon_t = y_t - \bar{y} - \pi_t + \pi_t^e$$

This would yield no possible political cycle. Persson and Tabellini (1990) argue that what on first hand seems odd (growth is observed before inflation), explains itself as follows. Policymakers do not directly control the instruments that determine inflation yet are able to control growth in a more direct way. Controlling inflation is done by some form of monetary instrument which is not always directly understandable by the voter whereas this does not necessarily hold for instruments that control growth (e.g. taxes).

The Persson and Tabellini model produces two types of equilibrium; a separating and a pooling equilibrium. In the separating equilibrium, voters are able to observe the types of policy maker. By analyzing policy making, voters are thus able to separate the low and high ability incumbent parties. In the separating equilibrium, the incumbents μ_t in the election year t is know to the voters. In the pooling equilibrium, voters are not able to observe the level of competence at time t of the incumbent party since both types of incumbent parties choose the same level of growth.

In a separating equilibrium, we have identical voters who prefer a policy maker that is of high competence. Since the challengers competence is normalized at zero, the high ability incumbent policy maker will want to signal his competence so to get reelected. In order to get reelected, the incumbent policy maker will have to attain a level of growth that is superior to that of a low ability policy maker. By definition, the competent policy maker is able to attain a higher level of growth ($y^s > \overline{y}$) than the incompetent policymaker. Since the incompetent policy maker is not able to create the same level as growth as a competent policy maker, the incompetent one will optimize the inflation with respect to one period of time (this inflation will be lower than the one of the competent policy maker, since the competent policy maker creates an inflation rate above the expected one, in order to attain y^s). The expected inflation is determined by the combined inflation rates of the high and low ability incumbent policy maker. As a result, an inflation rate above the expected inflation rate in the election year signals a competent policy maker while the contrary holds for an incompetent policymaker. Hence, the Persson and Tabellini model creates a political business cycle when a high ability policy maker in office (a competent policy maker stimulates the economy above normal in the election year and by doing so creates high growth which the voters are able to observe so to identify the competent policy maker) and generates rational retrospective voting.

A.2 Inflation expectations are rational:

$$\pi_t^e = E(\pi_t | I_{t-1})$$

I_{t-1} represents the information that is available at time $t - 1$

A.3 Politicians are identical. They prefer to be in office rather than out of office.

A.4 In every election, only two candidates (parties) face each other: an incumbent and a challenger.

A.5 Voters want to elect the policymaker who maximizes their expected utility. All voters have the same expected utility U, given by:

$$U = E\left\{\sum_{t=0}^{\infty} \beta^t u(\pi_t, y_t)\right\}; \quad \text{with } 0 < \beta < 1$$

Where β represent the discount factor.

$$u(\pi_t, y_t) = -\frac{1}{2}(\pi_t^2) + by_t; \quad \text{with } b > 0$$

Hence, the voter likes low inflation and high growth. A high b means that growth weights higher in relation to the cost of inflation and vice versa.

A.6 The policymaker controls inflation directly.

A.7 The timing of the elections is exogenously fixed.

2.3 Empirical implications of opportunistic models[1]

In the traditional opportunistic model, growth is above normal, whereas unemployment is below normal one or two years before the election, the contrary holds for one or two years after the election (regular multi cycle in growth and unemployment). Monetary and fiscal policy are expansionary in one or two years before the election while the opposite holds for one or two years after the election. Hence, inflation starts to increase before the election and this effect lasts for some quarters following the election after which inflation falls. The political support (vote share) for the incumbent is increasing in the growth while decreasing in the level of unemployment.

In the rational opportunistic model there is no regular multiyear cycle in growth and unemployment. The monetary and fiscal policy measures are the same as in the traditional model yet the effects are smaller and shorter-lived. Hence, inflation starts to increase before the election and this effect lasts for some quarters after the election after which inflation falls, yet this effect is smaller and shorter-lived than in the traditional model. The political support for the incumbent is increasing in growth while decreasing in the level of unemployment. The specific pattern of this relationship depends on voters' information.

3 Partisan models

[1] Alesina, A., Roubini, N. & Cohen G. D. (1997). Political cycles and the macroeconomy Table 2.3

Political parties have different goals, ideologies and preferences with respect to macro economical instruments. Opportunistic policy makers choose policies solely to win elections while partisan policymakers want to win in order to implement their desired policies (Alesina and Roubini 1997 p. 45). Hibbs (1977) Partisan model differs from Nordhaus's political business cycle because Hibbs argues that in OECD countries, left and right wing parties choose combinations of inflation, unemployment and growth that are different. Hence, political parties have a different trade-off between inflation and unemployment (in order to fight unemployment, left wing parties are more willing to bear the cost of inflation than right wing parties). This is based on the idea that left wing and right wing voters differ from each other in a distinct way. Partisan theory rests on the stylized empirical observations that down-scale classes make up the core constituency of left parties, they for the most part hold only human capital (their economic well being depends almost entirely on earnings from labor), and they tend to occupy unsheltered, lower status jobs while up-scale classes form the core constituency of right parties, they hold the lion's share of financial capital in the household sector, and they tend to occupy higher status, and more secure jobs (Hibbs 1992 p. 362). Therefore, left wing voters are influence by a larger part if the economy fluctuates. Unemployment has a far greater effect on left wing voters that on right wing voters. Left wing voters thus prefer low employment and tight labor markets. Hence, left wing voters benefit from a thriving economy with high growth rates. Right wing voters on the other hand incur more losses if inflation is high. They would benefit greatly from disinflation and do not necessarily dislike unemployment since this could yield lower wages and thus pres down labor costs. In summary, both political parties dislike inflation yet attribute different weights to the level of inflation compared to unemployment.

3.1 Assumptions of the *traditional* partisan model

Alesina and Roubini (1997) describe the traditional partisan model with the following assumptions:

A.1 The economy is characterized by an expectation-augmented Philips curve. Specifically, the following formulation of the Philips curve is used:

$$y_t = \bar{y} + \pi_t - \pi_t^e$$

A.2 Inflation expectations are adaptive:

$$\pi_t^e = \pi_{t-1} + \lambda(\pi_{t-1}^e - \pi_{t-1}); \quad \text{with } 0 < \lambda < 1$$

A.3 Politicians are not identical. Members of left-wing parties are more concerned with unemployment and growth and relatively less concerned with inflation. Members of the right-wing parties have opposite preferences.

In Hibb's model different political parties represent fractions of the preferences of the electorate. In particular, the right-wing electorate includes the upper middle class and the business and financial community; the left-wing electorate includes the lower middle class and the union movement (Alesina and Roubini 1997 p. 47).

A.4 In every election, only two candidates (parties) face each other: an incumbent and a challenger.

A.5 Different voters have different preferences over inflation and unemployment (or growth). Voters choose the left- or right-wing parties, according to their preferences.

Voters are retrospective: they look at the economy, and based on their preferences, favor one party or the other and are backward looking and do not use past observations to make rational forecasts of the future (Alesina and Roubini 1997 p. 47). Since politicians are not identical, it is likely to assume that politicians implement a different policy direction, yet partisan politicians might be incentivized to move to the middle in order to win the election. Nevertheless, since elections are surrounded with uncertainty it is sufficient to accept the idea that different political parties will implement different policies, when in office. Hence, moving to the middle simply states trading in your view and preferences to increase your chance of winning the election. This must be said with caution since moving to the middle could back fire by loosing party members and followers.

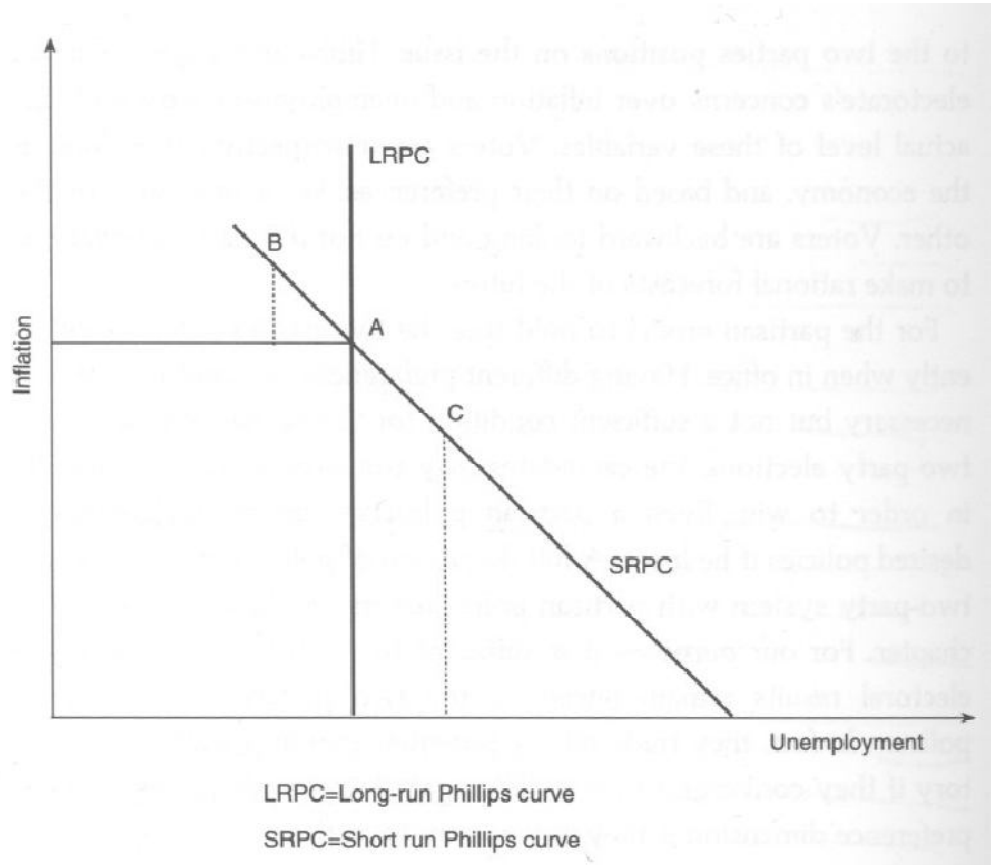

Figure 2
The Hibb's model at work (source: Alesina and Roubini 1997 p. 50)

Contrary to the Nordhaus-Lindbeck model, the model of Hibb's uses a different trade-off; the one between inflation and unemployment. Hibb's considers a stable short run Philips curve since he argues that the SRPC will not shift to a great extend due to expectation adjustments. Initially, the economy rests in point A. When a right wing party is in office they will make the economy move to point C. On the other hand, when a left wing party is in office they will make the economy move to point B. Whether a right or left wing party is in office, they are both able to achieve their desired level of unemployment and the accompanied growth while keeping inflation relatively stable.

A.6 The policymaker controls a policy instrument deterministically related to aggregate demand.

A.7 The timing of the elections is exogenously fixed.

3.2 Assumptions of the *rational* partisan model

Alesina and Roubini (1997) describe the rational partisan model with the following assumptions:

A.1 The economy is described by an expectation-augmented Philips curve:

$$y_t = \bar{y} + \pi_t - \pi_t^e$$

A.2 Inflation expectations are rational:

$$\pi_t^e = E(\pi_t | I_{t-1})$$

A.3 Politicians are not identical. Members of left-wing parties are more concerned with unemployment and growth and relatively less concerned with inflation. Members of the right-wing parties have opposite preferences.

A.4 In every election, only two candidates (parties) face each other: an incumbent and a challenger.

A.5[2] Different voters have different preferences over inflation and unemployment (or growth). Based on their preferences, they vote for the party that delivers the highest expected utility.

Real output growth is inversely related to the growth of real wages (w_t= the rate of growth of nominal wages):

$$y_t = \bar{y} + \pi_t - w_t$$

In either a competitive or noncompetitive market we have:

$$w_t = \pi_t^e = E(\pi_t | I_{t-1})$$

In a competitive market wage growth equals inflation. In a noncompetitive market labor unions set the real wage so that its equals the maximization of the welfare of the union members.

The left-wing party (L) and right-wing party (R) have the following preferences:

$$u^L = \sum_{t=0}^{\infty} \beta^t \left[-\left(\pi_t - \overline{\pi}^L\right)^2 + b^L y_t \right]$$

$$u^R = \sum_{t=0}^{\infty} \beta^t \left[-\left(\pi_t - \overline{\pi}^R\right)^2 + b^R y_t \right]$$

Where:

$$\overline{\pi}^L \geq \overline{\pi}^R \geq 0$$

$$b^L \geq b^R \geq 0$$

[2] See Alesina and Roubini (1997) page 52-57 for a more detailed description of assumption 5

Voters preferences equal that of the political parties, the generic voter has the following utility function:

$$u^i = \sum_{t=0}^{\infty} \beta^t \left[-\left(\pi_t - \overline{\pi}^i \right)^2 + b^i y_t \right]$$

Hence, voters have a different $\overline{\pi}^i$ (cost of inflation) and b^i (benefit of growth). The voters distribution is not known.

Assume that elections take place every other period (a party is thus in office for two periods). If party L wins the elections, it sets:

$$\pi_t = \pi_{t+1} = \overline{\pi}^L + \frac{b^L}{2} = \bar{\bar{\pi}}^L$$

If party R wins, it sets:

$$\pi_t = \pi_{t+1} = \overline{\pi}^R + \frac{b^R}{2} = \bar{\bar{\pi}}^R$$

Given the assumptions on preferences:

$$\bar{\bar{\pi}}^L > \bar{\bar{\pi}}^R$$

P is the probability that party R wins the election. The distribution of voter preferences is not known with certainty. Second, it is assumed that "the distribution of the distribution of voter preferences" in known to everybody. Hence, everybody can compute the probability of the given possible electoral outcomes, given the knowledge of the two parties policies.

Given P, expected inflation is:

$$\pi_t^e = P\bar{\bar{\pi}}^R + (1 - P)\,\bar{\bar{\pi}}^L$$

$$\pi_{t+1}^e = \bar{\bar{\pi}}^R \quad \text{if Right is in office}$$
$$\pi_{t+1}^e = \bar{\bar{\pi}}^L \quad \text{if Left is in office}$$

Hence, before elections the inflation is an average of $\bar{\bar{\pi}}^R$ and $\bar{\bar{\pi}}^L$ weighted by the probabilities of the two electoral outcomes. Afterwards, expectations adjust with respect to which party is in office. Hence, we can compute output growth:

$$y_t^L = \overline{y} + P(\bar{\bar{\pi}}^L - \bar{\bar{\pi}}^R)$$
$$y_t^R = \overline{y} + (1 - P)(\bar{\bar{\pi}}^L - \bar{\bar{\pi}}^R)$$
$$y_{t+1}^L = y_{t+1}^R = \overline{y}$$

A.6 The policymaker controls inflation directly.

A.7 The timing of the elections is exogenously fixed.

3.3 Empirical implications of partisan models[3]

In the traditional partisan model, growth is permanently higher while unemployment is permanently lower when a left-wing party is in office. Inflation is permanently higher when a left-wing party is in office.

In the rational partisan model, growth is temporarily higher while unemployment is temporarily lower than the natural rate after a left-wing electoral victory; the opposite is true after a right-wing electoral victory. Deviations of growth and unemployment from natural rates is correlated with the amount of electoral surprise. Unemployment and growth return to their natural rates in the second part of both right- and left-wing terms of office. Inflation is permanently higher when a left-wing party is in office.

4 Methodology

Alesina and Roubini (1997) (here after A&R) define different dummy variables to test for the existence of political cycles. The dummy variables test whether certain political cycles exist over time. Hence, a political dummy is included in order to absorb the possible existence of opportunistic or partisan effects. Table 1 shows the description of the used dummies. By using lagged variables for output growth, inflation and unemployment as well as including a political dummy in the regression equation, the different theories described above will be tested empirically. First we will replicate the work done by A&R on the different theories for output growth, inflation and unemployment (which covers chapters 4 and 6 of their book). After having replicated the regression outputs of A&R (US: 1947-1993 and panel: 1960-1993), the full sample will be used to test whether the found results of A&R still hold for the entire sample period (US: 1947-2010 and panel: 1960-2010). Both real GDP growth and inflation are defined by calculating the amount in quarter t as compared to the amount in quarter $t-4$. Real GDP growth is defined as $y_t = \left(\frac{x_t - x_{t-4}}{x_{t-4}}\right) * 100$, where x_t is the level of real GDP in quarter t. Inflation is defined as the yearly rate of change of the consumer price index; $\pi_t = \left(\frac{CPI_t - CPI_{t-4}}{CPI_{t-4}}\right) * 100$. Quarterly unemployment rates are obtained directly from the different sources (FED/OECD-MEI). For the United States and the panel regressions, the

[3] Alesina, A., Roubini, N. & Cohen G. D. (1997). Political cycles and the macroeconomy Table 3.3

empirical tests are the same as the ones A&R use. Namely, for output growth in the US we estimate the following:

$$y_t = \beta_0 + \beta_1 y_{t-1} + \beta_2 y_{t-2} \dots + \beta_n y_{t-n} + \beta_{n+1} PDUM_t + \varepsilon_t$$

Where y_t is GDP growth and $PDUM$ is a political dummy that captures the different implications of theories described above (Alesina and Roubini 1997, page 83).

The specification of the empirical test for the panel regression is as follows. For output growth:

$$y_t = \beta_0 + \beta_1 y_{t-1} + \beta_2 y_{t-2} \dots + \beta_n y_{t-n} + \beta_{n+1} yw_t + \beta_{n+2} PDUM_t + \varepsilon_t$$

Here, y_t is the stacked vector of time series data on output growth for the countries in the sample. The rate of growth is $y_{it} = \left(\frac{x_{it} - x_{it-4}}{x_{it-4}}\right) * 100$ where x_{it} is the level of GDP in country i at time t and yw_t is a proxy for the growth of the world economy (Alesina and Roubini 1997, page 146). A&R obtain this proxy as the average growth of the seven largest countries (in 1987: United States, Japan, Germany, France, the United Kingdom, Italy and Canada) in their sample (weighted by each country's share of GDP over the total). The replication of this proxy is somewhat troubling since not all of the GDP data mirrors the GDP data used by A&R. Since the replicated proxy for world growth does not properly represents the one used by A&R, we use the industrial production in the advanced economies[4] obtained from the IMF-IFS data base, as the proxy for world growth. The growth rate of the industrial production in advanced economies leads to better replications of the work done by A&R than when we use the replicated proxy of A&R. The fact that the proxy based on the seven largest countries of the year 1987 might not serve as the best representation of the world growth over the full sample and that the industrial production has higher t-statistic than the proxy use by A&R, both serve as an argument for using the growth rate of the industrial production of the advanced economies as proxy for the world growth. Using the proxy as defined by A&R, similar results are obtained, though significance, size of the political dummies and R^2 are lower.[5] For the world inflation rate (πw_t) the same definition as A&R is used (this proxy is defined similarly to that of the world growth, hence taking the average inflation rate in the before mentioned seven countries, weighted by each country's share of GDP over the total of these seven countries). Due to the high persistency of the unemployment rate, the

[4] See appendix 1 for a detailed description of the advanced economies

[5] The results for the Panel regressions that include this proxy (Tables 6b, 6.1b and 6.2b) instead of the one used in the main text are found in Appendix 3

unemployment rate is defined as the difference between a country's unemployment rate and that of the average unemployment rate in the OECD countries ($UDIFF = U_{it} - U_{OECDt}$ where U_{it} is a country's unemployment rate at time t and U_{OECDt} is the OECD average at time t). The average unemployment rate in the OECD countries is defined similarly to that of the proxy for the world growth (the average unemployment rate of the OECD countries is calculated by taking the average of the unemployment rates of the seven countries mentioned before).[6]

The data sample for the United Sates is obtained from the FED (Federal Reserve Bank of ST. LOUIS). The sample for real GDP and Inflation perfectly mirrors the one used by A&R, yet the same does not hold for the Unemployment rate (A&R use a sample that starts in quarter one of 1947, the currently available sample starts in quarter one of 1955).

Data for the panel regression are obtained from the IMF-IFS and OECD-MEI data base (the data used for the United States is not from the same source as the one used for the individual regressions of the United States, this to optimize the replication regression of A&R who use different sources for the regression of the United States and the 18 OECD countries). For the inflation rate, the data sample perfectly mirrors the one used by A&R, yet the same does not hold for the real GDP and the unemployment rate (see appendix 1 for a detailed description of a comparison between the data sample of A&R and the one used for the replication and the full sample of the panel regression). The quarterly unemployment rates are directly obtained from the OECD Main Economic Indicators (OECD-MEI) while the growth and inflation rates are calculated with the above mentioned formula's. For the GDP data we mirrored the sample used by A&R, by using alternative sources (FED). For the unemployment rate there are in total 127 quarters of missing values.

Election and regime change specifications are obtained from A&R (table 4.A.2 and 6.A.2: based on Alt 1985 and Banks 1994). The full sample contains the same political data with the added seventeen years by using dates obtained from The World Bank (Database of Political Institutions 2010).[7]

[6] Alesina and Roubini do not clearly mention whether the unemployment rate for the OECD average is weighted.
[7] All election dates and regime changes are found in appendix 2

Table 1

Dummy variables to test for political cycles

Defined by Alesina and Roubini (1997)

DRPTXN	+1 in the N quarters starting with a right-wing administration -1 in the N quarters starting with a left-wing administration 0 otherwise
DRPTN	+1 in the N quarters starting with that of a change to a right-wing administration +1 in the N quarters starting with that of a change to a left-wing administration 0 otherwise
RADM	+1 if a right-wing administration is in office, including the quarter of the change in administration -1 if a left-wing administration is in office, including the quarter of the change in administration
ADM	+1 if a right-wing government is in office, including the quarter of the change in administration +1/2 if a right-wing government is in office, including the quarter of the change in administration -1/2 if a left-wing government is in office, including the quarter of the change in administration -1 if a left-wing government is in office, including the quarter of the change in administration
NRDN	+1 in the (N-1) quarters preceding an election and in the election quarter 0 otherwise
NPOSTN	+1 in the (N-1) quarters following an election and in the election quarter 0 otherwise

DRPTXN is a dummy to test for the existence of the rational partisan theory. DRPTXN captures every regime change, while DRPTN only captures the actual changes of a left (right) to a right (left) wing administration.[8] Arguing that a reelection might be less surprising than when the challenging party wins an election, DRPTXN gets redefined to DRPTN. Both dummies are used in the US regression while DRPTN is only used in the panel regression of A&R. For the panel regression on output growth we also run the regression using the DRPTXN dummy. The results are weaker for the DRPTXN dummy (see appendix 3, table 6c).

RADM is used for testing both partisan theories (rational and traditional). Since many OECD countries do not have a two-party system like the United States, RADM gets redefined into ADM. The redefined RADM dummy gives a better indication of the differences between a two-party system and a multi-party system.

[8] If an election is held in for instance 1960q1 than DRPTXN starts in 1960q2 while DRPTN starts in 1960q1 (DRPTN only accounts for an actual change in regime while DRPTXN also includes an incumbents election victory).

NRDN is used to test the existence of the political business cycle of Nordhaus (1975) (traditional opportunistic model). The theory describes a pre-electoral rise in growth and fall in unemployment. NPOSTN is used to test the rational opportunistic model which implicates no regular multi cycle in growth and unemployment but an expansion and contraction around the election period in monetary and fiscal policy.

Different N's are used to test which time period best represents the implications of different theories. Many dummies are lagged so to account for a reasonable interval between policy implementation and the effect that these policy measures have on the economy.

5 Political cycles in the United States

5.1 RPT: Output growth (*y*) and Unemployment (*U*)

Columns (1), (2) and (3) of table 1 show the results of A&R. Columns (1a), (2a) and (3a) show the replication. While the regression of the growth rate is very similar in both sign as significance (DRPTX6(-1) is significant on a 1 percent interval in all the sample periods)[9], the same does not hold for unemployment. Important here is to note that the sample used for (2) is not the same as the one used in (2a); in (2a) there are 32 missing quarters. Nevertheless, all the other coefficients in (2a) are very similar in size except for the political dummy.[10] The dummy in the growth rate regressions is lagged 1 quarter to account for the interval between policy making and its effect on the economy. In the equation of unemployment, the dummy is lagged two quarters because of the more persistent character of the unemployment rate over time.

[9] Pindyck and Rubinfeld table 3 page 605: for df : ∞, Pr 0.01 (t-statistic: 2.576) Pr 0.02 (t-statistic: 2.326) Pr 0.05 (t-statistic: 1.960) Pr 0.1 (t-statistic: 1.645). T-statistic in absolute value, two-tailed tests.

[10] A&R interpretation of their equation is not consistent with the equation itself (page86: "the values of the coefficients in (2) imply that about six quarters after the election of a Republican (Democratic) administration, the unemployment rate is about 1.6 percent points above (below) normal"). Calculation 1.6: $U^* = 0.25 + 1.66U^* - 0.89U^* + 0.19U^* + 0.13DRPTX6 = 6.25 + 3.25DRPTX$. While the difference between the beginning of a left-wing and of a right-wing administration peaks at 3.25 percent, the unemployment rate is 1.63 percent above normal six quarters after a Republican victory

Table 2

Rational partisan theory

Dependent variable: rate of growth (y) (columns 1, 1a, 1b, 3, 3a, 3b), unemployment rate (U) (columns 2, 2a, 2b)

	(1)	(2)	(3)	(1a)	(2a)	(3a)	(1b)	(2b)	(3b)
	Alesina and Roubini			Replica			Full Sample		
	1947-93			1947-93	1955-93	1947-93	1947-10	1955-10	1947-10
Independent variables	Coefficient (t-statistics)			Coefficient t-statistics					
c	0.91	0.25	0.96	1.20	0.25	1.27	0.94	0.19	0.99
	(6.1)	(2.9)	(6.4)	7.06	2.64	7.43	7.26	2.56	7.52
y(-1)	1.10		1.10	1.10		1.08	1.15		1.14
	(15.4)		(15.4)	15.33		15.17	18.54		18.54
y(-2)	-0.21		-0.21	-0.22		-0.22	-0.25		-0.25
	(2.02)		(2.01	-2.03		-2.06	-2.68		-2.69
y(-3)	-0.16		-0.16	-0.21		-0.19	-0.18		-0.17
	(2.36)		(2.33)	-2.96		-2.81	-2.92		-2.87
U(-1)		1.66			1.67			1.70	
		(22.7)			21.10			25.54	
U(-2)		-0.89			-0.93			-0.89	
		(7.08)			-6.79			-7.47	
U(-3)		0.19			0.22			0.15	
		(2.68)			2.87			2.29	
DRPTX6(-1)	-0.64		-0.61	-0.69		-0.66	-0.50		-0.47
	(4.27)		(4.10)	-4.23		-4.07	-3.96		-3.74
DRPTX6(-2)		-0.13			0.14			0.09	
		(3.39)			3.59			2.94	
POIL			-0.009			-0.01			-0.004
			(1.89)			-2.27			-1.92
R2	0.81	0.96	0.81	0.81	0.97	0.81	0.81	0.97	0.81

The regression in columns (3), (3a) and (3b) have an extra variable that represents the yearly change of the oil price in dollars (PIOL), which accounts for the influence of the oil price on the growth of the United States. The POIL variable has the expected sign (an increase in the oil price negatively influences growth) and is significant on a 10 percent confidence level for (3) and (3b) and on a 5 percent level for (3a). Both size as well as the significance of DRPTX6 is barely changed by adding the POIL variable.

Comparing (1a) and (2a) with (1b) and (2b) the following stands out; in both cases the size and significance of the political dummy declines. The coefficients from the replication sample (1a and 2a) and the full sample (1b and 2b) imply that in the full sample, six quarters after a change from a right- (left-wing) to left-wing (right-wing) administration, the rate of growth is 0.90 percent above (below) its steady state value. This is a decline compared to the sample period used by A&R, in which the rate of growth is 1.05 percent above its steady state value. The difference between the beginning of a left-wing and of a right-wing administration peaks

at 1.79 percent, where this peak was 2,09 percent for the 1947-1993 sample.[11] The same holds for the unemployment rate. In the sample of 1947-1993, unemployment is 1.75 percent higher (lower) six quarters after a change from the left- (right) to the right- (left) wing government. This amount drops to 1.13 using the full sample.[12] Since the DRPTX dummy decreases in both size and significance we include a robustness check in which we look at different periods so to check for the persistence of the political cycles overtime. First, DRPTXN gets redefined to DRPTN, which only includes the actual changes from left to right and vice versa. DRPTN accounts for the idea that when an incumbent party wins the election this might yield less surprise and, hence, have less impact on the economy than when the challenging party wins the election.

Comparing tables 2.1 and 2.2, we can see that in all but one time period (for 1990-10 both dummies equal -0,12) the DRPTN variable has a larger size than the DRPTXN variable (DRPTXN is significant on a higher confidence level only for period 1947-10, for period 1990-10 both dummies are insignificant on a 10 percent level) which confirms the idea that an electoral victory of a challenging party entails more surprise than an incumbent's victory. Nevertheless, it must be noted by using the DRPTN dummy instead of the DRPTXN dummy, all periods in which an incumbent administration wins the election get excluded. Excluding these periods - that are characterized by less fluctuation since changes in policy making are less striking - might in itself lead to the observed increase in size and significance of the DRPTN variable. In other words: when a challenging party wins an election both the policy change and election surprise could be the cause of a higher fluctuation in economic growth.

[11] The "steady state" for growth (y^*) in column (1b) is computed as follows: $y^* = 0.94 + 1.15y^* - 0.25y^* - 0.18y^* - 0.50DRPTX6 = 3.36 - 1.79DRPTX$. The value of 1.79% reported in the text takes into account that the dummy goes back to zero after six quarters.

[12] The "steady state" for unemployment (U^*) in column (2b) is computed as follows: $U^* = 0.19 + 1.70U^* - 0.89U^* + 0.15U^* + 0.09DRPTX6 = 4.75 + 2.25DRPTX$

Table 2.1

Rational partisan theory

Dependent variable: rate of growth (*y*)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	1947-10	1961-10	1970-90	1973-00	1980-00	1980-10	1990-10
Independent variables	Coefficient t-statistics						
y (-1)	1.15	0.93	0.66	0.88	1.01	1.07	1.21
	18.61	12.57	5.96	8.90	8.91	10.90	9.63
y (-2)	-0.26	-0.21	-0.14	-0.18	-0.23	-0.30	-0.33
	-2.75	-2.14	-1.03	-1.40	-1.48	-2.21	-1.85
y (-3)	-0.17	-0.12	-0.18	-0.18	-0.17	-0.09	-0.11
	-2.86	-1.90	-2.00	-2.04	-1.64	-1.08	-0.96
DRPT6(-1)	-0.50	-0.54	-1.47	-0.79	-0.66	-0.32	-0.12
	-2.86	-3.66	-4.96	-3.29	-2.49	-1.81	-0.71
POIL	-0.006	-0.01	-0.01	-0.01	-0.01	-0.01	-0.004
	-2.44	-4.21	-4.24	-3.41	-2.09	-2.54	-1.57
yw		0.13	0.23	0.15	0.15	0.10	0.05
		5.49	4.67	3.50	2.66	3.23	1.66
R2	0.81	0.86	0.86	0.83	0.84	0.86	0.88

Table 2.2

Rational partisan theory

Dependent variable: rate of growth (*y*)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	1947-10	1961-10	1970-90	1973-00	1980-00	1980-10	1990-10
Independent variables	Coefficient t-statistics						
y (-1)	1.14	0.93	0.76	0.90	1.03	1.08	1.21
	18.54	12.58	6.63	9.00	8.91	10.90	9.57
y (-2)	-0.25	-0.21	-0.15	-0.20	-0.25	-0.31	-0.33
	-2.69	-2.17	-1.06	-1.52	-1.57	-2.27	-1.87
y (-3)	-0.17	-0.12	-0.13	-0.14	-0.15	-0.09	-0.11
	-2.87	-1.86	-1.32	-1.65	-1.39	-1.01	-0.94
DRPTX6(-1)	-0.47	-0.40	-0.73	-0.41	-0.29	-0.19	-0.12
	-3.74	-3.64	-3.34	-2.60	-1.72	-1.51	-0.90
POIL	-0.004	-0.01	-0.01	-0.01	-0.01	-0.01	-0.004
	-1.92	-3.62	-3.29	-3.00	-1.99	-2.40	-1.35
yw		0.13	0.19	0.14	0.14	0.10	0.05
		5.39	3.60	3.29	2.50	3.24	1.67
R2	0.82	0.85	0.84	0.82	0.83	0.86	0.88

In tables 2.1 and 2.2 the stability of the reported result in table 2 are checked overtime. Furthermore, we add a variable that represents the growth of the world economy (*yw*: growth rate of the industrial production in the advanced economies), to take into account that factors on a global level that might influence the economic growth of the United States. Excluding

both POIL and *yw*, or either of them, does not change the analysis of the sign and significance of the political dummies. Interestingly, both DRPT6 and DRPTX6 decrease in size and significance over time and both end up insignificant on a 10 percent level in the period 1990-2010 (same results are found when using DRPTX4 and DRPTX8, though DRPTX8 is still significant on a 10 percent interval for period 1990-2010).[13] Taking a closer look at table 2.1 and 2.2 it stands out that the period 1970-1990, strongly drives the observed result in table 2. Comparing columns (1) and (3) in table 2.1, we can see that the DRPT6 dummy almost triples in size and becomes highly significant (on a 1 percent confidential level) when we restrict the sample size to 1970-1990 (1973-1990 yields very similar results). Since this period covers 20 years and hence only includes a limited number of elections we also include a sample that covers more years and starts after the fall of the Bretton Woods system (1973-2000). The observed effect for the period 1973-2000 weakens compared to that of the 1970-1990 period, though DRPT6 still has a larger size than the one that covers the entire sample period. Nevertheless, for period 1990-2010 both DRPT6 and DRPTX6 become insignificant on a 10 percent confidence interval. We also include an additional thirty year sample so to account for possible consistencies in the political landscape (no or only a small number of changes in regime) in a twenty year time period. In the 1980-2010 sample both dummies are only significant on 10 percent confidence level. These results together with the ones reported in table 2 (a decreased size and significance of the DRPTX6 dummy when comparing the full sample with the 1947-1993 sample) indicates that the partisan effects are weakening in the last two decades.

These two decades are characterized by rapid growth and major changes in the political as well as the entire landscape of the world. The internet, globalization, the fall of the Berlin wall, mobile telephones, ever growing possibilities with computers, financial innovations and the easiness by which one can travel around the world, are just to name a few. Hence, the accessibility to information has increased due to the rapid growing use of internet and other information sources as well as the increased exchange of this information. Possibly, this has made the policy maker more accountable and less capable of directly stimulating the economy. More importantly perhaps is globalization, that has taken on far-reaching proportions in the last two decades. The decreased significance of *yw* for the period of 1990-2010 might account for that. In other words: the increased interdependence between countries

[13] See appendix 3, table 2.3 for the results on the DRPTX4 and DRPTX8 dummy

might have decreased the difference between the growth cycle of the world and that of a major country as the United States. Furthermore, the collapse of Bretton Woods system (collapsed in March 1973) might have caused a rise in political effectiveness that only lasted for a small two decades after which new changes in the landscape of politicians decreased the effectiveness with which they were able to influence the economy. Moreover, the increased accountability might have made politicians more cautious and less opportunistic.

5.2 PT: Inflation (π)

In this section we test the partisan implications for the inflation rate. After successfully replicating the regressions done by A&R, we run the same regression on the full sample. POIL is the rate of change of the dollar price of oil and D73 accounts for the change of the fixed to flexible exchange rates (collapse of the Bretton Woods system). INTADM (interaction term between RADM and D73) accounts for the change in the exchange rate regime and how this might have affected the ability to influence the interest rate and hence the inflation. Comparing (2) with (3) (or (2a) with (3a)) yields that inflation is consistently lower than the natural rate, during a Republican administration yet that this observed effect is higher after the collapse of the Bretton Woods system (INADM has a larger size and significance than RADM).

Table 3

Partisan theory

Dependent variable: inflation rate (π)

	(1)	(2)	(3)	(1a)	(2a)	(3a)	(1b)	(2b)	(3b)
	Alesina and Roubini 1947-93			Replica 1947-93			Full Sample 1947-10		
Independent variables	Coefficient (t-statistics)			Coefficient t-statistics					
c	0.46	0.46	0.45	0.43	0.43	0.36	0.24	0.24	0.24
	(4.87)	(4.89)	(6.51)	4.59	4.61	3.77	2.68	2.69	2.65
π(-1)	1.13	1.13	1.14	1.23	1.23	1.26	1.24	1.24	1.24
	(14.8)	(14.8)	(14.7)	16.58	16.63	16.65	19.07	19.12	19.10
π(-2)	-0.21	-0.21	-0.21	-0.29	-0.29	-0.29	-0.30	-0.30	-0.30
	(1.89)	(1.91)	(1.88)	-2.49	-2.50	-2.47	-2.97	-2.97	-2.95
π(-3)	-0.13	-0.13	-0.13	-0.13	-0.13	-0.13	-0.06	-0.06	-0.06
	(1.93)	(1.93)	(1.89)	-1.91	-1.91	-1.81	-0.93	-0.94	-0.97
POIL	0.02	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.01
	(5.16)	(5.17)	(5.35)	4.34	4.35	4.12	4.71	4.72	4.74
D73	0.75	0.75	0.62	0.87	0.87	0.60	0.17	0.17	0.16
	(5.03)	(5.05)	(4.38)	5.21	5.22	3.97	1.57	1.58	1.52
INTADM(-3)	-0.29	-0.31		-0.44	-0.45		-0.07	-0.07	
	(2.67)	(3.18)		-3.36	-4.08		-0.71	-1.07	
RADM(-3)	-0.01		-0.11	-0.01		-0.14	0.002		-0.04
	(0.19)		(1.97)	-0.08		-2.23	0.03		-0.80
R2	0.95	0.95	0.95	0.95	0.95	0.95	0.94	0.94	0.94

Columns (1b), (2b) and (3b) show that in contrast with other results reported in table 3, there is no significant partisan effect when running the regression on the full sample. Hence, there is no sign that inflation is significant under a Republican administration and Democratic administration. To check for the persistence of the political dummy, we conduct similar robustness checks as the ones conducted for the output growth. The D73 dummy is dropped. Column (1) shows that dropping the D73 dummy only has minor influence on the estimation compared to the ones in column (3b) in table 3. In accordance with the real GDP growth regression we find that in the seventies and eighties the partisan effects are highly significant (on a 1 percent confidential interval) and have a larger size than in the full sample and the sample used by A&R. This effect fades away more quickly with the inflation rate than with the real GDP growth. This is in line with the fact that both the size and significance of the RADM dummy are disproportionally higher in the 1973-1990 period compared to the full sample period. A&R note that for the post 1972 period the higher inflation of the Democratic administrations are almost all driven by the high inflation during the Carter administration. A post Bretton Woods period that covers a major part of the A&R sample is the driving force behind the found partisan effects. For the inflation rate, this effect is no longer present in the full sample. For period 1947-1990 the results do not support partisan effects for the inflation rate except for a post Bretton Woods period of roughly two decades (note that the RADM is

less sensitive to shorter time periods since it accounts for permanent effects across different administrations).

Table 3.1

Partisan theory

Dependent variable: inflation rate (π)

	(1)	(2)	(3)	(4)	(5)	(6)
	1947-10	1973-90	1973-00	1980-00	1980-10	1990-10
Independent variables	Coefficient t-statistics					
c	0.30	1.55	0.33	0.31	0.22	0.27
	3.78	6.27	2.93	2.98	2.28	1.53
π (-1)	1.25	1.04	1.26	0.93	0.81	0.71
	19.23	9.23	12.78	8.72	9.53	7.18
π (-2)	-0.30	-0.26	-0.34	-0.15	-0.13	-0.10
	-3.01	-1.61	-2.19	-0.99	-1.13	-0.83
π (-3)	-0.05	0.00	0.00	0.10	0.19	0.21
	-0.86	0.01	-0.05	1.06	2.53	2.24
POIL	0.01	0.01	0.01	0.01	0.02	0.02
	4.89	5.52	4.17	5.42	7.81	7.22
RADM(-3)	-0.03	-0.53	-0.04	0.03	-0.03	-0.05
	-0.52	-4.82	-0.72	0.57	-0.58	-0.80
R2	0.94	0.97	0.97	0.97	0.95	0.82

5.3 TPT: Output growth (*y*) and Unemployment (*U*)

Contrary to the rational partisan theory that implies temporary partisan effects for growth and unemployment, the traditional partisan theory implies permanent partisan effects for both growth and unemployment. Hence, by using the same dummy as the one used for the inflation rate, we can test the implications of the traditional partisan theory. The RADM dummy is significant on a 5 percent confidence level or higher and has the expected sign in all sample periods and for both unemployment and growth. This is in contrast with the found results for the tests of the rational partisan theory on growth an unemployment which yielded significant evidence for the temporary shocks in the same sample periods. Therefore the estimated permanent partisan effects are doubtful. By defining an additional dummy that is the complement of DRPTX dummy, we can test whether these permanent partisan effects actually hold. Hence, if the partisan effects are in fact permanent, as suggested by the significant RADM variable, one would have to find that both DRPTXN as well as its complement SECN are significant. The contrary holds however, DRPTX6 remains significant while SEC6 is highly insignificant. These results are barely changed when we compare the sample period

used by A&R to the full sample period. The estimated coefficient of the RADM dummy is biased because it absorbs temporary changes that are also captured by the DRPTX6 dummy. This also explains why the DRPTXN is twice as large as the RADM dummy.

Table 4

Traditional partisan theory

Dependent variable: rate of growth (*y*) (columns 1, 1a, 1b, 3, 3a, 3b), unemployment rate (U) (columns 2, 2a, 2b, 4, 4a, 4b)

	(1)	(2)	(3)	(4)	(1a)	(2a)	(3a)	(4a)	(1b)	(2b)	(3b)	(4b)
	Alesina and Roubini 1947-1993				Replica 1947-1993				Full Sample 1947-2010			
Independent variables	Coefficient (t-statistics)				Coefficient t-statistics							
c	1.03	0.32	0.97	0.27	1.30	0.30	1.25	0.25	1.03	0.24	0.98	0.21
	(6.23)	(3.58)	(5.93)	(2.85)	7.02	3.10	6.72	2.52	7.54	3.23	7.08	2.71
y (-1)	1.13		1.10		1.12		1.10		1.16		1.15	
	(15.6)		(15.3)		15.46		15.29		18.58		18.50	
y (-2)	-0.21		-0.21		-0.22		-0.22		-0.25		-0.25	
	(1.94)		(1.95)		-2.01		-2.03		-2.61		-2.68	
y (-3)	-0.22		-0.18		-0.25		-0.22		-0.21		-0.19	
	(3.03)		(2.50)		-3.45		-3.03		-3.46		-3.01	
U(-1)		1.68		1.66		1.69		1.68		1.71		1.71
		(22.8)		(22.6)		20.98		20.64		25.32		25.11
U(-2)		-0.91		-0.89		-0.93		-0.91		-0.88		-0.87
		(7.06)		(7.06)		-6.60		-6.42		-7.29		-7.19
U(-3)		0.16		0.19		0.19		0.19		0.13		0.13
		(2.33)		(2.64)		2.34		2.42		1.91		1.95
RADM(-1)	-0.34	0.05			-0.34	0.05			-0.26	0.04		
	(3.33)	(2.20)			-3.15	2.01			-3.27	2.06		
DRPTX6(-1)			-0.64	0.13			-0.68	0.10			-0.48	0.05
			(4.30)	(3.37)			-4.13	2.49			-3.80	1.78
SEC6(-1)			-0.11	0.01			-0.09	0.01			-0.08	0.01
			(0.86)	(0.36)			-0.68	0.41			-0.80	0.50
R2	0.80	0.96	0.81	0.96	0.80	0.97	0.81	0.97	0.81	0.97	0.81	0.97

5.4 PBC: Output growth (*y*), Unemployment (*U*) and Inflation (π)

Using the NRDN dummy, the political business cycle of Nordhaus (1975) is tested. A&R did not find any support for this theory. Besides the regression result reported in column (1) and (2) in table 5, they run the same regression with N=6 and 8. In addition, they control for oil shocks, use alternative lag structures, add a variable for the world business cycle, run a general nesting model, yet without any satisfactory results. Using the entire sample period - reported in columns (1b) and (2b) - does not yield different conclusions.

Table 5

Political business cycle theory

Dependent variable: rate of growth (y) (1, 1a, 1b), unemployment rate (U) (2, 2a, 2b)

	(1)	(2)	(1a)	(2a)	(1b)	(2b)
	Alesina and Roubini		Replica		Full Sample	
	1947-1993		1947-93	1955-93	1947-10	1955-10
Independent	Coefficient		Coefficient			
variables	(t-statistics)		t-statistics			
c	0.81	0.30	1.08	0.27	0.92	0.22
	(5.15)	(3.33)	6.00	2.77	6.68	2.89
y (-1)	1.17		1.16		1.19	
	(16.0)		15.72		18.89	
y (-2)	-0.25		-0.26		-0.28	
	(2.25)		-2.30		-2.86	
y (-3)	-0.17		-0.21		-0.19	
	(2.30)		-2.84		-2.95	
U(-1)		1.71		1.72		1.73
		(23.4)		21.40		25.67
U(-2)		-0.95		-0.96		-0.90
		(7.32)		-6.74		-7.41
U(-3)		0.18		0.19		0.13
		(2.53)		2.40		1.92
NRD4(-1)	-0.13	-0.06	-0.04	0.001	-0.09	0.03
	(0.58)	(1.15)	-0.15	0.01	-0.52	0.84
R2	0.79	0.96	0.79	0.97	0.80	0.97

Testing for the rational political business cycle does not provide any satisfactory results either. Using NPOSTN to detect a possible post electoral jump in inflation does not yield significant results. Using different N's (4,6,7) neither gives way to new insights and only confirms the fact that for the United States there is no sign of the existence of a post electoral jump in inflation.

Table 5.1

Political business cycle theory

Dependent variable: inflation rate (π)

	(1)	(2)	(3)
	A&R	Replica	Full sample
	1947-93	1947-93	1947-10
Independent	Coefficient	Coefficient	
variables	(t-statistics)	t-statistics	
c	0.25	0.23	0.24
	(2.4)	2.19	2.63
π (-1)	1.46	1.48	1.41
	(23.0)	23.57	24.99
π (-2)	-0.52	-0.55	-0.48
	(8.39)	8.76	-8.55
NPOST5(-1)	0.04	0.09	0.05
	(0.31)	0.71	0.45
R2	0.93	0.94	0.93

6 Political cycles in OECD countries

6.1 RPT: Output growth (*y*)

A new question arises after finding declining support for partisan cycles within the United States. Does the same hold for the panel regression which includes 18 OECD countries? Similar to the pervious section, we will first replicate the work done by A&R, after which we run the panel regression on the full sample period (1960-2010). In the panel regression of time-series cross-section data, country dummies account for the specific difference between countries overtime. Hence, these dummies account for country specific factors which are not captured by other variables in the regression equation. A&R run a dynamic fixed-effect panel model in which correlation between the error term and the lagged dependent variables might lead to inconsistent estimates of the parameters (Hsiao 1986). This is the case when there is a large number of agents while the time period is short. This does not apply to the panel regression run by A&R, as they point out in one of their notes. Some robustness analysis we run to check for the persistence of found results overtime, contain a smaller time period (20 years) than the panel regression run by A&R. Nevertheless, 20 years still account for a large amount of observations, since all data is quarterly. More importantly perhaps are the possible biased dummies in these shorter time periods (arguing that a shorter time period contains less elections and even less changes of regime, this might be the case in particular for the DRPTN dummy). To avoid the above mentioned correlation and biased dummies we also include larger periods that test the robustness of the found result overtime.

Table 6 shows the results of A&R and the replication. Columns (1), (2) and (3) show the result for the entire sample of 18 countries. Columns (4), (5) and (6) show the result for the 8-country sample that contains countries with clear identifiable coalitions or who use a two-way party system. The replication uses another proxy for the world growth and hence the coefficients are sometimes apart. In addition, revised data also contributes to the small differences. Nevertheless, both the replication and the regression run by A&R point to the same conclusion. All the political dummies are significant on a 2 or 1 percent confidence level and the coefficients increase in their size when the 18-country sample is restricted to the 8-country sample. In other words, partisan effects are more present in countries that have better identifiable coalitions or use a two-way party system. Furthermore, a temporary decrease (increase) in economic growth after a change from a left-wing (right-wing) to right-wing (left-wing) government is significant and has the expected sign for all chosen N's (4, 6

and 8). The one-quarter lag in the political dummy is consistent with a reasonable interval between a change in regime in quarter t and change in policy in period $t + 1$ (Alesina and Roubini 1997, page 149).

Table 6
Rational partisan theory
Dependent variable: rate of growth of output (y)

	(1)	(2)	(3)	(4)	(5)	(6)	(1a)	(2a)	(3a)	(4a)	(5a)	(6a)
	Alesina and Roubini 1960-1993						Replica 1960-1993					
Independent variables	Coefficient (t-statistics)						Coefficient t-statistics					
y(-1)	0.67	0.67	0.68	0.68	0.67	0.67	0.60	0.60	0.60	0.64	0.64	0.64
	(46.0)	(45.8)	(45.8)	(30.6)	(30.1)	(29.7)	38.63	38.55	38.49	43.64	43.64	43.65
yw	0.36	0.36	0.36	0.26	0.26	0.26	0.21	0.21	0.21	0.19	0.19	0.20
	(12.4)	(12.5)	(12.6)	(7.9)	(8.10)	(8.07)	16.39	16.39	16.37	15.26	15.27	15.27
DRPT4(-1)	-0.40			-0.48			-0.42			-0.48		
	(3.09)			(3.20)			-3.25			-3.91		
DRPT6(-1)		-0.35			-0.53			-0.33			-0.37	
		(3.26)			(4.35)			-3.02			-3.51	
DRPT8(-1)			-0.25			-0.40			-0.23			-0.26
			(2.71)			(3.75)			-2.39			-2.74
US	-0.41	-0.41	-0.41	-0.04	-0.04	-0.03	0.29	0.37	0.43	-0.07	-0.06	-0.05
	(1.93)	(1.94)	(1.96)	(0.25)	(0.22)	(0.17)	1.07	1.34	1.60	-0.36	-0.29	-0.25
UK	-0.55	-0.55	-0.54	-0.21	-0.20	-0.20	-0.18	-0.12	-0.05	-0.50	-0.49	-0.48
	(2.64)	(2.65)	(2.55)	(1.20)	(1.19)	(1.16)	-0.67	-0.43	-0.19	-2.50	-2.46	-2.41
France	-0.15	-0.15	-0.16	0.14	0.15	0.15	0.27	0.33	0.39	-0.10	-0.10	-0.09
	(0.70)	(0.71)	(0.74)	(0.80)	(0.87)	(0.85)	0.93	1.16	1.39	-0.47	-0.46	-0.43
Germany	-0.35	-0.35	-0.35	-0.02	-0.01	-0.02	0.17	0.24	0.30	-0.19	-0.18	-0.18
	(1.66)	(1.67)	(1.67)	(0.05)	(0.06)	(0.01)	0.61	0.87	1.12	-0.96	-0.93	-0.89
Sweden	-0.46	-0.45	-0.46	-0.18	-0.16	-0.16	-0.16	-0.09	-0.03	-0.47	-0.47	-0.46
	(1.96)	(1.93)	(1.93)	(0.97)	(0.89)	(0.86)	-0.53	-0.31	-0.09	-2.04	-2.00	-1.96
Canada	0.02	0.02	0.02	0.35	0.35	0.36	0.39	0.45	0.51	0.01	0.01	0.02
	(0.10)	(0.08)	(0.09)	(2.00)	(2.06)	(2.00)	1.40	1.65	1.90	0.06	0.07	0.09
Australia	-0.06	-0.05	-0.05	0.28	0.28	0.29	0.33	0.39	0.46	-0.05	-0.04	-0.04
	(0.22)	(0.24)	(0.26)	(1.60)	(1.64)	(1.68)	1.17	1.43	1.68	-0.25	-0.22	-0.18
New Zealand	-0.45	-0.45	-0.44	-0.11	-0.11	-0.10	0.06	0.13	0.20	-0.28	-0.27	-0.26
	(2.15)	(2.16)	(2.08)	(0.66)	(0.63)	(0.60)	0.23	0.48	0.72	-1.39	-1.36	-1.32
Belgium	-0.37	-0.37	-0.38				-0.10	-0.03	0.03			
	(1.76)	(1.79)	(1.79)				-0.35	-0.12	0.12			
Ireland	0.68	0.68	0.67				1.28	1.35	1.41			
	(3.15)	(3.16)	(3.11)				4.50	4.82	5.10			
Austria	0.12	0.12	0.17				0.24	0.31	0.38			
	(0.56)	(0.59)	(0.80)				0.88	1.14	1.39			
Denmark	-0.32	-0.32	-0.32				-0.14	-0.07	-0.01			
	(1.53)	(1.56)	(1.56)				-0.51	-0.26	-0.02			
Italy	-0.01	-0.01	-0.01				0.28	0.34	0.40			
	(0.01)	(0.03)	(0.07)				1.00	1.25	1.49			
Netherlands	-0.07	-0.07	-0.07				0.25	0.32	0.39			
	(0.31)	(0.32)	(0.32)				0.91	1.17	1.44			
Norway	-0.03	-0.03	-0.06				0.91	0.98	1.04			
	(0.15)	(0.18)	(0.19)				3.25	3.53	3.79			
Finland	-0.25	-0.24	-0.25				0.13	0.20	0.26			
	(1.06)	(1.00)	(1.02)				0.42	0.66	0.87			
Switserland	-0.47	-0.47	-0.47				-0.10	-0.03	0.03			
	(2.73)	(2.24)	(2.26)				-0.35	-0.11	0.13			
Japan	0.77	0.77	0.81				1.29	1.36	1.43			
	(3.61)	(3.63)	(3.81)				4.55	4.86	5.14			
R2	0.64	0.64	0.64	0.64	0.63	0.63	0.63	0.63	0.63	0.62	0.62	0.62

Table 6.1 shows the replication (1960-1993) and the panel regression for the full sample period (1960-2010).[14] The difference between the size of the political dummies of the 18- and 8-country samples remains. More importantly perhaps is the fact that the size of all the

[14] Country dummies are not reported

political dummies (except for the DRPT8) decreases. Hence, the temporary shocks (captured by the DRPTN dummy) in output growth are declining overtime. However, for the entire sample period all dummies' coefficients are still significant on a 1 percent confidence level. Similar to the United States, the partisan effects on output growth seem to shrink in the last two decades. This does not hold for the DRPT8 dummy. The DRPT8 dummy does not decrease in size and increases slightly in significance. Hence, in the last two decades it seems that the temporary shock in output growth shifts away from the first 6 quarters to the last 2 quarters, in the 8 quarters following a regime change. The coefficients in column (5b) imply that the growth rate between the beginning of a right and left wing government peaks at about 0.97 percent. Hence, six quarters after a regime change from a left (right) to a right (left) wing administration, the growth rate is about 0.49 percent below (above) the steady state value (column (5a) implies 1.03 and 0.52 percent, respectively).[15]

Table 6.1
Rational partisan theory
Dependent variable: rate of growth of output (*y*)

	(1a)	(2a)	(3a)	(4a)	(5a)	(6a)	(1b)	(2b)	(3b)	(4b)	(5b)	(6b)
	Sample Alesina and Roubini 1960-1993						Full Sample 1960-2010					
Independent variables	Coefficient t-statistics											
	18-country sample			8-country sample			18-country sample			8-country sample		
y(-1)	0.60	0.60	0.60	0.64	0.64	0.64	0.62	0.62	0.62	0.66	0.66	0.66
	38.63	38.55	38.49	43.64	43.64	43.65	52.93	52.83	52.69	58.56	58.44	58.30
yw	0.21	0.21	0.21	0.19	0.19	0.20	0.21	0.21	0.21	0.19	0.19	0.19
	16.39	16.39	16.37	15.26	15.27	15.27	21.61	21.65	21.68	20.26	20.32	20.36
DRPT4(-1)	-0.42			-0.48			-0.30			-0.37		
	-3.25			-3.91			-2.80			-3.68		
DRPT6(-1)		-0.33			-0.37			-0.28			-0.33	
		-3.02			-3.51			-3.16			-3.84	
DRPT8(-1)			-0.23			-0.26			-0.23			-0.27
			-2.39			-2.74			-3.03			-3.57
R2	0.63	0.63	0.63	0.62	0.62	0.62	0.65	0.65	0.65	0.65	0.65	0.65

Tables 6.2, 6.3 and 6.4 report the results of the robustness check for the persistence of the temporary shocks in output growth overtime. The DRPTN dummy increases in size and stays significant on a 1 percent confidence level (except for DRPT8 that is still significant on a 2 percent level for period 1973-1993) for period 1973-1993 and 1973-2003, while the contrary holds for later periods. For period 1990-2010 both DRPT4 and DRPT6 become insignificant on a 10 percent confidence level for the 18-country sample. For the 8-country sample DRPT6 is still significant on a 5 percent level, for period 1990-2010. DRPT8 stays significant on a 5 percent or higher confidence level in all periods. Since the DRPTN dummy only accounts for the actual changes from left (right) to right (left) and thus does not include incumbent

[15] The "steady state" for growth (y^*) in column (5b) is computed as follows: $y^* = 0.66y^* + 0.19y_w - 0.33DRPT6 = 0.56y_w - 0.97DRPT$

winnings, these results should not be overrated (a shorter time period might bias the DRPTN dummy). Over the entire sample the partisan effects are still significant on a 1 percent confidence level. Hence, the robustness check for persistence of the DRPTN dummy overtime, serves as an indication for the observed decreases in size of the DRPT4 and DRPT6 dummy in the full sample. In summary: the observed partisan effects are for a large part driven by the two decades after the collapse of the Bretton Woods system. Furthermore, there is evidence of a decrease of the observed partisan effects in the last two decades for output growth, even though the partisan effects for the full sample are still significant on a 1 percent confidence level. In addition, there seems to be a shift in the timing of the temporary shock in output growth after a regime change.

Table 6.2
Rational partisan theory
Dependent variable: rate of growth of output (*y*)

	(1)	(2)	(3)	(4)	(5)	(6)	(1a)	(2a)	(3a)	(4a)	(5a)	(6a)
	1960-10	1973-93	1973-03	1980-00	1980-10	1990-10	1960-10	1973-93	1973-03	1980-00	1980-10	1990-10
Independent variables	Coefficient t-statistics											
	18-country sample						8-country sample					
y (-1)	0.62	0.55	0.60	0.61	0.60	0.63	0.66	0.61	0.67	0.70	0.66	0.70
	52.93	28.13	38.76	31.75	39.51	36.23	58.56	32.71	46.80	40.19	46.19	43.72
yw	0.21	0.21	0.20	0.23	0.23	0.22	0.19	0.19	0.17	0.19	0.20	0.19
	21.61	13.42	14.26	10.41	17.62	15.47	20.26	12.04	12.34	8.65	15.86	13.62
DRPT4(-1)	-0.30	-0.46	-0.36	-0.31	-0.21	-0.12	-0.37	-0.50	-0.42	-0.39	-0.31	-0.24
	-2.80	-3.01	-2.84	-2.00	-1.57	-0.76	-3.68	-3.32	-3.33	-2.57	-2.43	-1.52
R2	0.65	0.59	0.61	0.62	0.63	0.69	0.65	0.57	0.59	0.59	0.61	0.67

Table 6.3
Rational partisan theory
Dependent variable: rate of growth of output (*y*)

	(1)	(2)	(3)	(4)	(5)	(6)	(1a)	(2a)	(3a)	(4a)	(5a)	(6a)
	1960-10	1973-93	1973-03	1980-00	1980-10	1990-10	1960-10	1973-93	1973-03	1980-00	1980-10	1990-10
Independent variables	Coefficient t-statistics											
	18-country sample						8-country sample					
y (-1)	0.62	0.55	0.60	0.61	0.60	0.63	0.66	0.61	0.67	0.70	0.66	0.70
	52.83	28.04	38.62	31.69	39.47	36.23	58.44	32.65	46.63	40.09	46.09	43.62
yw	0.21	0.21	0.20	0.23	0.23	0.22	0.19	0.19	0.17	0.19	0.20	0.19
	21.65	13.44	14.32	10.42	17.65	15.48	20.32	12.06	12.40	8.67	15.91	13.66
DRPT6(-1)	-0.28	-0.39	-0.36	-0.34	-0.25	-0.21	-0.33	-0.41	-0.39	-0.39	-0.32	-0.29
	-3.16	-2.99	-3.37	-2.64	-2.26	-1.60	-3.84	-3.23	-3.70	-3.04	-2.95	-2.21
R2	0.65	0.59	0.61	0.62	0.63	0.69	0.65	0.57	0.59	0.59	0.62	0.67

Table 6.4
Rational partisan theory
Dependent variable: rate of growth of output (*y*)

	(1)	(2)	(3)	(4)	(5)	(6)	(1a)	(2a)	(3a)	(4a)	(5a)	(6a)
	1960-10	1973-93	1973-03	1980-00	1980-10	1990-10	1960-10	1973-93	1973-03	1980-00	1980-10	1990-10
Independent variables	Coefficient t-statistics											
	18-country sample						8-country sample					
y (-1)	0.62	0.55	0.60	0.61	0.60	0.63	0.66	0.61	0.67	0.70	0.66	0.70
	52.69	27.96	38.43	31.55	39.37	36.11	58.30	32.59	46.44	39.93	45.92	43.41
yw	0.21	0.21	0.20	0.23	0.23	0.22	0.19	0.19	0.17	0.19	0.20	0.19
	21.68	13.42	14.36	10.43	17.69	15.54	20.36	12.05	12.44	8.70	15.95	13.72
DRPT8(-1)	-0.23	-0.29	-0.30	-0.23	-0.20	-0.26	-0.27	-0.31	-0.32	-0.26	-0.26	-0.30
	-3.03	-2.48	-3.20	-1.98	-2.04	-2.19	-3.57	-2.64	-3.38	-2.27	-2.64	-2.62
R2	0.65	0.58	0.61	0.62	0.63	0.69	0.65	0.57	0.59	0.59	0.62	0.67

6.2 RPT: Unemployment (*U*)

In this section we test partisan implications for the unemployment rate. Troubling here is the fact the unemployment sample does not correctly mirror the sample used by A&R (see appendix 1 for details concerning the two samples). Therefore, it is not surprising that the replication does not compare to the result found by A&R.[16] Where A&R found a highly significant DRPT6(-2), the replication only finds a DRPT6(-2) that is significant on a 10 percent confidence level for the 8-country sample. In both cases, the high persistency of unemployment plays a large role (adding up de UDIFF coefficients for the replication of the 18- and 8-country sample yield 0.98 and 0.99 respectively, which shows that the unemployment rate compared to the OECD average is still highly persistent over time). For calculating the average OECD unemployment rate, we took the average of the unemployment rates of United States, Japan, Germany, France, The United Kingdom, Italy and Canada (using the GDP or total labor force shares to weight the unemployment rates does not provide better estimations than the ones reported in (1a) and (2a)). Lagging the DRPT6 variable for only one quarter provides more significant results. In contrast with the dummy of A&R, the DRPT6(-1) dummy has about the same value for both country samples, yet the dummy for the 8-country sample has a higher t-statistic.

[16] Note additionally, that while the replication contains less data points than the one of A&R, the R^2 of the replication is higher, further amplifying the notion that the two samples do not properly compare and that both the lack of data as well as changes made to the used data over time contribute to the difference between the replication and the estimation of A&R.

Table 7

Rational partisan theory

Dependent variable: unemployment rate (relative to OECD average)(UDIFF)

	(1)	(2)	(1a)	(2a)	(3)	(4)
	Alesina and Roubini 1960-1993		Replica 1960-1993			
Independent variables	Coefficient (t-statistics)		Coefficient t-statistics			
UDIFF(-1)	1.10	1.09	1.29	1.30	1.29	1.30
	(49.7)	(33.2)	58.71	59.52	58.86	59.67
UDIFF(-1)	-0.12	-0.11	-0.31	-0.31	-0.31	-0.31
	(5.29)	(3.39)	-14.12	-13.90	-14.16	-13.97
DRPT6(-2)	0.08	0.13	0.02	0.03		
	(4.00)	(4.47)	1.53	1.86		
DRPT6(-1)					0.04	0.04
					2.61	2.88
US	0.003	0.01	-0.03	-0.02	-0.03	-0.02
	(0.09)	(0.47)	-0.95	-0.79	-0.71	-0.76
UK	0.05	0.05	-0.03	0.01	-0.02	0.01
	(1.39)	(1.64)	-0.80	0.28	-0.57	0.30
France	0.06	0.07	-0.02	0.01	-0.01	0.01
	(1.54)	(1.75)	-0.49	0.29	-0.27	0.31
Germany	0.007	-0.01	-0.06	-0.004	-0.05	-0.004
	(0.19)	(0.20)	-1.41	-0.14	-1.19	-0.12
Sweden	-0.01	-0.04	-0.09	-0.003	-0.09	-0.003
	(0.24)	(0.97)	-2.11	-0.09	-1.91	-0.08
Canada	0.04	0.06	0.01	-0.001	0.02	0.001
	(1.01)	(1.57)	0.22	-0.02	0.46	0.02
Australia	0.05	0.06	-0.01	0.01	-0.004	0.01
	(1.41)	(1.60)	-0.35	0.41	-0.11	0.46
New Zealand	-0.03	-0.06	0.07	0.10	0.08	0.10
	(0.57)	(1.14)	1.25	1.86	1.34	1.82
Belgium	0.03		-0.001		0.01	
	(0.80)		-0.01		0.20	
Ireland	0.13		0.16		0.17	
	(2.67)		2.56		2.73	
Austria	-0.03		-0.11		-0.10	
	(0.68)		-2.51		-2.31	
Denmark	0.10		0.03		0.04	
	(2.32)		0.73		0.97	
Italy	0.05		0.02		0.03	
	(1.30)		0.48		0.74	
Netherlands	0.07		-0.06		-0.05	
	(1.62)		-1.41		-1.18	
Norway	-0.01		-0.11		-0.11	
	(0.36)		-2.51		-2.30	
Finland	0.07		-0.01		0.002	
	(2.10)		-0.15		0.06	
Switserland	-0.04		-0.17		-0.17	
	(0.70)		-3.25		-3.09	
Japan	-0.07		-0.15		-0.14	
	(1.61)		-3.37		-3.16	
R2	0.98	0.97	0.99	0.99	0.99	0.99

Using the full sample provides insight on a possible decline in the persistence of the partisan effect on the unemployment rate. The DRPT6(-2) has a larger size for the 8-country sample and is significant on a 5 and 1 percent level for the 18- and 8-country sample respectively. DRPT6(-1) is still significant on a 1 percent level for both country samples. Furthermore, for both dummies, the size for the 8-country sample is higher than for the 18-country sample. Hence, the temporary shock in unemployment after a regime change increases in significance

overtime and is more present in countries that have a clearly identifiable coalition or a two-way party system. Even though the coefficients of the dummies are small, the temporary shocks have a significant impact due to the persistent character of the unemployment rate overtime. The coefficients in column (1b) imply that the unemployment rate between a right and left wing government peaks at about 1 percent. Hence, six quarters after a regime change from a left (right) to a right (left) wing administration, the unemployment rate is about 0.50 percent above (below) the steady state value (column (1a) implies the same values).[17]

Table 7.1
Rational partisan theory
Dependent variable: unemployment rate (relative to OECD average)(UDIFF)

	(1a)	(2a)	(3)	(4)	(1b)	(2b)	(3a)	(4a)
	Sample Alesina and Roubini 1960-1993				Full Sample 1960-2010			
Independent variables	Coefficient t-statistics							
	18-country sample		8-country sample		18-country sample		8-country sample	
UDIFF(-1)	1.29	1.29	1.30	1.30	1.28	1.28	1.29	1.29
	58.71	58.86	59.52	59.67	74.78	74.97	75.19	75.37
UDIFF(-1)	-0.31	-0.31	-0.31	-0.31	-0.30	-0.30	-0.29	-0.29
	-14.12	-14.16	-13.90	-13.97	-17.43	-17.49	-17.16	-17.25
DRPT6(-2)	0.02		0.03		0.02		0.03	
	1.53		1.86		2.02		2.69	
DRPT6(-1)		0.04		0.04		0.03		0.04
		2.61		2.88		2.85		3.49
R2	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99

6.3 PT: Inflation (π)

Table 8 reports the result of the empirical tests on the inflation rate for the partisan theory.[18] For the ADM dummy, the found results of A&R and the replication are similar (note that the found effect in the replication confirms that partisan effects are stronger in the 8-country sample). Nevertheless, A&R find that the RADM variable is insignificant on a 10 percent confidence level for both country samples. The replication finds a RADM that is significant on a 10 percent and 1 percent level for the 18-country and 8-country sample, respectively. Furthermore, the estimated coefficients in the replication confirm that the partisan effects for

[17] The "steady state" for unemployment (U^*) in column (1b) is computed as follows:
$U^* = 1.28U^* - 0.30U^* - 0.02DRPT6 = -1.00DRPT$
[18] The t-statistics reported in table 6.3 of Alesina and Roubini for π(-1) in column (1) and Netherlands in column (3) are changed from 5.58 to 55.8 and from 6.54 to 0.65 respectively (the reported t-statistics of Alesina and Roubini are inconsistent with other t-statistics in table 6.3, page 156-157)

the ADM and RADM specifications are higher in both size and significance in the 8-country sample compared to the 18-country sample.

Table 8
Rational partisan theory
Dependent variable: inflation rate (π)

	(1)	(2)	(3)	(4)	(1a)	(2a)	(3a)	(4a)
	Alesina and Roubini 1960-1993				Replica 1960-1993			
Independent variables	Coefficient (t-statistics)				Coefficient t-statistics			
π (-1)	1.13	1.22	1.13	1.22	1.08	1.10	1.08	1.10
	(55.8)	(40.2)	(55.8)	(40.3)	53.37	54.20	53.40	54.18
π (-2)	-0.15	-0.26	-0.14	-0.26	-0.12	-0.12	-0.12	-0.12
	(4.90)	(5.58)	(4.90)	(5.59)	-4.05	-4.17	-4.05	-4.17
π (-3)	-0.11	-0.08	-0.11	-0.09	-0.10	-0.09	-0.10	-0.09
	(5.82)	(3.11)	(5.82)	(3.11)	-5.31	-4.87	-5.31	-4.88
πw	0.11	0.12	0.11	0.11	0.14	0.12	0.14	0.12
	(13.1)	(9.82)	(13.1)	(9.78)	14.15	13.14	14.05	13.13
ADM(-1)	-0.05	-0.05			-0.08	-0.11		
	(1.80)	(1.67)			-2.18	-3.13		
RADM(-1)			-0.03	-0.04			-0.05	-0.09
			(1.46)	(1.39)			-1.95	-3.44
US	-0.06	-0.05	-0.05	-0.05	-0.03	-0.10	-0.03	-0.11
	(0.63)	(0.55	(0.69)	(0.57)	-0.24	-0.98	-0.19	-1.07
UK	0.39	0.38	0.39	0.38	0.35	0.23	0.36	0.22
	(3.89)	(3.87)	(3.86)	(3.81)	2.42	2.20	2.45	2.12
France	0.19	0.18	0.18	0.18	0.17	0.09	0.18	0.07
	(1.93)	(1.93)	(1.85)	(1.88)	1.21	0.82	1.22	0.70
Germany	-0.20	-0.20	-0.21	-0.21	-0.35	-0.36	-0.35	-0.38
	(2.01)	(2.19)	(2.15)	(2.30)	-2.46	-3.35	-2.46	-3.53
Sweden	0.22	0.21	0.23	0.21	0.17	0.04	0.20	0.05
	(2.23)	(2.18)	(2.33)	(2.26)	1.15	0.37	1.34	0.45
Canada	0.03	0.02	0.03	0.03	-0.02	-0.11	0.00	-0.11
	(0.36)	(0.26)	(0.36)	(0.79)	-0.12	-1.04	0.01	-1.03
Australia	0.22	0.21	0.21	0.21	0.19	0.08	0.19	0.08
	(2.22)	(2.21)	(2.16)	(2.16)	1.28	0.79	1.35	0.73
New Zealand	0.46	0.44	0.64	0.66	0.46	0.33	0.47	0.32
	(6.40)	(4.33)	(6.32)	(6.26)	3.16	3.10	3.17	3.02
Belgium	-0.01		-0.02		-0.08		-0.06	
	(0.18)		(0.23)		-0.54		-0.44	
Ireland	0.44		0.43		0.42		0.44	
	(6.36)		(4.24)		2.88		3.00	
Austria	-0.07		-0.07		-0.15		-0.13	
	(0.75)		(0.70)		-1.02		-0.91	
Denmark	0.22		0.21		0.18		0.19	
	(2.24)		(2.15)		1.22		1.30	
Italy	0.52		0.52		0.49		0.49	
	(5.14)		(5.01)		3.26		3.24	
Netherlands	-0.06		-0.05		-0.10		-0.09	
	(0.63)		(0.65)		-0.72		-0.59	
Norway	0.18		0.18		0.14		0.15	
	(1.88)		(1.82)		0.99		1.06	
Finland	0.27		0.27		0.26		0.27	
	(2.76)		(2.70)		1.79		1.84	
Switserland	-0.09		-0.08		-0.17		-0.14	
	(0.92)		(0.82)		-1.16		-0.95	
Japan	0.07		0.06		-0.001		0.03	
	n/a		(0.58)		-0.01		0.19	
R2	0.94	0.95	0.96	0.95	0.94	0.94	0.94	0.94

A&R note that the country dummies can be divided in three categories: Italy, Ireland, New Zealand and the United Kingdom show coefficients that are both in absolute form as in significance above average. The same holds for the replication though this first category declines slightly in both size and significance. The size, compared to the other country dummies ' coefficients is still high and all country dummies are significant on a 1 percent level except for the United kingdom (UK dummy is significant on a 2 and 5 percent level for the 18- and 8-country sample, respectively). The second category (United States, Germany, Canada, Belgium, Austria, the Netherlands, Switzerland and Japan) yields countries that have insignificant dummies (except for Germany that has a significant dummy but a negative sign). The same holds for the second category in the replication. Surprisingly, for the third category (France, Sweden, Australia, Denmark and Norway) the differences are substantial. In the regression of A&R, the category three country dummies ' coefficients are significant on either a 10 (France and Norway), 5 (Australia, Sweden and Denmark) or 1 (Finland[19]) percent confidence level. In the replication, it is exactly this category that changes considerably. All countries dummies of category three are no longer statistically significant on a 10 percent level except for Finland that is now only significant on a 10 percent level. Noteworthy is that all these countries (except for France and Australia) are from Northern Europe.

A&R attribute the differences between these three categories to the degree of central bank independence (arguing that more independent central banks lead to lower inflation rates).

Table 8.1 compares the replication with the full sample. The size of both ADM and RADM coefficients declines compared to the replication. The ADM and RADM specification are still significant on a 1 percent level for the 8-country sample, while for the 18-country sample both specifications are now only significant on a 10 percent level. The permanent partisan differences between the right and the left stay present over the full sample period though there is clear evidence that the partisan effects are weakening overtime. Hence, the inflation is still permanently lower than its natural rate, during right administration and this effect is more present in the countries that have a two-party system or more clearly identifiable coalitions. The coefficients in column (3c) imply that the inflation rate between a right and left wing government peaks at about 0.58 percent (column (3a) implies about 1 percent).[20]

[19] Finland gets left out in the Alesina and Roubini's categorization (I add Finland to the third group since it experiences the same decline as the other countries in the third group)

[20] The "steady state" for the inflation rate (π^*) in column (3c) is computed as follows: $\pi^* = 1.10\pi^* - 0.14\pi^* - 0.08\pi^* + 0.13\pi_w - 0.07ADM = 1.08\pi_w - 0.58ADM$

The three categories mentioned above, decline in their differences. The first group still displays the same categorization as before. In group two, the country dummy for Switzerland becomes significant on a 10 percent level. The country dummies in the third group drop even further in size and significance, now also leaving Finland insignificant on a 10 percent level. The introduction of the euro and the ECB might have caused these differences by decreasing the individual central bank independence in several of the countries (Belgium, Germany, Finland, France, Ireland, Italy, the Netherlands, Austria) within the sample.

Table 8.1
Rational partisan theory
Dependent variable: inflation rate (π)

	(1a)	(2a)	(3a)	(4a)	(1c)	(2c)	(3c)	(4c)
	Sample Alesina and Roubini 1960-1993				Full Sample 1960-2010			
Independent variables	Coefficient t-statistics							
π(-1)	1.08	1.08	1.10	1.10	1.09	1.09	1.10	1.10
	53.37	53.40	54.20	54.18	66.30	66.32	67.05	67.03
π(-2)	-0.12	-0.12	-0.12	-0.12	-0.14	-0.14	-0.14	-0.14
	-4.05	-4.05	-4.17	-4.17	-5.75	-5.75	-5.86	-5.85
π(-3)	-0.10	-0.10	-0.09	-0.09	-0.09	-0.09	-0.08	-0.08
	-5.31	-5.31	-4.87	-4.88	-5.49	-5.49	-5.14	-5.15
πw	0.14	0.14	0.12	0.12	0.15	0.15	0.13	0.13
	14.15	14.05	13.14	13.13	18.90	18.84	17.88	17.89
ADM(-1)	-0.08		-0.11		-0.05		-0.07	
	-2.18		-3.13		-1.94		-3.14	
RADM(-1)		-0.05		-0.09		-0.03		-0.06
		-1.95		-3.44		-1.70		-3.55
US	-0.03	-0.03	-0.10	-0.11	-0.03	-0.03	-0.05	-0.05
	-0.24	-0.19	-0.98	-1.07	-0.32	-0.26	-0.69	-0.75
UK	0.35	0.36	0.23	0.22	0.23	0.24	0.18	0.18
	2.42	2.45	2.20	2.12	2.27	2.35	2.48	2.45
France	0.17	0.18	0.09	0.07	0.06	0.06	0.04	0.04
	1.21	1.22	0.82	0.70	0.62	0.64	0.60	0.51
Germany	-0.35	-0.35	-0.36	-0.38	-0.28	-0.28	-0.27	-0.27
	-2.46	-2.46	-3.35	-3.53	-2.83	-2.81	-3.56	-3.69
Sweden	0.17	0.20	0.04	0.05	0.05	0.07	0.001	0.004
	1.15	1.34	0.37	0.45	0.48	0.65	0.01	0.06
Canada	-0.02	0.00	-0.11	-0.11	-0.04	-0.03	-0.07	-0.07
	-0.12	0.01	-1.04	-1.03	-0.41	-0.28	-0.98	-0.98
Australia	0.19	0.19	0.08	0.08	0.13	0.14	0.10	0.10
	1.28	1.35	0.79	0.73	1.33	1.37	1.38	1.32
New Zealand	0.46	0.47	0.33	0.32	0.27	0.28	0.23	0.22
	3.16	3.17	3.10	3.02	2.69	2.73	3.06	3.01
Belgium	-0.08	-0.06			-0.07	-0.06		
	-0.54	-0.44			-0.67	-0.56		
Ireland	0.42	0.44			0.26	0.26		
	2.88	3.00			2.54	2.63		
Austria	-0.15	-0.13			-0.13	-0.12		
	-1.02	-0.91			-1.27	-1.18		
Denmark	0.18	0.19			0.10	0.11		
	1.22	1.30			0.97	1.05		
Italy	0.49	0.49			0.31	0.32		
	3.26	3.24			3.05	3.09		
Netherlands	-0.10	-0.09			-0.09	-0.08		
	-0.72	-0.59			-0.88	-0.79		
Norway	0.14	0.15			0.07	0.08		
	0.99	1.06			0.74	0.81		
Finland	0.26	0.27			0.12	0.13		
	1.79	1.84			1.22	1.28		
Switserland	-0.17	-0.14			-0.19	-0.17		
	-1.16	-0.95			-1.88	-1.70		
Japan	0.00	0.03			-0.13	-0.11		
	-0.01	0.19			-1.27	-1.12		
R2	0.94	0.94	0.94	0.94	0.95	0.95	0.94	0.94

Due to the decrease in size of both dummies we include similar robustness checks as with output growth (note that the dichotomous dummies ADM and RADM are less sensitive to a shorter time periods since they either account for a right- or left-wing government and not for actual changes in regime, like the DRPTN dummy does). The results in tables 8.2 and 8.3 support the notion that a post Bretton Woods period of two decades was an important influence behind the found partisan effects, especially for the 8-country sample. Both ADM and RADM specifications are significant on a 1 percent level for the 8-country sample (except for the 1990-2010 period in which the ADM and RADM specification are significant on a 5 and 2 percent level, respectively). The results for the 18-country sample are less convincing. For the 1973-1993 both dummies have a larger size but are less significant than in the full sample (note that for the full sample the RADM dummy is significant on a 10 percent level while this is not the case for the 1973-1993 period). Nevertheless, both dummies have a larger size and t-statistic for the 1973-2003 period compared to the full sample. For the 18-country sample it seems that a post Bretton Woods period of two decades is of no big importance and that the last two decades have contributed to a decline in the found partisan effects. The contrary holds for the 8-country sample, where there are only minor indications for a decline in the found partisan effect over the last two decades. Furthermore, evidence is found (for the 8-country sample) for a rise in the inflation rate that is permanently higher - than its natural rate - during a left-wing administration in a post Bretton Woods period of two decades.

Table 8.2
Rational partisan theory
Dependent variable: inflation rate (π)

	(1)	(2)	(3)	(4)	(5)	(6)	(1a)	(2a)	(3a)	(4a)	(5a)	(6a)
	1960-10	1973-93	1973-03	1980-00	1980-10	1990-10	1960-10	1973-93	1973-03	1980-00	1980-10	1990-10
Independent variables	Coefficient t-statistics											
	18-country sample						8-country sample					
π(-1)	1.09	1.09	1.09	1.03	1.03	0.94	1.10	1.12	1.12	1.04	1.05	0.96
	66.30	43.04	52.74	40.99	49.95	37.69	67.05	44.38	53.90	41.75	50.74	38.37
π(-2)	-0.14	-0.13	-0.13	-0.06	-0.10	-0.11	-0.14	-0.14	-0.14	-0.06	-0.10	-0.11
	-5.75	-3.44	-4.25	-1.66	-3.29	-3.09	-5.86	-3.64	-4.39	-1.74	-3.39	-3.18
π(-3)	-0.09	-0.11	-0.10	-0.10	-0.08	-0.07	-0.08	-0.10	-0.09	-0.09	-0.07	-0.06
	-5.49	-4.72	-5.18	-4.22	-4.01	-3.15	-5.14	-4.17	-4.82	-3.93	-3.72	-2.74
πw	0.15	0.16	0.15	0.13	0.15	0.24	0.13	0.13	0.13	0.12	0.13	0.22
	18.90	13.21	15.95	10.94	14.96	11.58	17.88	11.39	14.32	10.07	13.98	11.34
ADM(-1)	-0.05	-0.08	-0.07	-0.06	-0.05	-0.04	-0.07	-0.12	-0.09	-0.09	-0.07	-0.06
	-1.94	-1.71	-2.16	-1.79	-2.10	-1.50	-3.14	-2.64	-3.10	-2.55	-2.97	-2.15
R2	0.95	0.95	0.96	0.95	0.95	0.83	0.94	0.94	0.95	0.95	0.95	0.83

Table 8.3
Rational partisan theory
Dependent variable: inflation rate (π)

	(1)	(2)	(3)	(4)	(5)	(6)	(1a)	(2a)	(3a)	(4a)	(5a)	(6a)
	1960-10	1973-93	1973-03	1980-00	1980-10	1990-10	1960-10	1973-93	1973-03	1980-00	1980-10	1990-10
Independent variables	Coefficient t-statistics											
	18-country sample						8-country sample					
π(-1)	1.09	1.09	1.09	1.03	1.03	0.94	1.10	1.12	1.12	1.04	1.04	0.96
	66.32	43.08	52.78	41.02	49.98	37.70	67.03	44.34	53.86	41.72	50.70	38.35
π(-2)	-0.14	-0.13	-0.13	-0.06	-0.10	-0.11	-0.14	-0.14	-0.13	-0.06	-0.10	-0.11
	-5.75	-3.44	-4.25	-1.66	-3.29	-3.09	-5.85	-3.63	-4.38	-1.73	-3.38	-3.18
π(-3)	-0.09	-0.11	-0.10	-0.10	-0.08	-0.07	-0.08	-0.10	-0.10	-0.09	-0.07	-0.07
	-5.49	-4.73	-5.19	-4.22	-4.02	-3.15	-5.15	-4.20	-4.83	-3.94	-3.74	-2.74
πw	0.15	0.16	0.15	0.13	0.15	0.24	0.13	0.13	0.13	0.12	0.14	0.22
	18.84	13.12	15.88	10.91	14.93	11.58	17.89	11.40	14.36	10.13	14.05	11.39
RADM(-1)	-0.03	-0.05	-0.04	-0.05	-0.04	-0.03	-0.06	-0.10	-0.08	-0.08	-0.07	-0.05
	-1.70	-1.44	-1.87	-1.70	-2.07	-1.53	-3.55	-3.09	-3.49	-2.92	-3.47	-2.51
R2	0.95	0.95	0.96	0.95	0.95	0.83	0.94	0.94	0.95	0.95	0.95	0.83

6.4 TPT: Output growth (*y*) and Unemployment (*U*)

Testing for the traditional partisan theory, A&R found no support. Contrary to the United States where the RADM dummy is significant for the output growth, this does not hold for the panel regression. After replicating the regression and running the same regression on the full sample period, nothing changes to this result. For unemployment A&R find no support for the traditional partisan theory. The ADM dummy is significant on a 5 percent level for the 18-country sample, though after conducting the same test as for the United States by using the SECN dummy, the significance of the ADM dummy is found spurious. Hence, no support is found for the traditional partisan theory on both output growth and unemployment not even when conducting the same estimation on the full sample period (tables 9, 9.1, 10 and 10.1 are found in appendix 3).[21]

Summarizing the findings for the rational and traditional partisan theory, A&R conclude: "our regressions show that a permanent difference in inflation is associated with temporary deviations of output and unemployment from the trend; consistently with the models of inflation bias, real effects occur only when there are unexpected policy shocks, in our case as result of electoral surprises. The results also suggest that administrations more concerned about growth and unemployment than inflation are caught in the suboptimal equilibrium with an inflation bias after the temporary initial expansion." Hence, a policy maker can have an incentive to amplify output, but by doing so cause a higher inflation rate without achieving long lasting growth and employment. Note that these conclusions are supported by indirect

[21] For unemployment - as in table 7 – a disappointing replication is produced

results provided above and that the temporary shocks in growth (tables 6.2, 6.3 and 6.4) and the permanent effects of inflation are declining overtime (8.1, 8.2 and 8.3) while the shocks in the unemployment rate remain stable (table 7.1).

6.5 PBC: Output growth (*y*), Unemployment (*U*) and Inflation (π)

A&R do not find any satisfactory evidence for the political business cycle (this in accordance with the lack of results for the United States). Table 11 shows the results of A&R and the replication. Both the replication and the results reported by A&R reject any notion of a political business cycle for output growth and unemployment.[22]

Table 11

Political business cycle theory

Dependent variable: rate of growth (*y*) and unemployment rate (relative to OECD average)(UDIFF)

	(1)	(2)	(1a)	(2a)	(3)	(4)	(3a)	(4a)
	Alesina and Roubini 1960-1993		Replica 1960-1993		Alesina and Roubini 1960-1993		Replica 1960-1993	
Independent variables	Coefficient (t-statistics)		Coefficient t-statistics		Coefficient (t-statistics)		Coefficient t-statistics	
	18-country sample				8-country sample			
y (-1)	0.68		0.60		0.68		0.65	
	(45.8)		38.75		(30.3)		44.12	
yw	0.36		0.21		0.26		0.19	
	(12.2)		16.24		(7.77)		15.18	
UDIFF(-1)		1.10		1.29		1.10		1.30
		(48.1)		58.83		(32.5)		59.49
UDIFF(-2)		-0.12		-0.32		-0.12		-0.31
		(5.09)		-14.21		(3.51)		-13.93
NRD4	0.01	-0.01	0.06	-0.004	0.13	-0.01	0.04	-0.001
	(0.09)	(0.39)	0.55	-0.27	(1.14)	(0.56)	0.35	-0.05
R2	0.63	0.98	0.65	0.99	0.62	0.97	0.64	0.99

Table 11.1

Political business cycle theory

Dependent variable: rate of growth (*y*) and unemployment rate (relative to OECD average)(UDIFF)

	(1)	(2)	(1a)	(2a)	(3)	(4)	(3a)	(4a)
	1960-1993		1960-2010		1960-1993		1960-2010	
Independent variables	Coefficient t-statistics							
	18-country sample				8-country sample			
y (-1)	0.60		0.63		0.65		0.66	
	38.75		52.96		44.12		58.81	
yw	0.21		0.21		0.19		0.19	
	16.24		21.58		15.18		20.27	
UDIFF(-1)		1.29		1.28		1.30		1.29
		58.83		74.94		59.49		75.2
UDIFF(-2)		-0.32		-0.30		-0.31		-0.29
		-14.21		-17.55		-13.93		-17.21
NRD4	0.06	-0.004	0.13	-0.01	0.04	-0.001	0.09	-0.007
	0.55	-0.27	1.56	-0.96	0.35	-0.05	1.10	-0.64
R2	0.65	0.99	0.65	0.99	0.64	0.99	0.64	0.99

[22] As seen before, the replica of unemployment is disappointing. Furthermore, there are small differences between the results reported for output growth that contradict each other (both the proxy for world growth as updated data might have contribute to this)

Conducting the same panel regression on the full sample for output growth, yields an increased size and higher t-statistic for the NRD4 dummy. Even though the NRD4 dummy is still insignificant on a 10 percent confidence level, reexamination of the political business cycle on the full sample might lead to interesting results. Running numerous regressions, we find support for the political business cycle when lagging the NRDN dummy with 1 quarter.[23] The opportunistic effects on output growth seem to grow in the last two decades (except for NRD8, which slightly decreases is size, yet has a higher t-statistic in the full sample compared to the 1960-1993 sample), contrary to the found decline in partisan effects on output growth in the last two decades. Moreover, the temporary jump in output growth before an election has a larger size and is significant on a 1 percent level for the 18-country sample. The 8-country sample has a slightly lower size and is significant on a 5 percent confidence level for the NRD4 and NDR6 specification. Furthermore, in the 8-country sample, the NRD8 specification is significant on a 2 percent confidence level and has a larger size than both NRD4 and NRD6 specifications. In the 18-country sample, the NRD4 specification has the largest size of the three. Put together, there is no clear evidence that opportunistic behavior of politicians - for which the NRDN specification finds indirect evidence - is more present in countries that have a clear identifiable coalition or use a two-way party system. Furthermore, in the last two decades, there seems to be a clear rise in the temporary shock in output growth before an election. Since the NRDN specification accounts for a jump in output growth for both left- and right-wing administrations, it might capture a reversed causality between output growth and elections.[24] Hence, the jump in output growth in the pre-election period might not be caused by an opportunistic policy maker but by the idea that a change in government might lead to better times, and thus increase trust in the future. Table 11.3 reports the robustness check for the found result over time. What stands out (contrary to the robustness checks for the partisan effects) are the 1980-2010 and 1990-2010 period, which both prove to be a major force behind the found evidence for the opportunistic business cycle. Similar results are found for the NRD6 and NRD8 specification.[25] Interestingly, while partisan effects are declining overtime, opportunistic behavior - as defined by the political business cycle - seem to be on a rise in the last three decades. Hence, looking at the last three decades, there is significant evidence that points to an increase in the temporary shock in output growth before an election

[23] Alesian and Roubini do not find support for the PBC theory when using alternative lag structures for the NRDN dummy. Furthermore, using the proxy for world growth as defined by A&R does lead to similar results as the ones reported in table 11.2 (see appendix 4)

[24] For specifications which captures the differences between right and left, one would reject this possible reversed causality since left- and right-wing governments have the opposite sign. Hence, this reversed causality could also be captured by the NPOSTN specification

[25] The robustness checks for the NRD6 and NRD8 specification are found in appendix 3

while a temporary shock in output growth after a regime change seems to become of less importance.

Table 11.2

Political business cycle theory

Dependent variable: rate of growth (*y*)

	(1)	(2)	(3)	(4)	(5)	(6)	(1a)	(2a)	(3a)	(4a)	(5a)	(6a)
	1960-1993						1960-2010					
Independent variables	Coefficient t-statistics											
y (-1)	0.60	0.60	0.60	0.65	0.65	0.65	0.63	0.63	0.63	0.66	0.66	0.66
	38.81	38.81	38.84	44.18	44.20	44.24	53.00	52.99	53.00	58.89	58.88	58.89
yw	0.21	0.21	0.21	0.19	0.19	0.19	0.21	0.21	0.21	0.19	0.19	0.19
	16.13	16.19	16.23	15.09	15.12	15.16	21.51	21.58	21.65	20.21	20.26	20.31
NRD4(-1)	0.17			0.15			0.23			0.18		
	1.68			1.45			2.73			2.21		
NRD6(-1)		0.16			0.16			0.19			0.17	
		1.69			1.67			2.59			2.29	
NRD8(-1)			0.19			0.21			0.21			0.19
			2.13			2.23			2.83			2.52
US	0.57	0.54	0.53	-0.04	-0.04	-0.04	0.55	0.51	0.50	0.002	-0.00004	0.0005
	2.11	2.02	1.98	-0.22	-0.23	-0.21	2.52	2.34	2.29	0.01	0.00	0.00
UK	0.10	0.08	0.07	-0.46	-0.46	-0.45	0.22	0.18	0.17	-0.30	-0.30	-0.30
	0.38	0.29	0.26	-2.28	-2.27	-2.22	0.98	0.81	0.77	-1.85	-1.85	-1.84
France	0.54	0.52	0.51	-0.07	-0.07	-0.06	0.43	0.39	0.38	-0.11	-0.11	-0.11
	1.95	1.87	1.83	-0.31	-0.31	-0.28	1.89	1.73	1.70	-0.65	-0.65	-0.62
Germany	0.44	0.42	0.40	-0.17	-0.17	-0.17	0.32	0.28	0.26	-0.21	-0.21	-0.22
	1.65	1.55	1.49	-0.83	-0.83	-0.84	1.46	1.27	1.21	-1.29	-1.31	-1.32
Sweden	0.11	0.08	0.06	-0.45	-0.45	-0.46	0.35	0.30	0.29	-0.18	-0.18	-0.18
	0.37	0.27	0.20	-1.92	-1.94	-1.97	1.51	1.33	1.26	-0.98	-1.00	-1.02
Canada	0.67	0.64	0.63	0.04	0.04	0.05	0.63	0.59	0.58	0.07	0.07	0.07
	2.48	2.39	2.36	0.22	0.22	0.25	2.87	2.70	2.66	0.44	0.43	0.45
Australia	0.59	0.56	0.53	-0.02	-0.03	-0.05	0.70	0.65	0.63	0.13	0.12	0.11
	2.21	2.10	1.99	-0.12	-0.16	-0.24	3.17	2.96	2.85	0.80	0.75	0.68
New Zealand	0.33	0.30	0.27	-0.26	-0.27	-0.28	0.42	0.37	0.35	-0.12	-0.13	-0.14
	1.22	1.11	1.01	-1.29	-1.32	-1.39	1.90	1.69	1.59	-0.75	-0.80	-0.85
Belgium	0.19	0.16	0.14				0.21	0.17	0.15			
	0.70	0.60	0.53				0.98	0.78	0.71			
Ireland	1.55	1.53	1.51				1.96	1.92	1.91			
	5.63	5.56	5.51				8.57	8.43	8.39			
Austria	0.52	0.49	0.48				0.51	0.46	0.45			
	1.94	1.84	1.79				2.30	2.12	2.07			
Denmark	0.13	0.09	0.07				0.16	0.11	0.09			
	0.47	0.35	0.26				0.72	0.52	0.43			
Italy	0.56	0.53	0.52				0.36	0.32	0.30			
	2.08	1.99	1.92				1.64	1.46	1.40			
Netherlands	0.55	0.52	0.51				0.44	0.40	0.39			
	2.02	1.94	1.90				2.01	1.83	1.78			
Norway	1.18	1.15	1.14				0.62	0.57	0.56			
	4.34	4.26	4.21				2.79	2.62	2.57			
Finland	0.38	0.36	0.34				0.54	0.50	0.49			
	1.29	1.21	1.16				2.34	2.17	2.13			
Switserland	0.18	0.16	0.14				0.33	0.29	0.28			
	0.68	0.58	0.54				1.49	1.31	1.26			
Japan	1.55	1.52	1.50				0.93	0.89	0.87			
	5.62	5.53	5.44				4.21	4.03	3.96			
R2	0.63	0.63	0.63	0.62	0.62	0.62	0.65	0.65	0.65	0.64	0.64	0.65

Table 11.3

Political business cycle theory

Dependent variable: rate of growth of output (*y*)

	(1)	(2)	(3)	(4)	(5)	(6)	(1a)	(2a)	(3a)	(4a)	(5a)	(6a)
	1960-10	1973-93	1973-03	1980-00	1980-10	1990-10	1960-10	1973-93	1973-03	1980-00	1980-10	1990-10
Independen	Coefficient											
variables	t-statistics											
	18-country sample						8-country sample					
y (-1)	0.63	0.56	0.60	0.61	0.60	0.63	0.66	0.62	0.68	0.70	0.66	0.70
	53.00	28.40	38.92	31.88	39.58	36.20	58.89	33.22	47.20	40.49	46.39	43.81
yw	0.21	0.21	0.19	0.23	0.23	0.22	0.19	0.19	0.17	0.19	0.21	0.19
	21.51	13.09	14.12	10.50	17.78	15.62	20.21	11.74	12.23	8.82	15.99	13.72
NRD4(-1)	0.23	0.26	0.28	0.41	0.41	0.38	0.18	0.25	0.24	0.37	0.35	0.30
	2.73	1.98	2.59	3.25	3.92	3.06	2.21	1.88	2.20	2.89	3.30	2.36
R2	0.65	0.58	0.61	0.62	0.63	0.69	0.64	0.57	0.59	0.59	0.62	0.67

Testing for electoral cycle on inflation yields significant results (contrary to the findings for the United States).[26] For the full sample, the post electoral jump in inflation drops slightly in size but stays significant on a 2 percent level when comparing the 1960-1993 sample to the full sample. A&R dedicate an entire chapter to investigate this finding. They find results that support electoral cycles in monetary and fiscal policies in election years. In summary, A&R's results suggest that expanding measures in election years occurs frequently, yet these effects are in no country present in every election and are of minor size when they occur. Hence, the found results can better be interpreted as a dislike of politicians to use restrictive measures in election years.

Conducting similar robustness checks as before imply that the results in table 12 should not be overrated. The persistence of the post electoral shock in inflation seems to fade away over time. The found results on output growth and inflation for the political business cycle, point towards a temporary shock in output growth before an election that might lead to a temporarily rise in inflation after an election. Nevertheless, this temporary shock in output growth seems to grow in the last three decades while the same does not hold for the inflation rate. Hence, the results prove ambiguous towards the idea that a pre-electoral stimulation would lead to a post electoral jump in inflation.

[26] Surprisingly, A&R do not report which sample (18/8-country sample) they use for their found estimation. For simplicity we replicated both country samples and come to the same conclusion

Table 12

Political business cycle theory

Dependent variable: inflation rate (π)

	(1)	(2)	(3)	(2)	(3)
	A&R 1960-93	Replica 1960-93	Full sample 1960-10	Replica 1960-93	Full sample 1960-10
Independent variables	Coefficient (t-statistics) ?	Coefficient t-statistics 18-country sample		Coefficient t-statistics 8-country sample	
π (-1)	1.12	1.08	1.09	1.10	1.10
	(55.9)	53.50	66.39	54.42	67.24
π (-2)	-0.14	-0.12	-0.14	-0.12	-0.14
	(4.88)	-4.04	-5.74	-4.17	-5.86
π (-3)	-0.11	-0.10	-0.09	-0.09	-0.08
	(5.75)	-5.25	-5.48	-4.76	-5.10
πw	0.11	0.14	0.15	0.12	0.13
	(13.2)	14.04	18.79	13.01	17.69
NPOST5	0.14	0.12	0.08	0.13	0.08
	(3.08)	2.34	2.38	2.55	2.41
R2	0.93	0.94	0.95	0.94	0.94

Table 12.1

Political business cycle theory

Dependent variable: inflation rate (π)

	(1)	(2)	(3)	(4)	(5)	(6)	(1a)	(2a)	(3a)	(4a)	(5a)	(6a)
	1960-10	1973-93	1973-03	1980-00	1980-10	1990-10	1960-10	1973-93	1973-03	1980-00	1980-10	1990-10
Independent variables	Coefficient t-statistics 18-country sample						8-country sample					
π (-1)	1,09	1,09	1,10	1,03	1,03	0,94	1,10	1,12	1,12	1,05	1,05	0,96
	66,39	43,17	52,90	41,10	50,09	37,72	54,42	44,60	54,16	41,92	50,96	38,43
π (-2)	-0,14	-0,13	-0,13	-0,06	-0,10	-0,11	-0,12	-0,14	-0,14	-0,06	-0,10	-0,11
	-5,74	-3,44	-4,24	-1,65	-3,30	-3,08	-4,17	-3,65	-4,38	-1,73	-3,41	-3,18
π (-3)	-0,09	-0,11	-0,10	-0,10	-0,08	-0,08	-0,09	-0,10	-0,10	-0,09	-0,07	-0,07
	-5,48	-4,68	-5,23	-4,27	-4,05	-3,17	-4,76	-4,07	-4,84	-3,96	-3,74	-2,74
πw	0,15	0,16	0,15	0,13	0,15	0,23	0,12	0,13	0,12	0,11	0,13	0,22
	18,79	13,12	15,77	10,79	14,80	11,54	13,01	11,28	14,02	9,77	13,68	11,27
NPOST5	0,08	0,09	0,06	-0,03	-0,01	-0,06	0,13	0,13	0,07	-0,03	-0,01	-0,06
	2,38	1,47	1,35	-0,51	-0,22	-1,42	2,55	2,04	1,56	-0,59	-0,21	-1,50
R2	0,95	0,95	0,95	0,95	0,95	0,83	0,94	0,94	0,95	0,95	0,95	0,83

7 Conclusion

Our estimation results for the period 1947-2010 provide evidence for a decrease in the partisan effect on output growth, unemployment and inflation in the United States. Nevertheless, the partisan effects on output growth are still significant and point towards a temporal increase (decrease) in output growth after a change of a Republican (Democratic) to a Democratic (Republican) administration. On the other hand, inflation is no longer permanently higher with a Democratic administration in office. No evidence is found that

supports the opportunistic business cycle within the United States. In addition, there seems to be clear evidence for the notion that a post Bretton Woods period of roughly 2 decades is a major contributor to the found partisan effects for the United States.

The estimation results for the full sample of the 18 OECD countries supports the existence of partisan cycles. An actual change from a left (right) to a right (left) wing government leads to a temporary decrease (increase) in output growth. Furthermore, inflation is permanently higher (lower) during a left (right) wing government. The partisan effects seem to decrease over time. Contrary to the findings of Alesian and Roubini (1997), we do find support for the political business cycle. This support is driven primarily by the last two to three decades. For the full sample period of the 18 OECD countries there is indirect evidence that points towards a suboptimal equilibrium in which policy makers are trapped. Political parties that are particularly concerned with growth and unemployment try to stimulate growth and decrease unemployment, but by doing so they end up only temporarily stimulating the economy while creating permanently higher inflation. Political parties, which are primarily concerned with inflation seem to permanently decrease inflation but by doing so temporarily decrease growth and increase unemployment. Furthermore, while left wing parties inherit lower inflation and boost this above the natural rate in order to temporarily increase economic growth and decrease unemployment, right wing parties inherit higher inflation, which seems to force them to fight this by leading to temporarily lower growth and higher unemployment. Moreover, indirect evidence is found for opportunistic behavior of political parties before elections, especially in the last two to three decades. To conclude, indirect evidence is found that supports the idea that elections negatively influence economic stability. Furthermore, political parties should be cautious with stimulating growth and employment on the short run because this might yield a permanently higher inflation rate in the long run.

Exploring the political cycle in emerging economies (such as the BRIC-countries) may be an avenue for future research. Furthermore, investigating the direction of the causal relationship between the pre-election jump in growth and the election itself might provide new insight on the possible existence of an opportunistic policy maker.

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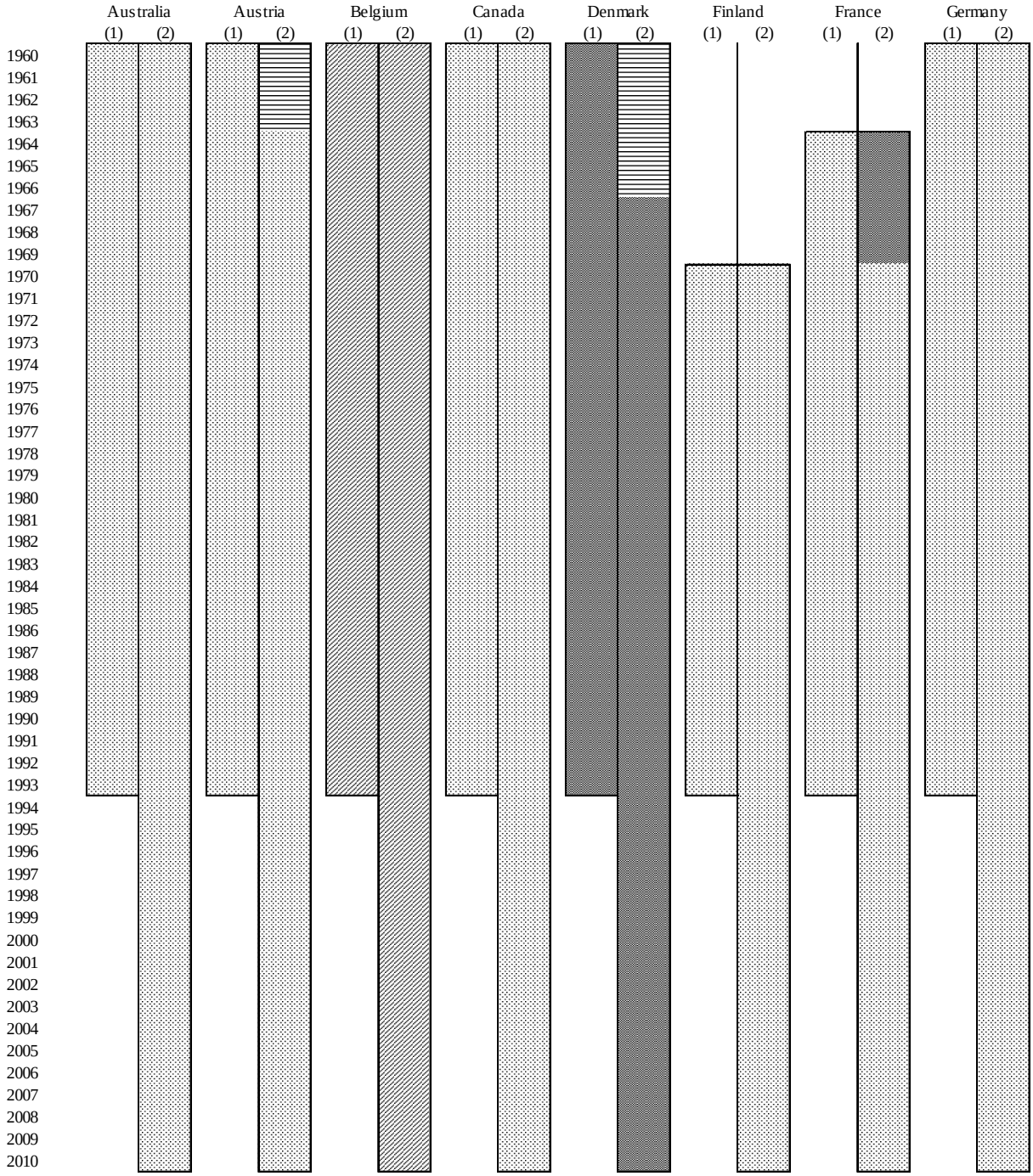
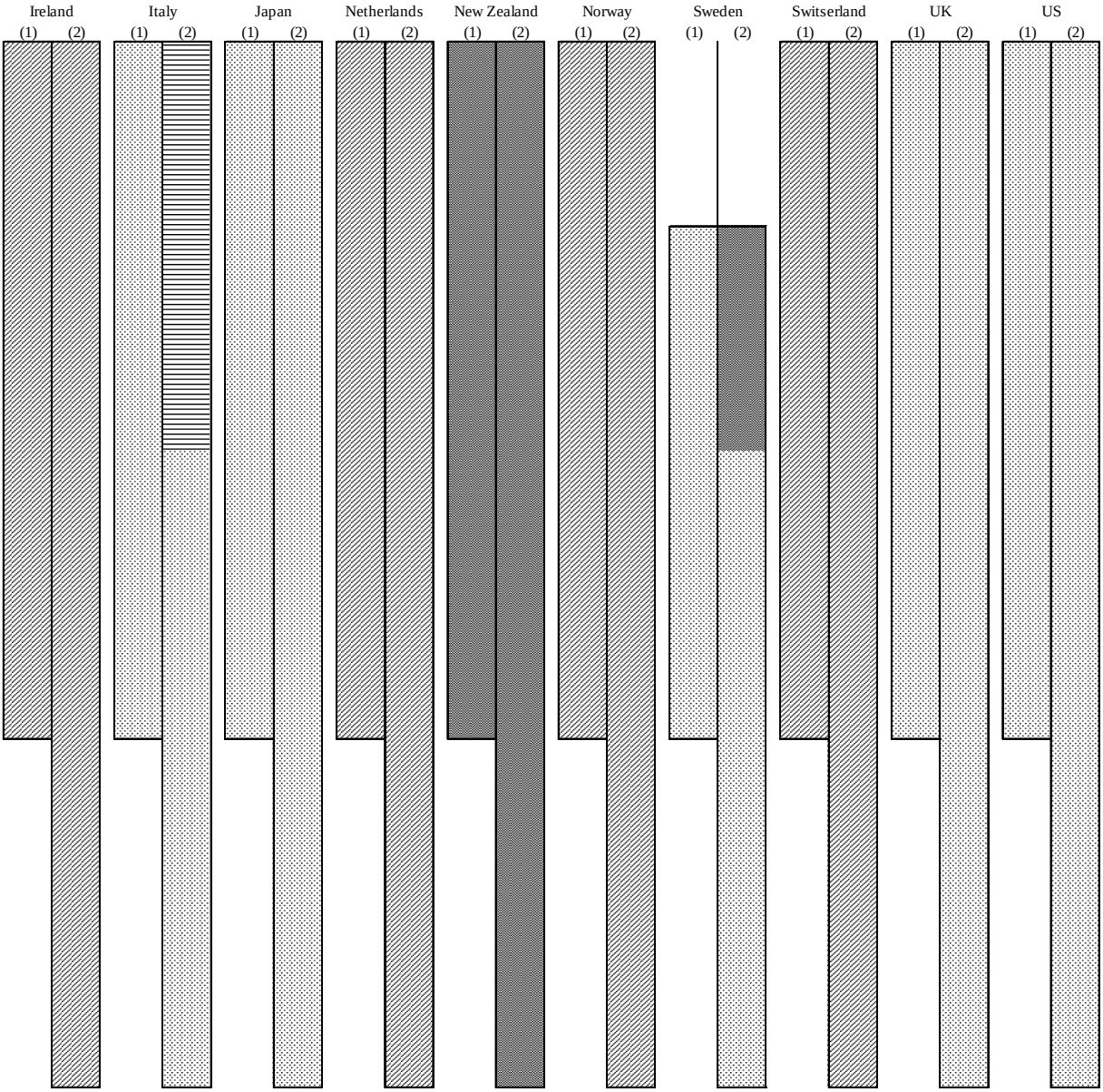
Appendix 1

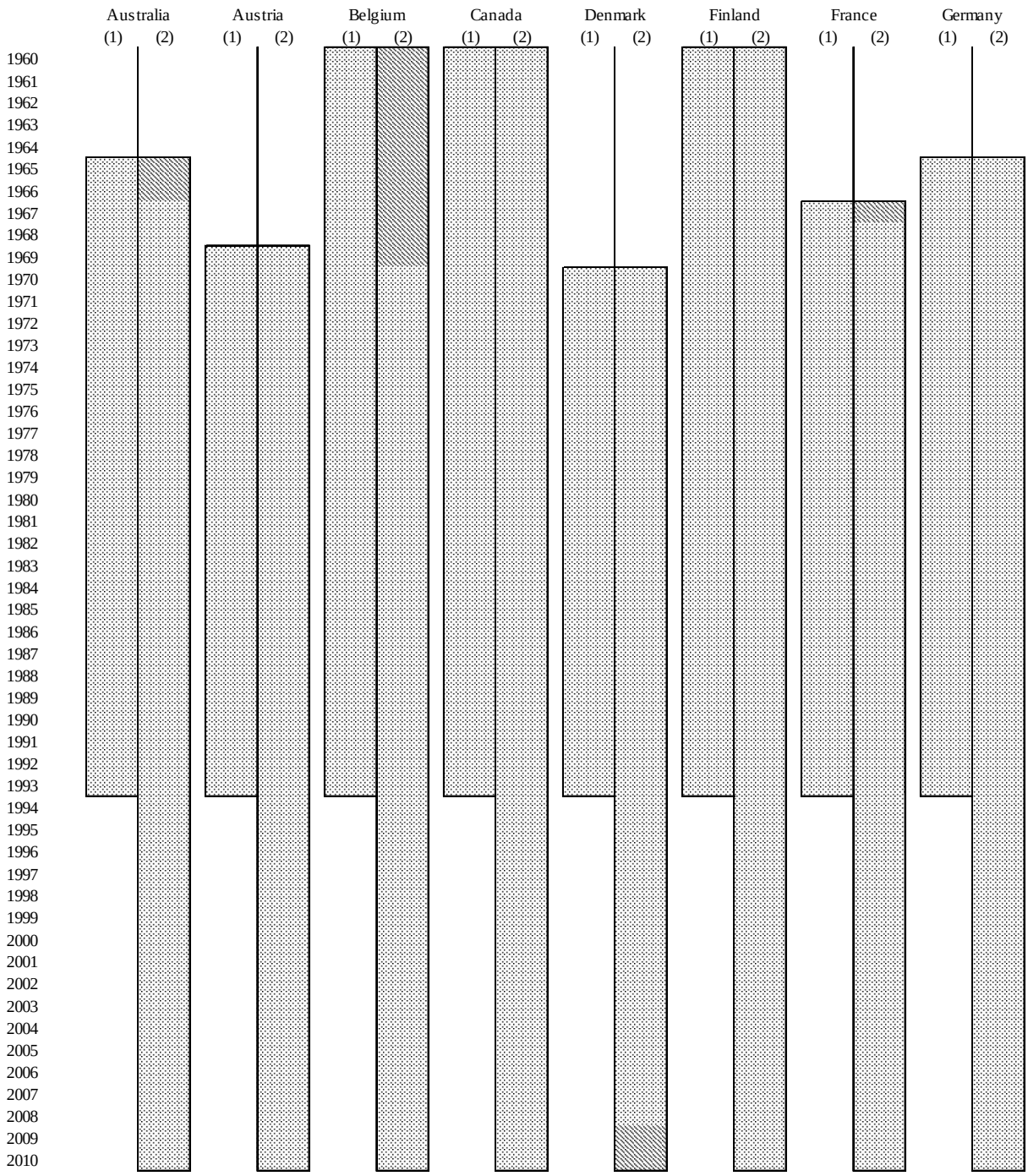
Data: Real GDP
(1) Alesina and Roubini
(2) Full sample
Real GDP quarterly (Source: IMF-IFS)
Real GDP yearly (Source: IMF-IFS)*
Real GDP yearly (Source: U.S. Department of Labor: Bureau of Labor Statistics)*
Industrial Production quarterly (Source: IMF-IFS)
**(converted into quarterly data by assuming that quarter-to-quarter annual change corresponds to year-to-year change)*



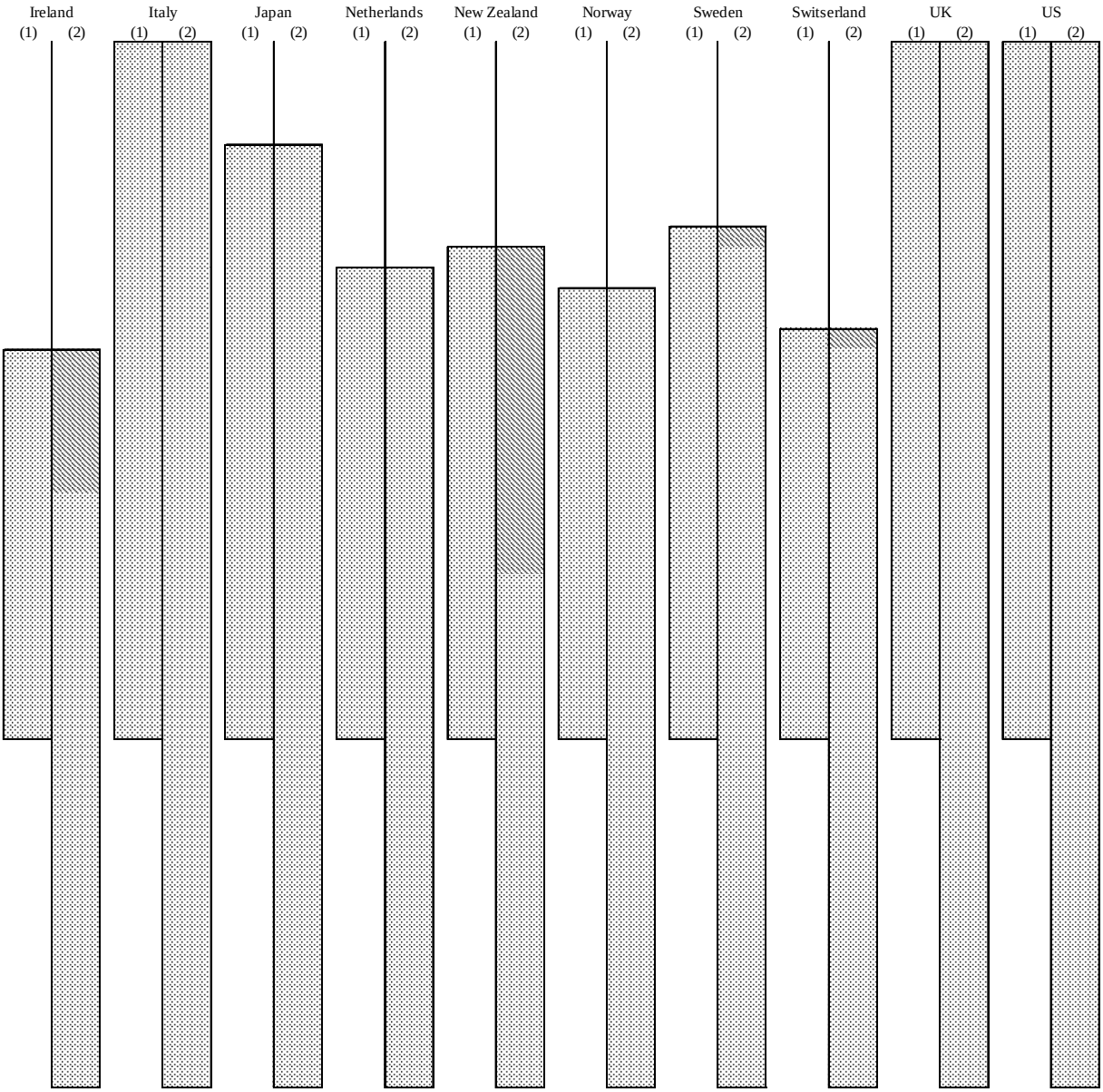
Data: Real GDP
(1) Alesina and Roubini
(2) Full sample
Real GDP quarterly (Source: IMF-IFS)
Real GDP yearly (Source: IMF-IFS)*
Real GDP yearly (Source: U.S. Department of Labor: Bureau of Labor Statistics)*
Industrial Production quarterly (Source: IMF-IFS)
**(converted into quarterly data by assuming that quarter-to-quarter annual change corresponds to year-to-year change)*



Data: Unemployment
(1) Alesina and Roubini
(2) Full sample
Unemployment rate, seasonaly adjusted (Source: OECD-MEI)
Missing data



Data: Unemployment
(1) Alesina and Roubini
(2) Full sample
Unemployment rate, seasonaly adjusted (Source: OECD-MEI)
Missing data



Unemployment rate (Source: OECD-MEI)		
Australia	Unemployment > Rate > Harmonised (HUR) > All persons	Level, rate or national currency, s.a.
Austria	Unemployment > Rate > Registered > All persons	Level, rate or national currency, s.a.
Belgium	Unemployment > Rate > Harmonised (HUR) > All persons	Level, rate or national currency, s.a.
Canada	Unemployment > Rate > Harmonised (HUR) > All persons	Level, rate or national currency, s.a.
Denmark	Unemployment > Rate > Registered > All persons	Level, rate or national currency, s.a.
Finland	Unemployment > Rate > Survey-based > All persons	Level, rate or national currency, s.a.
France	Unemployment > Rate > Survey-based > All persons	Level, rate or national currency, s.a.
Germany	Unemployment > Rate > Survey-based > All persons	Level, rate or national currency, s.a.
Ireland	Unemployment > Rate > Harmonised (HUR) > All persons	Level, rate or national currency, s.a.
Italy	Unemployment > Rate > Survey-based > All persons	Level, rate or national currency, s.a.
Japan	Unemployment > Rate > Harmonised (HUR) > All persons	Level, rate or national currency, s.a.
Netherlands	Unemployment > Rate > Harmonised (HUR) > All persons	Level, rate or national currency, s.a.
New Zealand	Unemployment > Rate > Harmonised (HUR) > All persons	Level, rate or national currency, s.a.
Norway	Unemployment > Rate > Harmonised (HUR) > All persons	Level, rate or national currency, s.a.
Sweden	Unemployment > Rate > Harmonised (HUR) > All persons	Level, rate or national currency, s.a.
Switzerland	Unemployment > Rate > Harmonised (HUR) > All persons	Level, rate or national currency, s.a.
United Kingdom	Unemployment > Rate > Registered > All persons	Level, rate or national currency, s.a.
United States	Unemployment > Rate > Harmonised (HUR) > All persons	Level, rate or national currency, s.a.

Consumcer Price Index (Source: IMF-IFS, line 64)	DESCRIPTOR (all data for used sample periods available)
Australia	CPI:ALL GROUPS,SIX CAPITALS
Austria	CPI 20 TOWNS
Belgium	CPI:ALL GROUPS,62 CENTERS
Canada	CPI:ALL CITIES POP OVR.30,000
Denmark	CPI: 70 LOCALITIES
Finland	CPI: ALL COUNTRY
France	CPI: 108 CITIES
Germany	CPI UNIFIED GERMANY
Ireland	CPI: ALL ITEMS
Italy	CPI:ALL ITALY
Japan	CPI:ALL JAPAN-485 ITEMS
Netherlands	CPI:WAGE EARNERS,MEDIAN INC.
New Zealand	CPI:ALL GROUPS
Norway	CPI:NATIONAL ALL CONSUMERS
Sweden	CPI URBAN&RURAL AREAS
Switzerland	CPI:ALL COUNTRY
United Kingdom	CPI: ALL ITEMS
United States	CPI ALL ITEMS CITY AVERAGE

Advanced Economies*
Australia
Austria
Belgium
Canada
Cyprus
Czech Republic
Denmark
Finland
France
Germany
Greece
Hong Kong SAR
Iceland
Ireland
Israel
Italy
Japan
Korea
Luxembourg
Malta
Netherlands
New Zealand
Norway
Portugal
Singapore
Slovak Republic
Slovenia
Spain
Sweden
Switzerland
Taiwan Province of China
United Kingdom
United States

*Recovered form the world economic outlouk, IMF, Oktober 2010

Appendix 2

*Elections not included in tests for the political business cycle (less than two years to previous election)

Australia	
1961q4	E RIGHT
1963q4	E:R
1966q4	E:R
1969q4	E:R
1972q4	E:L
1974q2	E:L*
1975q4	E:R
1977q4	E:R
1980q4	E:R
1983q1	E:L
1984q4	E:L*
1987q3	E:L
1990q1	E:L
1993q1	E:L
1996q1	E:R
1998q4	E:R
2001q4	E:R
2004q4	E:R
2007q4	E:L
2010q3	E:L

Austria	
1959q2	E RIGHT
1962q4	E:R
1966q1	E:R
1970q1	E:L
1971q4	E:L*
1975q4	E:L
1979q2	E:L
1983q2	E:R
1986q4	E:R
1990q4	E:R
1994q4	E:L
1995q4	E:L*
1999q4	E:R
2002q4	E:R
2006q4	E:L
2008q3	E:L*

Belgium	
1961q1	E RIGHT
1965q2	E:R
1968q1	E:L
1971q4	E:L
1973q1	CH R
1974q1	E:R
1977q2	E:L
1978q4	E:L*
1981q4	E:R
1985q4	E:R
1987q4	E:R
1988q2	CH L
1991q4	E:L
1995q2	E:R
1999q2	E:R
2003q2	E:R
2007q2	E:R
2010q2	E: n/a

Canada	
1962q2	E RIGHT
1963q2	E:L*
1965q4	E:L
1968q2	E:L
1972q4	E:L
1974q3	E:L*
1979q2	E:R
1980q1	E:L*
1984q3	E:R
1988q4	E:R
1993q4	E:L
1997q2	E:L
2000q4	E:L
2004q2	E:L
2006q1	E:R*
2008q4	E:R

Denmark	
1960q4	E LELFT
1964q3	E:L
1966q4	E:L
1968q1	E:R*
1971q3	E:L
1973q4	E:R
1975q1	E:L*
1977q1	E:L
1979q4	E:L
1981q4	E:L
1982q3	CH R
1984q1	E:R
1987q3	E:R
1990q4	E:R
1993q1	CH L
1994q3	E:L
1998q1	E:L
2001q4	E:R
2005q1	E:R
2007q4	E:R

Finland	
1962q1	E LEFT
1963q4	CH R
1966q1	E:L
1970q1	E:L
1972q1	E:L
1975q3	E:R
1977q2	CH L
1979q1	E:L
1983q1	E:L
1987q1	E:R
1991q1	E:R
1995q1	E:L
1999q1	E:L
2003q1	E:R
2007q1	E:R

France	
1962q4	E RIGHT
1967q1	E:R
1968q2	E:R*
1973q1	E:R
1978q1	E:R
1981q2	E:L
1984q3	CH R
1986q1	E:R
1988q2	E:L
1993q1	E:R
1997q2	E:L
2002q2	E:R
2007q2	E:R

Germany	
1961q3	E RIGHT
1965q3	E:R
1966q4	CH L
1969q3	E:L
1972q4	E:R
1976q4	E:R
1980q4	E:R
1982q4	CH R
1983q1	E:R
1987q1	E:R
1990q4	E:R
1994q4	E:R
1998q3	E:L
2002q3	E:L
2005q3	E:R
2009q3	E:R

Ireland	
1961q4	E RIGHT
1965q2	E:R
1969q2	E:R
1973q1	E:L
1977q2	E:R
1981q2	E:L
1982q1	E:R*
1982q4	E:L*
1987q1	E:R
1989q3	E:R
1992q4	E:L
1994q4	CH R
1997q2	E:L
2002q2	E:L
2007q2	E:L

Italy	
	RIGHT
1962q4	CH L
1963q2	E:L
1968q2	E:L
1972q2	E:L
1974q4	CH R
1976q2	E:L
1979q2	E:L
1983q2	E:L
1987q2	E:L
1989q2	E:L
1992q2	E:L
1994q1	E:R*
1996q2	E:L
2001q2	E:R
2006q2	E:L
2008q2	E:R

Japan	
1960q4	E RIGHT
1963q4	E:R
1967q1	E:R
1969q4	E:R
1972q4	E:R
1976q4	E:R
1979q4	E:R
1980q2	E:R*
1983q4	E:R
1986q3	E:R
1990q1	E:R
1993q3	E:L
1996q4	E:R
2000q2	E:R
2003q4	E:R
2005q3	E:R*
2009q3	E:L

Netherlands	
1959q1	E RIGHT
1963q2	E:R
1965q2	CH L
1967q1	E:R
1971q1	E:R
1972q4	E:R*
1973q2	CH L
1977q2	E:L
1977q4	CH R
1981q2	E:L
1982q3	E:R*
1986q2	E:R
1989q3	E:L
1994q2	E:L
1998q2	E:L
2002q2	E:R
2003q1	E:R*
2006q4	E:R
2010q2	E:R

New Zealand	
1960q4	E RIGHT
1963q4	E:R
1966q4	E:R
1969q4	E:R
1972q4	E:L
1975q4	E:R
1978q4	E:R
1981q4	E:R
1984q3	E:L
1987q3	E:L
1990q4	E:R
1993q4	E:R
1996q4	E:R
1999q4	E:L
2002q3	E:L
2005q3	E:L
2008q4	E:R

Norway	
1961q3	E LEFT
1965q3	E:R
1969q3	E:R
1971q4	CH L
1972q4	CH R
1973q3	E:L
1977q3	E:L
1981q3	E:R
1985q3	E:R
1986q2	CH L
1989q3	E:R
1990q4	CH L
1993q3	E:L
1997q3	E:R
2001q3	E:R
2005q4	E:L
2009q3	E:L

Sweden	
1960q3	E LEFT
1964q3	E:L
1968q3	E:L
1970q3	E:L
1973q3	E:L
1976q3	E:R
1979q3	E:R
1982q3	E:L
1985q3	E:L
1988q3	E:L
1993q3	E:L
1994q3	E:L*
1998q3	E:L
2002q3	E:L
2006q3	E:R
2010q3	E:R

Switzerland	
1959q4	E RIGHT
1963q4	E:R
1967q4	E:R
1971q4	E:R
1975q4	E:R
1979q4	E:R
1983q4	E:R
1987q4	E:R
1991q4	E:R
1995q4	E:R
1999q4	E:R
2003q4	E:R
2007q4	E:R

United Kingdom	
1959q4	E RIGHT
1964q4	E:L
1966q1	E:L*
1970q2	E:R
1974q1	E:R
1974q3	E:L *
1979q2	E:R
1983q2	E:R
1987q2	E:R
1992q2	E:R
1997q2	E:L
2001q3	E:L
2005q2	E:L
2010q2	E:R

United States	
1944q4	E LEFT
1948q4	E:L
1952q4	E:R
1956q4	E:R
1960q4	E:L
1964q4	E:L
1968q4	E:R
1972q4	E:R
1976q4	E:L
1980q4	E:R
1984q4	E:R
1988q4	E:R
1992q4	E:L
1996q4	E:L
2000q4	E:R
2004q4	E:R
2008q4	E:L

Appendix 3

Table 2.3

Rational partisan theory

Dependent variable: rate of growth (*y*)

	1961-10		1970-90		1973-00		1980-00		1980-10		1990-10	
Independent variables	Coefficient											
	t-statistics											
y (-1)	0.95	0.91	0.83	0.70	0.93	0.86	1.04	1.01	1.08	1.06	1.21	1.17
	12.93	12.29	7.19	6.15	9.26	8.69	8.93	8.68	10.91	10.72	9.57	9.30
y (-2)	-0.18	-0.20	-0.14	-0.13	-0.19	-0.18	-0.23	-0.24	-0.29	-0.30	-0.31	-0.32
	-1.86	-2.09	-0.94	-0.92	-1.48	-1.40	-1.44	-1.49	-2.13	-2.24	-1.78	-1.84
y (-3)	-0.14	-0.13	-0.17	-0.15	-0.16	-0.15	-0.17	-0.15	-0.11	-0.09	-0.12	-0.09
	-2.27	-2.10	-1.67	-1.53	-1.78	-1.81	-1.57	-1.46	-1.22	-1.02	-1.06	-0.84
DRPTX4(-1)	-0.48		-0.62		-0.40		-0.28		-0.20		-0.12	
	-3.65		-2.31		-2.05		-1.33		-1.29		-0.78	
DRPTX8(-1)		-0.38		-0.78		-0.46		-0.28		-0.20		-0.20
		-3.92		-3.85		-3.31		-1.82		-1.82		-1.78
POIL	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.004	-0.003
	-3.65	-3.50	-2.99	-3.43	-3.05	-2.92	-1.90	-2.00	-2.37	-2.41	-1.45	-1.05
yw	0.12	0.13	0.17	0.19	0.13	0.14	0.14	0.14	0.10	0.11	0.05	0.05
	5.14	5.51	3.10	3.63	3.11	3.34	2.44	2.52	3.18	3.35	1.67	1.78
R2	0.85	0.86	0.83	0.84	0.83	0.84	0.83	0.83	0.86	0.86	0.88	0.88

Table 6b

Rational partisan theory

Dependent variable: rate of growth of output (*y*)

	(1)	(2)	(3)	(4)	(5)	(6)	(1a)	(2a)	(3a)	(4a)	(5a)	(6a)
	Alesina and Roubini 1960-1993						Replica 1960-1993					
Independent variables	Coefficient (t-statistics)						Coefficient t-statistics					
y(-1)	0.67	0.67	0.68	0.68	0.67	0.67	0.69	0.69	0.69	0.72	0.72	0.72
	(46.0)	(45.8)	(45.8)	(30.6)	(30.1)	(29.7)	48.06	47.97	47.90	52.62	52.57	52.55
yw	0.36	0.36	0.36	0.26	0.26	0.26	0.12	0.12	0.12	0.11	0.11	0.12
	(12.4)	(12.5)	(12.6)	(7.9)	(8.10)	(8.07)	9.22	9.27	9.30	9.02	9.14	9.23
DRPT4(-1)	-0.40			-0.48			-0.33			-0.38		
	(3.09)			(3.20)			-2.48			-3.02		
DRPT6(-1)		-0.35			-0.53			-0.27			-0.30	
		(3.26)			(4.35)			-2.41			-2.82	
DRPT8(-1)			-0.25			-0.40			-0.18			-0.21
			(2.71)			(3.75)			-1.86			-2.17
US	-0.41	-0.41	-0.41	-0.04	-0.04	-0.03	0.25	0.30	0.35	-0.03	-0.02	-0.02
	(1.93)	(1.94)	(1.96)	(0.25)	(0.22)	(0.17)	0.87	1.05	1.26	-0.16	-0.12	-0.09
UK	-0.55	-0.55	-0.54	-0.21	-0.20	-0.20	-0.12	-0.08	-0.03	-0.38	-0.37	-0.36
	(2.64)	(2.65)	(2.55)	(1.20)	(1.19)	(1.16)	-0.44	-0.28	-0.09	-1.82	-1.80	-1.77
France	-0.15	-0.15	-0.16	0.14	0.15	0.15	0.14	0.18	0.23	-0.14	-0.14	-0.14
	(0.70)	(0.71)	(0.74)	(0.80)	(0.87)	(0.85)	0.46	0.61	0.80	-0.63	-0.63	-0.61
Germany	-0.35	-0.35	-0.35	-0.02	-0.01	-0.02	0.13	0.18	0.23	-0.15	-0.14	-0.14
	(1.66)	(1.67)	(1.67)	(0.05)	(0.06)	(0.01)	0.46	0.63	0.83	-0.72	-0.69	-0.66
Sweden	-0.46	-0.45	-0.46	-0.18	-0.16	-0.16	-0.27	-0.23	-0.17	-0.51	-0.51	-0.50
	(1.96)	(1.93)	(1.93)	(0.97)	(0.89)	(0.86)	-0.88	-0.74	-0.57	-2.14	-2.12	-2.09
Canada	0.02	0.02	0.02	0.35	0.35	0.36	0.32	0.36	0.42	0.03	0.03	0.04
	(0.10)	(0.08)	(0.09)	(2.00)	(2.06)	(2.00)	1.11	1.28	1.47	0.15	0.16	0.18
Australia	-0.06	-0.05	-0.05	0.28	0.28	0.29	0.27	0.31	0.37	-0.02	-0.02	-0.01
	(0.22)	(0.24)	(0.26)	(1.60)	(1.64)	(1.68)	0.93	1.09	1.30	-0.10	-0.09	-0.06
New Zealand	-0.45	-0.45	-0.44	-0.11	-0.11	-0.10	0.07	0.11	0.17	-0.20	-0.19	-0.19
	(2.15)	(2.16)	(2.08)	(0.66)	(0.63)	(0.60)	0.24	0.40	0.60	-0.96	-0.94	-0.91
Belgium	-0.37	-0.37	-0.38				-0.06	-0.02	0.03			
	(1.76)	(1.79)	(1.79)				-0.22	-0.07	0.12			
Ireland	0.68	0.68	0.67				0.99	1.04	1.10			
	(3.15)	(3.16)	(3.11)				3.36	3.58	3.81			
Austria	0.12	0.12	0.17				0.20	0.24	0.30			
	(0.56)	(0.59)	(0.80)				0.68	0.85	1.05			
Denmark	-0.32	-0.32	-0.32				-0.10	-0.05	0.00			
	(1.53)	(1.56)	(1.56)				-0.35	-0.19	-0.01			
Italy	-0.01	-0.01	-0.01				0.22	0.26	0.31			
	(0.01)	(0.03)	(0.07)				0.75	0.91	1.10			
Netherlands	-0.07	-0.07	-0.07				0.20	0.24	0.30			
	(0.31)	(0.32)	(0.32)				0.68	0.85	1.07			
Norway	-0.03	-0.03	-0.06				0.72	0.76	0.81			
	(0.15)	(0.18)	(0.19)				2.46	2.64	2.85			
Finland	-0.25	-0.24	-0.25				-0.02	0.03	0.08			
	(1.06)	(1.00)	(1.02)				-0.07	0.09	0.26			
Switserland	-0.47	-0.47	-0.47				-0.07	-0.02	0.03			
	(2.73)	(2.24)	(2.26)				-0.24	-0.09	0.11			
Japan	0.77	0.77	0.81				0.99	1.04	1.09			
	(3.61)	(3.63)	(3.81)				3.36	3.57	3.78			
R2	0.64	0.64	0.64	0.64	0.63	0.63	0.61	0.61	0.61	0.60	0.60	0.60

Table 6c

Rational partisan theory

Dependent variable: rate of growth of output (*y*)

	(1)	(2)	(3)	(4)	(5)	(6)	(1a)	(2a)	(3a)	(4a)	(5a)	(6a)
	1960-1993						1960-2010					
Independent variables	Coefficient (t-statistics)						Coefficient t-statistics					
y (-1)	0,60	0,60	0,60	0,64	0,64	0,64	0,62	0,62	0,62	0,66	0,66	0,66
	38,68	38,52	38,47	44,06	43,99	43,99	52,94	52,85	52,76	58,75	58,66	58,58
yw	0,21	0,21	0,21	0,19	0,20	0,19	0,21	0,21	0,21	0,19	0,19	0,19
	16,41	16,45	16,40	15,26	15,28	15,24	21,65	21,69	21,68	20,33	20,36	20,35
DRPTX4	-0,25			-0,22			-0,16			-0,18		
	-3,04			-2,76			-2,36			-2,75		
DRPTX6		-0,21			-0,17			-0,17			-0,17	
		-3,09			-2,46			-2,97			-3,11	
DRPTX8			-0,14			-0,09			-0,15			-0,15
			-2,29			-1,51			-3,01			-3,00
US	0,41	0,44	0,46	-0,06	-0,06	-0,05	0,42	0,42	0,42	-0,02	-0,02	-0,02
	1,52	1,63	1,73	-0,31	-0,29	-0,27	1,90	1,90	1,93	-0,09	-0,10	-0,10
UK	-0,05	-0,03	0,00	-0,47	-0,47	-0,47	0,07	0,07	0,08	-0,33	-0,33	-0,33
	-0,20	-0,10	-0,01	-2,37	-2,34	-2,34	0,33	0,31	0,34	-2,02	-2,03	-2,03
France	0,42	0,45	0,47	-0,05	-0,05	-0,06	0,31	0,31	0,32	-0,11	-0,11	-0,11
	1,52	1,62	1,68	-0,25	-0,24	-0,28	1,36	1,40	1,44	-0,66	-0,62	-0,62
Germany	0,33	0,36	0,38	-0,15	-0,14	-0,15	0,21	0,22	0,23	-0,20	-0,19	-0,19
	1,22	1,35	1,41	-0,73	-0,70	-0,75	0,97	1,00	1,05	-1,23	-1,19	-1,18
Sweden	-0,08	-0,07	-0,04	-0,49	-0,49	-0,48	0,20	0,18	0,18	-0,22	-0,23	-0,23
	-0,27	-0,23	-0,13	-2,11	-2,12	-2,06	0,85	0,78	0,77	-1,20	-1,26	-1,30
Canada	0,48	0,49	0,52	0,00	0,00	0,01	0,48	0,47	0,47	0,04	0,02	0,02
	1,78	1,83	1,93	0,01	-0,01	0,04	2,16	2,10	2,10	0,22	0,14	0,11
Australia	0,45	0,47	0,51	-0,03	-0,03	-0,02	0,60	0,60	0,61	0,14	0,15	0,15
	1,67	1,76	1,89	-0,15	-0,13	-0,09	2,69	2,71	2,78	0,87	0,89	0,92
New Zealand	0,21	0,24	0,26	-0,24	-0,23	-0,24	0,31	0,32	0,33	-0,11	-0,11	-0,11
	0,78	0,90	0,99	-1,20	-1,17	-1,19	1,41	1,44	1,49	-0,69	-0,66	-0,64
Belgium	0,03	0,05	0,08				0,10	0,10	0,12			
	0,10	0,18	0,28				0,46	0,48	0,53			
Ireland	1.42	1.45	1.48				1,82	1,82	1,83			
	5,15	5,30	5,38				7,92	7,96	8,01			
Austria	0,36	0,39	0,41				0,36	0,36	0,37			
	1,34	1,44	1,54				1,64	1,63	1,67			
Denmark	-0,05	-0,03	0,00				0,03	0,02	0,03			
	-0,18	-0,11	0,00				0,14	0,11	0,13			
Italy	0,34	0,34	0,38				0,20	0,19	0,18			
	1,22	1,24	1,37				0,91	0,84	0,83			
Netherlands	0,39	0,42	0,44				0,31	0,32	0,32			
	1,45	1,56	1,65				1,43	1,44	1,48			
Norway	1,02	1,03	1,06				0,47	0,47	0,47			
	3,71	3,79	3,88				2,14	2,12	2,14			
Finland	0,21	0,22	0,25				0,40	0,38	0,38			
	0,70	0,75	0,83				1,69	1,64	1,64			
Switserland	0,07	0,11	0,13				0,23	0,25	0,27			
	0,28	0,43	0,50				1,04	1,13	1,22			
Japan	1,48	1,53	1,54				0,84	0,86	0,88			
	5,37	5,55	5,60				3,81	3,92	0,32			
R2	0,63	0,63	0,63	0,62	0,62	0,62	0,65	0,65	0,65	0,64	0,64	0,64

Note: DRPTXN is not lagged.[27] DRPTXN(-1) is still significant on a 10 percent confidence level for the full sample.

[27] DRPTXN starts in the same quarter as DRPTN(-1), yet DRPTXN also accounts for the N quarters after an electoral victory of the incumbent administration.

Table 6.1b

Rational partisan theory

Dependent variable: rate of growth of output (*y*) (yw: proxy A&R)

	(1a)	(2a)	(3a)	(4a)	(5a)	(6a)	(1b)	(2b)	(3b)	(4b)	(5b)	(6b)
	Sample Alesina and Roubini 1960-1993						Full Sample 1960-2010					
Independent variables	Coefficient t-statistics											
	18-country sample			8-country sample			18-country sample			8-country sample		
y (-1)	0.69	0.69	0.69	0.72	0.72	0.72	0.71	0.71	0.71	0.74	0.74	0.74
	48.06	47.97	47.90	52.62	52.57	52.55	64.59	64.48	64.35	69.45	69.31	69.17
yw	0.12	0.12	0.12	0.11	0.11	0.12	0.13	0.13	0.13	0.13	0.13	0.13
	9.22	9.27	9.30	9.02	9.14	9.23	12.47	12.54	12.58	12.15	12.26	12.34
DRPT4(-1)	-0.33			-0.38			-0.26			-0.30		
	-2.48			-3.02			-2.41			-2.91		
DRPT6(-1)		-0.27			-0.30			-0.26			-0.28	
		-2.41			-2.82			-2.83			-3.22	
DRPT8(-1)			-0.18			-0.21			-0.21			-0.23
			-1.86			-2.17			-2.60			-2.92
R2	0.61	0.61	0.61	0.60	0.60	0.60	0.63	0.63	0.63	0.62	0.62	0.62

Table 6.2b

Rational partisan theory

Dependent variable: rate of growth of output (*y*) (yw: proxy A&R)

	(1)	(2)	(3)	(4)	(5)	(6)	(1a)	(2a)	(3a)	(4a)	(5a)	(6a)
	1960-10	1973-93	1973-03	1980-00	1980-10	1990-10	1960-10	1973-93	1973-03	1980-00	1980-10	1990-10
Independent variables	Coefficient t-statistics											
	18-country sample						8-country sample					
y (-1)	0.71	0.65	0.67	0.67	0.69	0.73	0.74	0.68	0.72	0.74	0.73	0.77
	64.48	35.17	45.78	36.66	47.59	43.77	69.31	39.09	52.95	44.43	53.23	50.02
yw	0.13	0.12	0.10	0.08	0.12	0.15	0.13	0.11	0.10	0.07	0.11	0.14
	12.54	7.99	8.59	5.63	9.48	8.52	12.26	7.59	8.07	5.16	8.97	8.01
DRPT6(-1)	-0.26	-0.29	-0.32	-0.34	-0.28	-0.23	-0.28	-0.31	-0.34	-0.39	-0.31	-0.25
	-2.83	-2.19	-2.91	-2.58	-2.39	-1.64	-3.22	-2.37	-3.20	-3.01	-2.76	-1.83
R2	0.63	0.55	0.59	0.60	0.60	0.65	0.62	0.54	0.58	0.58	0.59	0.64

Table 9

Traditional partisan theory

Dependent variable: rate of growth of output (*y*)

	(1)	(2)	(1a)	(2a)	(3)	(4)	(3a)	(4a)
	Alesina and Roubini 1960-1993		Replica 1960-1993		Alesina and Roubini 1960-1993		Replica 1960-1993	
Independent variables	Coefficient (t-statistics)		Coefficient t-statistics		Coefficient (t-statistics)		Coefficient t-statistics	
	18-country sample				8-country sample			
y (-1)	0.68	0.68	0.60	0.60	0.69	0.69	0.65	0.65
	(46.6)	(46.4)	38.7	38.70	(31.0)	(31.0)	44.15	44.11
yw	0.36	0.36	0.21	0.21	0.25	0.25	0.19	0.19
	(12.3)	(12.3)	16.24	16.26	(7.72)	(7.72)	15.15	15.19
RADM(-1)	-0.01		-0.01		-0.04		0.02	
	(0.23)		-0.18		(0.70)		0.5	
ADM(-1)		-0.03		-0.02		-0.04		-0.01
		(0.45)		-0.37		(0.71)		-0.09
R2	0.64	0.64	0.63	0.63	0.63	0.63	0.62	0.62

Table 9.1

Traditional partisan theory

Dependent variable: rate of growth of output (*y*)

	(1a)	(2a)	(1c)	(2c)	(3a)	(4a)	(3c)	(4c)
	1960-1993		1960-2010		1960-1993		1960-2010	
Independent variables	Coefficient t-statistics							
	18-country sample				8-country sample			
y (-1)	0.60	0.60	0.62	0.62	0.65	0.65	0.66	0.66
	38.7	38.70	52.72	52.76	44.15	44.11	58.58	58.56
yw	0.21	0.21	0.21	0.21	0.19	0.19	0.19	0.19
	16.24	16.26	21.65	21.65	15.15	15.19	20.33	20.34
RADM(-1)	-0.01		-0.06		0.02		-0.05	
	-0.18		-1.48		0.5		-1.42	
ADM(-1)		-0.02		-0.08		-0.01		-0.08
		-0.37		-1.47		-0.09		-1.61
R2	0.63	0.63	0.65	0.64	0.62	0.62	0.64	0.62

Table 10

Traditional partisan theory

Dependent variable: unemployment rate (relative to OECD average)(UDIFF)

	(1)	(2)	(1a)	(2a)	(3)	(4)	(3a)	(4a)
	Alesina and Roubini 1960-1993		Replica 1960-1993		Alesina and Roubini 1960-1993		Replica 1960-1993	
Independent variables	Coefficient (t-statistics)		Coefficient t-statistics		Coefficient (t-statistics)		Coefficient t-statistics	
	18-country sample				8-country sample			
UDIFF(-1)	1.11	1.11	1.29	1.29	1.11	1.11	1.30	1.30
	(49.9)	(49.9)	58.8	58.86	(33.7)	(33.7)	59.57	59.57
UDIFF(-2)	-0.13	-0.12	-0.31	-0.32	-0.13	-0.13	-0.31	-0.31
	(5.55)	(5.52)	-14.17	-14.22	(3.87)	(3.85)	-13.93	-13.95
RADM(-1)	0.02		0.01		0.01		0.005	
	(1.74)		1.53		(1.18)		0.73	
ADM(-1)		0.02		0.003		0.02		-0.001
		(2.07)		0.30		(1.29)		-0.06
R2	0.98	0.98	0.99	0.99	0.97	0.98	0.99	0.99

Table 10.1

Traditional partisan theory

Dependent variable: unemployment rate (relative to OECD average)(UDIFF)

	(1a)	(2a)	(1c)	(2c)	(3a)	(4a)	(3c)	(4c)
	1960-1993		1960-2010		1960-1993		1960-2010	
Independent variables	Coefficient t-statistics							
	18-country sample				8-country sample			
UDIFF(-1)	1.29	1.29	1.28	1.28	1.30	1.30	1.29	1.29
	58.8	58.86	74.91	74.95	59.57	59.57	75.27	75.28
UDIFF(-2)	-0.31	-0.32	-0.30	-0.30	-0.31	-0.31	-0.29	-0.29
	-14.17	-14.22	-17.53	-17.57	-13.93	-13.95	-17.22	-17.25
RADM(-1)	0.01		0.01		0.005		0.005	
	1.53		1.81		0.73		0.96	
ADM(-1)		0.003		0.004		-0.001		0.002
		0.30		0.65		-0.06		0.26
R2	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99

Table 11.4

Political business cycle theory

Dependent variable: rate of growth of output (*y*)

	(1)	(2)	(3)	(4)	(5)	(6)	(1a)	(2a)	(3a)	(4a)	(5a)	(6a)
	1960-10	1973-93	1973-03	1980-00	1980-10	1990-10	1960-10	1973-93	1973-03	1980-00	1980-10	1990-10
Independen	Coefficient											
variables	t-statistics											
	18-country sample						8-country sample					
y (-1)	0.63	0.56	0.60	0.61	0.60	0.63	0.66	0.62	0.68	0.70	0.66	0.70
	52.99	28.39	38.89	31.78	39.52	36.23	58.88	33.21	47.17	40.36	46.31	43.83
yw	0.21	0.21	0.20	0.23	0.23	0.22	0.19	0.19	0.17	0.19	0.21	0.19
	21.58	13.18	14.21	10.49	17.81	15.70	20.26	11.81	12.30	8.79	16.02	13.79
NRD6(-1)	0.19	0.22	0.21	0.20	0.27	0.36	0.17	0.22	0.19	0.19	0.24	0.30
	2.59	1.84	2.18	1.73	2.87	3.20	2.29	1.82	1.93	1.63	2.46	2.61
R2	0.65	0.58	0.61	0.62	0.63	0.69	0.64	0.57	0.59	0.59	0.61	0.67

Table 11.5

Political business cycle theory

Dependent variable: rate of growth of output (*y*)

	(1)	(2)	(3)	(4)	(5)	(6)	(1a)	(2a)	(3a)	(4a)	(5a)	(6a)
	1960-10	1973-93	1973-03	1980-00	1980-10	1990-10	1960-10	1973-93	1973-03	1980-00	1980-10	1990-10
Independen	Coefficient											
variables	t-statistics											
	18-country sample						8-country sample					
y (-1)	0.63	0.56	0.61	0.61	0.60	0.63	0.66	0.62	0.68	0.70	0.66	0.70
	53.00	28.41	38.93	31.77	39.48	36.17	58.89	33.23	47.20	40.35	46.28	43.78
yw	0.21	0.21	0.20	0.23	0.23	0.22	0.19	0.19	0.17	0.19	0.21	0.19
	21.65	13.24	14.28	10.48	17.83	15.69	20.31	11.87	12.35	8.77	16.02	13.77
NRD8(-1)	0.21	0.23	0.23	0.17	0.25	0.29	0.19	0.25	0.22	0.17	0.21	0.22
	2.83	1.97	2.45	1.53	2.70	2.66	2.52	2.04	2.22	1.44	2.18	1.98
R2	0.65	0.58	0.61	0.62	0.63	0.69	0.65	0.57	0.59	0.59	0.61	0.67

Appendix 4

Table 11.2b

Political business cycle theory

Dependent variable: rate of growth (*y*). ***yw* as defined by Alesina and Roubini**

	(1)	(2)	(3)	(4)	(5)	(6)	(1a)	(2a)	(3a)	(4a)	(5a)	(6a)
	1960-1993						1960-2010					
Independent variables	Coefficient t-statistics											
y (-1)	0.69	0.69	0.69	0.72	0.72	0.72	0.71	0.71	0.71	0.74	0.74	0.74
	48.18	48.17	48.18	53.09	53.07	53.08	64.64	64.64	64.65	69.76	69.73	69.73
yw	0.12	0.12	0.12	0.12	0.12	0.11	0.13	0.13	0.13	0.13	0.13	0.13
	9.14	9.13	9.13	9.21	9.15	9.13	12.50	12.51	12.54	12.41	12.38	12.39
NRD4(-1)	0.23			0.21			0.27			0.24		
	2.20			1.98			3.13			2.78		
NRD6(-1)		0.17			0.16			0.20			0.18	
		1.73			1.69			2.56			2.34	
NRD8(-1)			0.17			0.18			0.19			0.17
			1.85			1.92			2.48			2.27
US	0.49	0.45	0.44	-0.01	-0.01	-0.01	0.38	0.33	0.32	0.01	0.01	0.01
	1.75	1.61	1.56	-0.05	-0.06	-0.05	1.65	1.43	1.38	0.07	0.05	0.04
UK	0.13	0.09	0.08	-0.34	-0.34	-0.33	0.12	0.07	0.06	-0.23	-0.23	-0.23
	0.45	0.32	0.28	-1.64	-1.64	-1.61	0.52	0.30	0.25	-1.35	-1.37	-1.36
France	0.38	0.35	0.33	-0.11	-0.11	-0.11	0.23	0.18	0.17	-0.13	-0.13	-0.12
	1.31	1.19	1.15	-0.50	-0.51	-0.48	0.98	0.77	0.74	-0.71	-0.72	-0.70
Germany	0.37	0.33	0.32	-0.13	-0.13	-0.13	0.19	0.14	0.12	-0.17	-0.17	-0.17
	1.33	1.19	1.13	-0.61	-0.62	-0.63	0.83	0.60	0.54	-0.98	-1.00	-1.01
Sweden	-0.05	-0.08	-0.10	-0.50	-0.50	-0.50	0.12	0.07	0.06	-0.22	-0.22	-0.23
	-0.15	-0.28	-0.34	-2.07	-2.08	-2.10	0.51	0.30	0.24	-1.19	-1.21	-1.22
Canada	0.57	0.53	0.52	0.06	0.06	0.06	0.44	0.39	0.38	0.07	0.06	0.06
	2.02	1.89	1.85	0.30	0.29	0.31	1.91	1.69	1.65	0.40	0.37	0.38
Australia	0.49	0.45	0.43	-0.01	-0.01	-0.02	0.47	0.42	0.40	0.10	0.09	0.08
	1.76	1.62	1.54	-0.04	-0.06	-0.11	2.06	1.83	1.74	0.57	0.53	0.49
New Zealand	0.29	0.25	0.23	-0.19	-0.19	-0.20	0.26	0.21	0.19	-0.10	-0.11	-0.11
	1.05	0.91	0.83	-0.90	-0.93	-0.97	1.14	0.90	0.82	-0.59	-0.63	-0.66
Belgium	0.18	0.14	0.12				0.12	0.07	0.06			
	0.65	0.51	0.45				0.54	0.31	0.24			
Ireland	1.23	1.20	1.18				1.45	1.40	1.39			
	4.31	4.19	4.13				6.10	5.91	5.86			
Austria	0.44	0.40	0.38				0.34	0.28	0.27			
	1.57	1.43	1.37				1.46	1.24	1.19			
Denmark	0.13	0.08	0.06				0.04	-0.01	-0.03			
	0.45	0.30	0.22				0.19	-0.04	-0.12			
Italy	0.46	0.42	0.40				0.22	0.17	0.15			
	1.65	1.51	1.45				0.95	0.73	0.67			
Netherlands	0.46	0.42	0.40				0.29	0.24	0.22			
	1.62	1.49	1.44				1.26	1.04	0.98			
Norway	0.96	0.92	0.90				0.41	0.36	0.34			
	3.37	3.24	3.19				1.78	1.56	1.50			
Finland	0.20	0.17	0.15				0.30	0.24	0.23			
	0.67	0.54	0.50				1.22	1.01	0.97			
Switserland	0.17	0.14	0.12				0.20	0.15	0.14			
	0.62	0.49	0.44				0.88	0.65	0.60			
Japan	1.22	1.18	1.15				0.65	0.60	0.58			
	4.25	4.11	4.03				2.81	2.59	2.52			
R2	0.61	0.61	0.61	0.60	0.60	0.60	0.63	0.63	0.63	0.62	0.62	0.62