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Political Business Cycles  
and Independent Central Banks.  
German Governments  
and the Bundesbank (1960-1989)

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**EUROPEAN UNIVERSITY INSTITUTE, FLORENCE**

**ROBERT SCHUMAN CENTRE**

**Political Business Cycles and Independent Central Banks.  
German Governments and the Bundesbank (1960-1989)**

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## Abstract

How do highly independent and inflation-averse central banks like the German Bundesbank affect the ability of partisan governments to generate pre- and post-electoral monetary and fiscal cycles? Following the explosion of research on independent central banks (ICBs), recent rational-partisan theories of political business cycles predict that ICBs simply weaken the ability of governments to generate partisan-opportunistic cycles. This paper argues that the ideological interactions between conservative, or inflation-averse, ICBs and partisan-opportunistic governments that have different aversion to inflation generate distinct, yet temporally unstable, left and right cycles. Yet, singular historical events, typically linked to severe recessions, may render cycles temporally unstable. Box-Jenkins-Tiao analyses of Germany lend significant support to the model. The Bundesbank does contribute to generate distinct, albeit unstable, left and right pre- and post-electoral monetary and fiscal cycles.

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## 1. Introduction

How do highly independent and inflation-averse central banks like the German Bundesbank affect the ability of partisan governments to generate politically beneficial pre- and post-electoral monetary and fiscal cycles?<sup>1</sup>

Following the explosion of research on independent central banks (ICBs), scholars of political business cycle (PBCs) have acknowledged the importance of this question. Traditional PBCs models simply assumed the dominance of parliamentary politics, thereby largely ignoring ICBs, and predicting that governments freely generate politically beneficial policy and economic cycles. The research on ICBs challenges parliamentary dominance: by limiting direct government access to the Treasury, inflation-averse ICBs constrain the ability of governments to freely generate self-serving yet economically inefficient shocks (Cuckierman, 1992; Alesina and Summers, 1993). In particular, rational-partisan theories (RPT) propose that ICBs weaken the ability of governments to generate pre- and post-electoral monetary and fiscal cycles and thereby reduce policy variability generated by such cycles (Alesina, Roubini and Cohen 1997).

Undoubtedly, this model of RPT-like weaker cycles constitutes progress: it distinguishes between polities with dependent and independent central banks; and it predicts weaker pre- and post-electoral cycles for polities with ICBs. Nevertheless, this paper argues that satisfactory theoretical and empirical accounts of how ICBs affect the ability of governments to generate cycles remain lacking. First, the model does not consider whether and how the ideological interactions between inflation-averse ICBs and partisan-opportunistic governments with different aversions to inflation generate distinct pre- and post-electoral left and right monetary and fiscal cycles. Second, empirical research does not demonstrate that ICBs constrain the ability of partisan-opportunistic governments to generate self-serving cycles: indeed, the evidence on Germany, although patchy, suggests that the Bundesbank, the archetype of ICBs, facilitates rather than weakens monetary and fiscal cycles (Alesina, Roubini and Cohen, 1992, 1993). Third, both the theoretical and empirical research rests on widely held but historically untenable assumptions of the temporal stability of cycles.

This paper proposes an alternative PBCs model with ICBs that rests on 'ideological chicken games' and that also allows for temporal instability; it then tests the model against the experience of German governments from 1960 to 1989, the year of unification.<sup>2</sup> In the model, the ideological distance, or polarization, between ICBs and left and right governments over unemployment and inflation generates distinct interactions and pre- and post-electoral cycles. The significant ideological polarization between ICBs and left governments engenders highly conflictual chicken games in which ICBs tighten monetary



growth: in the post-electoral period, to enforce long-run fiscal responsibility; in the pre-election period, to counter opportunistic fiscal expansions. Instead, the ideological proximity of ICBs and right governments engenders cooperative relations that tend to dissipate monetary and fiscal cycles: fiscally conservative right governments allow ICBs to pursue monetary stability. However, unpredictable events that prevalently linked to severe recessions may engender temporally unstable cycles.

Tests of German PBCs, which rely on interrupted time series designs and Box-Jenkins-Tiao modeling, strongly support the model (Cook and Campbell, 1979; Box and Jenkins, 1994; Box and Tiao 1975). The Bundesbank does contribute to the generation of distinct left and right monetary and fiscal cycles. When confronting fiscally loose center-left governments, the Bundesbank systematically tightens monetary policy: in the pre-electoral period, it curbs short-run opportunistic fiscal expansions; in the post-electoral period, it enforces long-term fiscal responsibility. When confronting fiscally conservative center-right governments, the Bundesbank maintains monetary stability. However, four temporal instabilities, which are indeed associated with recessions, deviate from this general pattern. They concern: the anomalous Grand Coalition; the Louvre Accord in 1977; Schmidt's last center-left government in 1981; and the historically distant center-right governments of the 1960s and 1980s. This research thus demonstrates that the ideological interactions between ICBs and partisan-opportunistic governments do not simply generate weaker, and temporally stable, RPT-like cycles. Rather they engender distinct, and temporally unstable, pre- and post-electoral left and right monetary and fiscal cycles.

This paper is organized in seven sections. Section two outlines the limits of current research on PBCs and ICBs. Section three sketches the model of ideological interactions. Section four specifies the model for Germany. Section five develops the research methodology. Section six discusses the findings. Section seven provides the conclusion.

## **2. Limits of PBCs research: ICBs and party governments**

Three problems prevent established research from providing adequate accounts of how ICBs affect the ability of governments to generate PBCs: (1) its neglect of whether and how the ideological polarization between ICBs and partisan-opportunistic governments generates distinct left and right cycles; (2) the detection of stronger, not weaker, German cycles; and (3) the reliance on the hypothesis of temporal stability of cycles.



## 2.1 The theoretical puzzle: weaker or distinct left and right PBCs?

The model of ICBs-induced RPT-like weaker cycles constitutes progress vis-à-vis traditional PBCs models. Yet, it does not consider whether and how the ideological interactions of ICBs with partisan-opportunistic governments engender distinct pre- and post-electoral left and right monetary and fiscal cycles.

### 2.1.1 Traditional PBCs models: parliamentary dominance

In traditional PBCs models, ICBs play no role in shaping political cycles: parliamentary politics completely determine pre- and post-electoral monetary and fiscal cycles. Three core assumptions establish parliamentary dominance. First, the political-institutional framework exhibits governments that dominate central banks: central banks are subordinate to governments. Second, governments have extensive control, or discretion, over monetary and fiscal instruments: they freely use such instruments to achieve self-regarding political objectives, whereas central banks simply implement the directives of governments. Third, monetary policy is endogenous to fiscal policy: governments finance deficits both by selling debt and by having central banks monetize fiscal expansions. Government's considerable control of monetary and fiscal policies allows them to engineer unhindered pre- and post-electoral cycles.

This framework informs two generations of public choice and partisan PBCs models. In the first generation, a stable inflation-unemployment tradeoff engenders permanent policy and economic cycles: e.g., opportunistic models (Nordhaus, 1975); and partisan models (Hibbs, 1977, 1987). In the second, based on rational expectations, monetary and fiscal shocks generate short-run fluctuations in unemployment but long-term shifts in inflation: e.g., rational opportunistic models (Rogoff and Silbert, 1988; Rogoff, 1990); and RPT models (Alesina, 1989; Alesina, Roubini and Cohen 1997). Ostensibly, evidence from cross-national time-series designs and panel regressions lends support to the RPT model.<sup>3</sup> Governments generate ideologically divergent yet temporary partisan-opportunistic monetary and fiscal cycles: left post-electoral inflationary expansions followed by pre-electoral deflationary contractions; and right post-electoral deflationary contractions followed by pre-electoral inflationary expansions. This research clearly establishes the centrality of ideological and electoral objectives as well as the primacy of long-term ideological commitments over shorter-run opportunistic concerns. However, it ignores that ICBs affect the ability of governments to generate those cycles.

### 2.1.2 Model of weaker PBCs: ICBs dominance

The RPT-like model of weaker cycles builds on research which establishes the relative dominance of ICBs and thereby challenges the parliamentary dominance embedded in traditional PBCs models (Cuckierman, 1992; Alesina and Summers,

1993; Rogoff, 1985; Alesina, 1988). Thus, inflation-averse ICBs can effectively weaken the ability of governments to engineer politically self-serving but economically inefficient monetary and fiscal cycles (Alesina, Roubini and Cohen, 1997; Alesina, 1988).

Four assumptions establish ICBs dominance. First, governments' control of monetary instruments has deleterious effects on policy and economic performance. Specifically, the poor credibility of governments with considerable discretion over monetary policy and the sub-optimality and time inconsistency of discretionary policies have a built-in inflation bias. Second, the polity exhibits an institutional framework with two partially independent agents that have different competencies: ICBs control monetary policy, and governments control fiscal policy. Third, ICBs are conservative or 'inflation-averse': their objective is to prevent, through their control of monetary policy, inefficient policy and economic fluctuations. Fourth, power is asymmetric in favor of ICBs: control of monetary policy and the unwillingness to finance inflationary deficits weaken the ability of governments to engineer fiscal expansions. Ultimately, inflation-averse ICBs emerge as powerful agents that produce superior policy and economic performance. By insulating monetary policy from the direct control of governments, they enhance credibility in policy-making and ultimately reduce average and variance inflation.<sup>4</sup>

This framework first informed economics models of political economy that conceived of governments as benevolent social planners. In such models governments simply absorb exogenous shocks. However, polities with ICBs absorb such shocks more effectively and efficiently than polities whose governments have complete discretion over monetary and fiscal policies (Rogoff, 1985). Empirical evidence seemingly supports the view that ICBs induce lower and less volatile inflation, although the effects on growth and unemployment are ambiguous (Eijffinger and De Haan, 1996; Alesina and Gatti, 1995; Walsh, 1995; Cuckierman, 1994, 1992; Alesina and Summers, 1993; Grilli, Masciandaro and Tabellini, 1991). ICBs also affect the dynamics of government debt: by limiting automatic credit to the Treasury, ICBs enforce fiscal responsibility on governments, and thus generate smaller and less volatile deficits (Parkin, 1987; Masciandaro and Tabellini, 1988). However, this research ignores the political incentives.

ICBs dominance was later extended to two generations of PBCs models which do incorporate political incentives. The first incorporates incentives within a public choice framework. Non-cooperative 'chicken games' between inflation-averse ICBs and inflation-prone opportunistic governments drive the dynamics of monetary and fiscal policies (Alesina, 1988). In these games, governments undertake fiscal expansions for short-term political gains in unemployment even



at the cost of higher inflation while ICBs use monetary policies to force governments to pursue non-inflationary fiscal policies. In models of 'passive' monetary policy, ICBs counter fiscal expansions with monetary stability (Sargent and Wallace, 1981). In models of 'active' monetary policy, they counter fiscal expansions with monetary contractions (Tabellini, 1986). However, these opportunistic models do not consider the partisan-opportunistic nature of governments, the ideological interactions between ICBs and governments, and the distinctiveness of left and right pre- and post-electoral monetary and fiscal cycles.

The second generation explicitly builds on the RPT: hence, parties are partisan-opportunistic agents, have different preferences over inflation and unemployment, and pursue ideologically distinct policy strategies to achieve their objectives (Alesina, Roubini and Cohen, 1997; Waller, 1989). Ultimately, however, ICBs's control of monetary instruments reduces partisan and electoral volatility in monetary and fiscal policies as well as in economic outcomes. They insulate the economy from policy variability and expectation uncertainty caused by partisan cycles. They also insulate the economy from opportunistic cycles: in election years, ICBs more easily resist political pressures for loose money. However, this model does not consider how the ideological polarization between ICBs and partisan-opportunistic governments generate distinct interactions as well as pre- and post-electoral left and right monetary and fiscal cycles. Specifically, it neglects that conflicting chicken games more likely occur with ideologically distant left governments than with ideologically proximate right governments. That is, the propensity of left governments for fiscal expansions to cut unemployment may prompt ICBs to tighten money growth to enforce fiscal responsibility. Instead, the basic ideological agreement between ICBs and right governments regarding fiscal balances is conducive to policy stability that weakens pre- and post-electoral monetary and fiscal cycles.<sup>5</sup> Thus, a more appropriate model ought to consider how ideological polarization engenders different interactions between ICBs and partisan-opportunistic governments as well as distinct left and right cycles.

## **2.2 The research on Germany: Bundesbank as facilitator of PBCs?**

The specific research on Germany exhibits two main problems. The first problem is theoretical: established models do not consider the distinct ideological interactions between the Bundesbank and the German governments. The second problem is empirical: findings seemingly suggest that the Bundesbank generates stronger RPT-like cycles but they are inadequate.

### **2.2.1 The theoretical problem**

Mirroring the general PBCs framework, the theoretical research on Germany

provides three types of models which fail to consider that the ideological interactions between the Bundesbank and the partisan-opportunistic governments may generate distinct left and right cycles. The first examines reaction functions within the socially benevolent government framework (Frey and Schneider, 1981; Berger and Schneider, 1997; Clarida and Gertler, 1997). This research ignores altogether the political incentives driving democratic governments and the occurrence of political cycles. The second acknowledges political incentives but within the opportunistic framework (Berger and Woitek, 1997a, 1997b). This research disregards that ideology shapes the interactions between the Bundesbank and governments and generates partisan-opportunistic cycles. The third builds on the RPT, hence it allows for partisan-opportunistic cycles and predicts that the Bundesbank induces weaker cycles (Alesina, Roubini and Cohen, 1997). Clearly, this research does not consider the distinctive ideological interactions between the Bundesbank and the various German governments: i.e., the center-left and center-right coalitions and the Grand Coalition. Nor does it consider the unique left and right cycles such interactions may generate. Yet, significant historical evidence does suggest the distinctiveness of such ideological interactions and cycles.<sup>6</sup>

Five main instances of conflicts have been detected. First, confronting a severe recession that threatened its electoral chances, Erhard's center-right government (1961:4-1965:3) engineers an opportunistic pre-electoral expansion of social expenditures; the Bundesbank tightens credit to counteract the inflationary fiscal expansion (Berger and de Haan, 1997; Holtfrerich, 1988; Leaman, 1987).<sup>7</sup> Second, after inheriting the first severe recession in the Post-World II era, the Grand Coalition undertakes a significant fiscal expansion; the Bundesbank responds by tightening monetary growth (Conradt, 1989; Katzenstein, 1987; Courakis, 1977). Third, having successfully fought the recession with demand management and institutional innovations encapsulated in the *Law for Growth and Stability*, novel inflationary pressures before elections prompt the Grand Coalition to cut deficits; such a move enables the Bundesbank to maintain monetary stability (Holtfrerich, 1988; Katzenstein, 1987). Fourth, Schmidt's second center-left government (1977:1-1980:4) confronts a worldwide economic crisis that resulted in international policy coordination encapsulated in the Louvre Accord of 1977 (Goodman, 1992; Funabashi, 1988; Putnam and Bayne, 1984). Foreign governments, as well as Schmidt's government, pressure the Bundesbank to expand monetary policies to help pull the world economy out of recession; the Bundesbank acquiesces, albeit reluctantly and temporarily. Fifth, Schmidt's short-lived last center-left government (1981:1-1982:3) confronts high unemployment that compels the SPD, against the wishes of the FDP, to engineer a significant fiscal expansion; the expansion prompts the Bundesbank to tighten money growth (Conradt, 1989; Hancock, 1989; Katzenstein, 1987). Contrasting these conflictual interactions, Kohl's



governments in the 1980s enjoy less conflictual, and even cooperative, relations with the Bundesbank (Marsh, 1992; Hancock, 1989).

This historical evidence suggests the distinctiveness of the ideological interactions between the inflation-averse Bundesbank and the partisan-opportunistic governments. In particular, conflicts tend to be harsher with left governments that are more concerned with unemployment than inflation. They are less conflictual, and even cooperative, with right governments that largely share similar aversion to inflation. This evidence seemingly supports the model of ideological chicken games between the Bundesbank and the German governments that predicts distinct left and right pre- and post-electoral monetary and fiscal cycles.

### 2.2.2 The empirical problem

The relevant empirical research, mainly within the RPT framework, suggests that the Bundesbank, the archetypal ICB, generates stronger not weaker economic and policy cycles (Alesina, Roubini and Cohen, 1992, 1993). However, such evidence is partial and inadequate.

**Post-electoral monetary and fiscal cycles.** Tests of such cycles are missing: only analyses of economic cycles -- growth, unemployment, and inflation -- are available (Alesina, Roubini and Cohen, 1993). Ostensibly, such analyses could provide useful insights into monetary and fiscal cycles by demonstrating that ICBs engender weaker economic cycles. Yet, findings reject such a claim: comparatively, Germany exhibits the strongest RPT-type of economic cycles.<sup>8</sup> Analyses of German post-electoral monetary and fiscal cycles are therefore much needed.

**Pre-electoral monetary cycles.** Findings suggest an ideological bias of the Bundesbank towards the right: it expands monetary growth for right governments, but it maintains monetary stability for left governments (Alesina, Roubini and Cohen, 1992).<sup>9</sup> Seemingly, ICBs 'actively' facilitate right cycles through accommodative monetary expansions but 'passively' weaken left cycles by leaving monetary policy unchanged. Yet, these findings are not reliable. First, the empirical model does not adequately control for the Bretton Woods regime break. In particular, it does not consider that the floating exchange rates regime enhanced the power of ICBs over monetary policy and resulted in tighter and less volatile monetary policy (Obstfeld, 1993). Nor does it consider that after 1973 the Bundesbank pursued a tighter monetary policy coupled with targeting (Bernanke and Mishkin, 1992; Berger and Schneider, 1997). Second, the 'world' variable capturing exogenous effects on German monetary policy is inappropriate. Its operationalization -- weighted average of major currencies -- overlooks that the Bundesbank principally reacts to changes in US monetary

policy (Berger and Woitek, 1997b; Goodman, 1992). Thus, a more adequate model of monetary cycles ought to control both for the monetary regime shift and for fluctuations in US monetary policy.

**Pre-electoral fiscal cycles.** Tests consider only opportunistic models and suggest that, comparatively, Germany exhibits the strongest pre-electoral fiscal expansions (Alesina, Roubini and Cohen, 1992). Seemingly, ICBs do not weaken the ability of governments to engineer pre-electoral fiscal expansions. Yet, findings are questionable. First, tests of only opportunistic models ignore left and right cycles. Second, the empirical model does not control for the long-term effects of the oil shock on deficits. Third, the model focuses on public debt and, because of data limitation, uses low frequency yearly data that poorly captures the short-run properties of pre-electoral fiscal cycles. This last problem is crucial in politics like Germany where governments can call early elections on a short notice. Higher frequency quarterly data would better capture the short-run properties of pre-and post-electoral cycles. The unavailability of debt data suggests the use of deficit ratios, which are available at quarterly frequency. Moreover, such analyses would have to consider the distinctiveness of partisan-opportunistic cycles.

In sum, research on German PBCs neither establishes whether the Bundesbank weakens the ability of governments to generate monetary and fiscal cycles, nor considers whether and how the ideological interactions between the Bundesbank and the German governments generate distinct interactions and partisan-opportunistic cycles. Theoretical research ought to consider a model of ideological interactions between the Bundesbank and the partisan-opportunistic governments, and specifically the center-right and center-left coalitions as well as the Grand Coalition. In turn, empirical research ought to provide three types of analysis: (1) of left and right monetary and fiscal cycles, (2) of monetary cycles that includes the effects of monetary regimes and US monetary policy, and (3) of fiscal cycles using quarterly deficit ratios.

### 2.3 Temporal stability of cycles?

Finally, the PBC research relies on the widely held but empirically inadequate assumption of temporal stability of cycles. Historical evidence amply suggests the alternative hypothesis of cycle instability.

#### 2.3.1 The hypothesis of temporal stability

According to the stability hypothesis, all governments within a given polity generate regular, or systematic, post- and pre-electoral cycles that share similar characteristics. Thus, for instance, the RPT model assumes stable cycles with abrupt onset, temporary duration, level shift dynamics, and homogeneous gain



over time and across all polities (Alesina, Roubini and Cohen, 1997). Its extension also predicts that the interaction between ICBs and governments is stable over time and generates systematic, albeit weaker, partisan-opportunistic cycles. Methodologically, this assumption informs three fashionable choices. The first concerns the adoption of operant designs with multiple interventions that share similar onset, duration, dynamics, and gain (Glass, Willson and Gottman, 1975; Cook and Campbell, 1975); the second, the temporal pooling of cycles of different governments within a given polity as they share similar properties;<sup>10</sup> the third, the reliance on static OLS regressions that can only capture cycles with abrupt level-shifts (Pankratz, 1991; Wei, 1990). However, this research rules out *a priori* alternative hypotheses of cycles with different onset, duration, dynamics, and gain. Clearly, it rules out that cycles may differ over time and thus be temporally unstable.

### **2.3.2 The hypothesis of temporal instability**

PBCs theorists acknowledge, but do not investigate systematically, temporal instability. For instance, analyses of American administrations and British governments detect cycle instability (Beck, 1982, Alt, 1985). Even proponents of the RPT recognize that singular historical conditions may compel governments to undertake different -- i.e., temporally unstable -- pre- and post-electoral interventions over time (Alesina, Roubini and Cohen, 1997).<sup>11</sup> Moreover, several lines of research -- especially concerning the effects of regime breaks, economic conditions, and political institutions -- suggest the temporal instability of cycles, the inadequacy of operant designs and pooling techniques, and the unreliability of empirical findings.

### **2.3.3 Regime breaks**

Empirical specifications of PBCs models acknowledge the long-term effects of regime breaks but not their implications for shorter-run political cycles. Thus, the first oil shock is linked to a long-term growth of deficits whereas the breakdown of the Bretton Woods regime generates a permanent level-shift in monetary growth (Alesina, Roubini and Cohen, 1997; Krugman and Obsfeld, 1997; Alesina and Perotti, 1995). For Germany, the oil shock triggers the long-term growth of deficits (Conradt, 1989; Leaman, 1985). Similarly, the shift to floating exchange rates allows the Bundesbank to adopt tighter monetary policies as well as targeting (Bernanke and Mishkin, 1992; Kloten, Ketterer and Volmer, 1985; Courakis, 1977). This research, however, overlooks that regime shifts may affect, and thus render unstable, the shorter-run pre- and post-electoral monetary and fiscal cycles. This problem is especially significant for Germany, as the enhanced power of the Bundesbank after 1973 may have affected the partisan and electoral strategies of governments.

### 2.3.4 Economic conditions

Economic conditions -- growth and inflation, and recession and unemployment -- may also generate cycles instability by affecting the ability of governments to engineer PCBs (Lewis-Beck, 1990; Nordhaus, 1989; OECD, 1988). While the question of how governments do so remains open, historical research on Germany recognizes five major situations in which economic conditions affect the interactions between the Bundesbank and the governments, and, furthermore, engender pre- and post-electoral monetary and fiscal cycles that deviate from expected patterns. First, in the interaction between Erhard's government and the Bundesbank, the severe recession that threatened electoral chances is the trigger for the expansion of social expenditures and for monetary tightening (Berger and de Haan, 1997; Holtfrerich, 1988; Leaman, 1987). Second, the inherited severe recession prompts the Grand Coalition to undertake the fiscal expansion that forces the Bundesbank's tightening of credit (Conradt, 1989; Katzenstein, 1987; Courakis, 1977). Third, inflationary pressures before elections prompt the Grand Coalition to cut deficits (Marsh, 1992). Fourth, the worldwide economic crisis that resulted in international policy coordination in the Louvre Accord pressure the Bundesbank to expand, albeit reluctantly, monetary policies (Goodman, 1992; Funabashi, 1988; Putnam and Bayne, 1984). Fifth, high unemployment compelled Schmidt's short-lived last center-left government, or more precisely the SPD against the wishes of the FDP and the Bundesbank, to engineer the fiscal expansion (Conradt, 1989; Hancock, 1989; Katzenstein, 1987). These five major events do indicate that economic conditions significantly shape the short-term partisan and electoral objectives and strategies of German governments, the interactions of such governments with the Bundesbank, and ultimately the properties of pre- and post-electoral monetary and fiscal cycles. In particular, they contribute to generate temporally unstable cycles that deviate from expected general left and right patterns.

### 2.3.5 Temporal instability: political institutions

By providing opportunities to governments, they also engender cycle instability. Parliamentary fragmentation may result in the breakdown of coalition governments and alter significantly pre- and post-electoral strategies (Grilli, Masciandaro and Tabellini, 1991; Alesina and Perotti, 1995). Similarly, endogenous timing of elections may lead to early elections that disturb the 'normal' occurrence of pre-electoral cycles (Ito, 1990; Terrones, 1989). This problem is significant for Germany as it exhibits a variety of coalition governments as well as endogenous timing of elections. The Bundesbank did confront a variety of structurally and ideologically different governments, and furthermore early elections were called several times (Vaubel, 1997; Goodman, 1992; Conradt, 1989; Katzenstein, 1987; Markovits, 1982). Four anomalies are historically salient. The first concerns the breakdown of the short-lived center-right governments in 1966 that paved the way to the Grand Coalition. The second



is its replacement by the Grand Coalition, which spans the whole of the ideological spectrum but nonetheless represents a clear leftward shift.<sup>12</sup> The third is the collapse of the last center-left government in the Fall of 1982 following the defection of the FDP over the conduct of fiscal policy. The fourth is Kohl's subsequent short-lived center-right government that immediately called early elections. A proper model ought to examine the properties of pre- and post-electoral interventions of such governments.

Clearly, the stability hypothesis -- and hence pooling of cycles, associated ITS operant designs, and static OLS-based techniques -- obscures temporal differences in the pre- and post-electoral cycles of German governments. The more appropriate theoretical strategy is to consider a PBCs model based on ideological polarization that allows for the temporal instability of cycles. Methodologically, such model calls for single-interventions ITS designs and dynamic regression techniques that capture temporal instabilities. The logic of inference implies that the stability hypothesis is not rejected if stable cycles are observed both for single governments and for pooled governments (Glass, Willson, and Gottman, 1975). Significant discrepancies would refute the stability hypothesis and implicitly support the instability hypothesis.

### **3. PBCs in the presence of ICBs: partisan-electoral 'chicken games'**

The alternative PBCs model rests on ideological interactions, or chicken games, between partially independent ICBs and partisan-opportunistic governments. Ideological polarization affects such interactions as well as the properties of political cycles. Greater polarization generates conflictual non-cooperative interactions. Conflictual interactions are more likely with ideologically distant left governments than with ideologically closer right governments. Such interactions generate distinct left and right pre- and post-electoral monetary and fiscal cycles.

#### **3.1 Format / structure of the polity: ICBs dominance**

As with the standard research, the political-institutional arrangement exhibits two relatively independent agents with different policy competencies: governments, who control fiscal policy; and ICBs, who control monetary policy. Yet, power is asymmetric in favor of ICBs: ICBs fully control monetary policy; governments only partially control fiscal policy. As ICBs dominate governments, monetary policy is exogenous to fiscal policy. Dominance and exogeneity establish the subordination of fiscal to monetary policy and hence ICBs can constrain the ability of governments to use fiscal instruments for political purposes.

### 3.2 Ideology: ICBs and governments on the left-right space

Besides being independent, ICBs and governments are ideological agents. Hence, their motivations, preferences and objectives can be mapped on the left-right spectrum. As in standard partisan models, governments are driven by long-term ideological commitments as well as by short-term electoral concerns (Budge and Laver, 1992). Ideological commitments are rooted in long-standing yet evolving socioeconomic cleavages (Klingemann, 1994; Budge, Robertson and Hearl, 1987). Holding office is a crucial instrument to achieve ideological objectives; electoral concerns are subordinate to ideological commitments. Thus, political competition to gain office involves left and right parties with different socioeconomic bases, ideologies, and objectives.

Distinct preferences over unemployment and inflation capture differences in objectives and strategies of left and right parties (Alesina, Roubini and Cohen, 1997). The Left privileges low unemployment even at the cost of inflation and hence adopts more expansionary monetary and fiscal policies. The Right prefers low inflation even at the cost of unemployment and hence adopts tighter policies. This basic framework informs the RPT and its amended version with ICBs. However, ideological ICBs affect the ability of left and right governments to use monetary and fiscal instrument to achieve preferred partisan-electoral objectives.

Like governments, ICBs are ideological agents that have distinct preferences over unemployment and inflation. Formal independence is not sufficient to explain the preference, objectives, and strategies of ICBs: conservatism, captured by a strong aversion to inflation, is also necessary. Debates are still evolving as to how to explain the conservatism of ICBs (Lohman, 1998; Vaubel, 1997; Alesina, Roubini, and Cohen 1997; Chappel, Havrislesky and McGregor, 1993; Alt, 1992). Nevertheless, ICBs prefer low and stable inflation even at the cost of higher unemployment and they use their control of monetary instruments to achieve this objective. The conservatism of ICBs affects the partisan-electoral strategies of governments.

### 3.3 Ideological polarization: mechanics of ideological interactions

The ideological polarization between ICBs and partisan-opportunistic governments over inflation and unemployment shapes their interactions and PBCs. Inflation-averse ICBs establish distinct relations with left and right governments. ICBs enjoy greater ideological congruence with right governments that have similar preferences for low inflation. The preference of left governments for low unemployment diverges from the preference of ICBs for low inflation. Conflictual chicken games more likely occur with left governments: the propensity of the left to adopt expansionary fiscal policies to fight unemployment prompts ICBs to tighten monetary growth. In contrast,



cooperative relations more likely occur with right governments: their preference for non-inflationary budget balances allows ICBs to pursue stable monetary policies. These hypotheses suggest distinctive partisan-electoral monetary and fiscal cycles.

### **3.4 PBCs for left governments: conflictual chicken games**

Ideological polarization triggers conflictual relationships characterized by distinct chicken games in which ICBs adopt tight pre- and post-electoral monetary policies to enforce fiscal responsibility on deficit-prone left governments.

**Post-electoral ideological shifts (LI).**<sup>13</sup> In a leftward ideological shift, a right government ostensibly loses elections because its low inflation objective generates politically undesirable high unemployment.<sup>14</sup> The shift induces a change from the right low-inflation objective to the left low-unemployment objective. It also induces a policy shift from the right fiscal conservatism to the left expansionary, and potentially inflationary, fiscal policies. Confronting a fiscally loose left government, ICBs tighten monetary policy to enforce long-run fiscal responsibility.

*(LI) After an ideological shift to the left, both monetary and fiscal policies are tighter.*

**Pre-electoral cycles (LE).** Given ideologically 'hostile' ICBs, left governments are unlikely to achieve the desirable low unemployment by the end of the legislature. Facing elections with excess unemployment, they undertake fiscal expansions to maximize chances for re-election. ICBs react by tightening monetary policy to curb deficits.

*(LE) Before elections, deficits grow and monetary policy, with a lag, turns restrictive.*

**Administrative shifts (LA).** When left governments retain control of the executive, their interaction with ICBs obeys the same logic and generates similar post- and pre-electoral monetary and fiscal cycles. After an administrative shift, ICBs further tighten monetary growth to enforce long-run fiscal responsibility. Before elections, left governments engineer fiscal expansions and ICBs tighten monetary policy.

*(LA = LI) After re-election, monetary policy tightens and deficits contract.*

*(LE) Before elections, deficits grow and monetary policy turns restrictive.*

### 3.5 PBCs during right governments: cooperative relations

The ideological closeness renders relationships less conflictual, if not cooperative, and engenders long-run fiscal and monetary stability. Right governments pursue fiscal balances, and ICBs maintain monetary stability.

**Post-electoral ideological shifts (RI).** In an ideological shift to the right, left governments ostensibly lose elections because low unemployment may generate fiscal imbalances and inflation. The shift marks a departure from the left low-unemployment objective to the right objective of low inflation. It also marks a policy shift from the left propensity for fiscal expansions to right fiscal conservatism. Confronting inflation- deficit-averse governments, ICBs pursue monetary stability.

**(RI)** *After a shift to the right, deficits shrink whereas monetary policy remains stable.*

**Pre-electoral cycles (RE).** On ideological grounds, right governments do not opportunistically expand deficits to inflate the economy before elections to cut unemployment. The fiscal responsibility allows ICBs to maintain monetary policy stable.

**(RE)** *Before elections, fiscal and monetary policies are stable.*

**Administrative shifts (RA).** After incumbent right governments regain control of the executive, their interaction with ICBs obeys the same logic. Governments continue to cut deficits to establish fiscal balances and ICBs maintain monetary stability. Before elections, right governments do not expand deficits whereas ICBs keep monetary stable.

**(RA = RI)** *After re-election, deficits continue to shrink and monetary policy is stable.*

**(RE)** *Before elections, fiscal and monetary policies remain stable.*

These patterns differ from the RPT-like weaker cycles. Conflictual 'chicken games' between ideologically distant ICBs and left governments engender asynchronous cycles: pre-electoral fiscal expansion followed by monetary contraction; and post-electoral monetary contraction followed by fiscal contraction. Ideologically close ICBs and right governments more likely establish cooperative relations that are conducive to fiscal balances and monetary stability.



## 4. Germany: pre- and post-electoral left and right cycles

The specification of the model for Germany accounts for the unique historical events and institutional arrangements that affect the temporal stability of pre- and post-electoral cycles. Three types of governments are considered under both assumptions of temporal stability and instability: center-left, center-right, and Grand Coalition.

### 4.1 Center-Left governments

The general stability hypothesis predicts two asynchronous cycles: post-electoral monetary contraction and deficit cuts; and pre-electoral fiscal expansions and monetary contraction. However, historical evidence suggests significant temporal instabilities.

**Post-electoral ideological cycles.** There is only one leftward shift, in 1969:3, following the Grand Coalition. This shift is anomalous both because the Coalition covers the whole ideological spectrum and because it includes the SPD. The shift is significant because the SPD now is the dominant partner and the center-based FDP replaces the right CDU/CSU. The hypothesis of ideological shift predicts that the Bundesbank tightens monetary policy to enforce fiscal responsibility on the new center-left government.

**(LI69:4)** *After the 'anomalous' leftward shift, monetary policy is tighter and deficits shrink.*<sup>15</sup>

**Pre-electoral cycles.** Center-left governments confront three elections in 1972:4, 1976:4, and 1980:4. Historical evidence suggests no temporal instabilities. Thus, following the general hypothesis, the governments expand deficits and the Bundesbank tightens monetary growth.

**(LE72:4, LE76:4, LE80:4)** *Before elections, deficits grow and monetary policy tightens.*

**Post-electoral administrative cycles.** Center-left governments regain power on three consecutive occasions: 1973:1, 1977:1, and 1981:1. Only the first government (LA73:1) follows the general pattern: its reelection prompts the Bundesbank to tighten monetary policy to enforce fiscal responsibility. In the second government, following the Louvre Accord (LA77:1), international and domestic pressures force the Bundesbank to relax monetary policy. In the last, short-lived, Schmidt's government (LA81:1), the SPD engineers the significant fiscal expansion, whereas the Bundesbank tightens monetary policy.

**(LA73:1)** *After 1973:1, monetary policy tightens and deficits contract.*

**(LA77:1)** *After 1977:1, monetary policy is expansionary but fiscal policy remains tight.*

**(LA81:1)** *After 1981:1, deficits expand, not contract, and monetary policy turns tight.*

## 4.2 Center-Right governments

The stability hypothesis predicts post-electoral fiscal contractions and monetary stability but no pre-electoral cycles. However, historical evidence suggests significant temporal instabilities.

**Post-electoral ideological cycles.** There is only one rightward ideological shift, in 1983:1, when the center-left coalition collapses because of ideological disagreements over the use of fiscal policy to fight unemployment -- the SPD favoring a fiscal expansion, and the FDP budget cuts. The defection of the FDP gives way to Kohl's first interim coalition and soon after to the victorious 1983:1 early elections. The new center-right government undertakes permanent deficit cuts, and the Bundesbank maintains monetary stability.

**(RI83:1)** *After the right shift, deficits decline permanently and monetary policy is stable.*

**Pre-electoral cycles.** Two elections are considered: in 1965:3; and, before the 1989 unification, in 1987:1.<sup>16</sup> On ideological grounds, center-right governments do not expand deficits whereas the Bundesbank maintains monetary stability. However, historical evidence suggests instabilities for the first election when the opportunistic expansion of social expenditures prompted the Bundesbank to tighten credit to counteract their inflationary impact. The second election of 1987:1 obeys the general pattern.

**(RE65:3)** *Before the election, fiscal policy is expansionary and monetary policy tightens.*

**(RE87:1)** *Before the election, fiscal and monetary policies are stable.*

**Post-electoral administrative cycles.** There are two shifts, in 1965:4 and in 1987:2, that exhibit instabilities. The first shift results in the short-lived government that ineffectively confronts a severe recession and that the Grand Coalition subsequently replaces. The Coalition's response to the recession with the fiscal stimulus prompts the Bundesbank to tighten money. In the second shift, Kohl confronts the novel problems of unification, abandons the objective of fiscal balances, and cuts deficits only up to the unification, when in fact deficits begin to grow.

**(RA65:4)** *After 1965:4, fiscal policy is expansionary whereas monetary policy is tight.*

**(RA87:2)** *After 1987:2, deficits shrink until 1989 and monetary policy remains stable.*

### 4.3 PBCs during the Grand Coalition

The unprecedented participation of the SPD in government causes a significant, albeit anomalous, leftward shift. The general model predicts that such ideological shift should engender post-electoral monetary tightening and fiscal contraction followed by pre-electoral fiscal expansion and monetary tightening. Temporal instabilities contradict these predictions.

**Ideological cycle (GCI).** The inherited severe recession prompts the Grand Coalition to undertake a fiscal expansion and the Bundesbank in response tightens monetary growth.

**(GCI)** *At the onset of the Grand Coalition, deficits expand and monetary policy tightens.*

**Pre-electoral cycle (GCE).** The pre-electoral inflationary pressures, in the wings of the new boom, prompt the Coalition to cut deficits; the Bundesbank to maintains monetary stability.

**(GCE)** *In the pre-election period, deficits contract and monetary policy remains stable.*

In sum, these patterns for the German center-right, center-left and Grand Coalition governments differ from the RPT-like weaker cycles. They fit well in the model of ideological chicken games that allows for temporal instabilities. Such instabilities do not invalidate the model. Rather they strongly indicate the need to consider singular and unpredictable historical events as well as institutional arrangements that may affect the short-run objectives and strategies of governments and ICBs. These hypotheses are tested next using a methodological framework that optimally discriminates between the stability and instability hypotheses.



## 5. Research methodology

Tests of the model for Germany require four methodological decisions. They concern: (1) the interrupted time series (ITS) designs to examine the stability/instability of cycles; (2) the Box-Jenkins-Tiao (BJT) model specification; (3) the specification of the models for German monetary and fiscal cycles; (4) the specification of German pre- and post-electoral cycles in BJT form.

### 5.1 ITS quasi-experiment designs: stability / instability of cycles

The hypothesis of temporal stability calls for multi-interventions operant ITS designs that assume similar cycles for all governments over time (Cook and Campbell, 1979). Instead, the instability hypothesis requires single-intervention ITS designs that capture the properties of pre- and post-electoral cycles of each government. Five properties of cycles are considered:

- **existence**, by which cycles either emerge or policies remain on a stable path;
- **direction**, by which cycles exhibit patterns of either growth or contraction;
- **duration**, by which cycles are either permanent or temporary;
- **dynamics**, by which cycles exhibit either abrupt, or gradual, or oscillatory level shifts;
- **gain**, which captures the cumulated total change, or growth/decay, of cycles over time.

The logic of inference implies that tests yielding similar findings under both hypotheses of temporal stability and instability do not reject the stability hypothesis (Glass, Willson and Gottman, 1975). Instead, significant discrepancies, especially about existence and direction, reject the stability hypothesis, and implicitly support the alternative of temporal instability.

### 5.2 Box-Jenkins-Tiao modeling of PBCs

PBCs research suggests open economy models that include three core elements: (1) international and domestic economic fluctuations; (2) regime shifts, such as the oil shock and the breakdown of the Bretton Woods system; and (3) pre- and post-electoral interventions (Alesina, Cohen, Roubini, 1997; Alt, 1985). The models are estimated by means of BJT regressions (Box and Jenkins, 1994; Box and Tiao, 1975).<sup>17</sup>

### 5.2.1 The general transfer and intervention functions model

The general model takes the form<sup>18</sup>

$$Y_t = C + \frac{v(B)B^b}{\delta(B)} X_t + \frac{z}{\delta(B)} R_t + \frac{w}{\delta(B)} P_t + N_t$$

1.  $Y_t$  represents endogenous policy variables: i.e., deficits and monetary growth.
2.  $C$  is a constant term that captures the effects of excluded variables on  $Y_t$ .
3.  $X_t$  is a vector of exogenous continuous variables affecting the movement of  $Y_t$ .
4.  $v(B) = (v_0 - v_1B - v_2B^2 - \dots - v_gB^g)$  are the responses of transfer functions.
5.  $B^b$  describes the delay in the onset of transfer functions.
6.  $R_t$  is a vector of binary variables describing regime shifts.
7.  $z$  is the response of intervention functions capturing the effects of regime shifts.
8.  $P_t$  represents binary variables describing pre- and post-electoral interventions.
9.  $w$  is the responses of intervention functions for pre- and post-electoral interventions.
10.  $\delta(B) = (1 - \delta_1B - \delta_2B^2 - \dots - \delta_rB^r)$  describes the dynamics of Koyck-type effects.
11.  $N_t = \frac{\theta(B)\Theta(B)}{\phi(B)\Phi(B)} a_t$  is the stationary error term in ARMA form, where  $a_t$  is white noise.

### 5.2.2 Properties of intervention functions and cycles

The BJT framework is best suited for examining the five core properties of cycles.

- **Existence:**  $w \neq 0$  captures the existence of cycles;  $w=0$ , the absence of cycles.
- **Direction:**  $w > 0$  indicates growth;  $w < 0$ , contraction.
- **Duration:** the length of the binary vector  $P_t$  describes the duration of cycles.
- **Dynamics:** the first-order intervention function  $\delta = 1 - \delta_1(B)$  suggests five potential patterns:<sup>19</sup>
  - 1)  $\delta_1 = 0$  indicates abrupt level shift;
  - 2)  $0 < \delta_1 < 1$  indicates either gradual growth for  $w > 0$ , or decay for  $w < 0$ ;
  - 3)  $-1 < \delta_1 < 0$  indicates damped oscillations typical of adjustment processes;
  - 4)  $\delta_1 = 1$  indicates ramp/trend-like shifts in slope;
  - 5)  $\delta_1 = -1$  indicates repetitive oscillations which are also associated with targeting;
- **Gain:**  $w(1 - \delta_1 + \delta_1^2 + \dots + \delta_1^n)$  captures the cumulated response over time.

### 5.2.3 Operationalization of political interventions

In standard form, political interventions are measured as binary variables:  $P=1$  indicates the presence of interventions;  $P=0$  the absence of interventions. In post-



election interventions,  $P=1$  for increasing numbers of quarters starting with the quarter after elections ( $t+k$ );  $P=0$  otherwise. In pre-election interventions,  $P=1$  for increasing numbers of quarters starting with the election quarter ( $t-k$ );  $P=0$  otherwise. The hypothesis of temporal stability, and the associated ITS operant design, generates P-vectors that encompass either all pre-electoral or all post-electoral periods for left-wing and right-wing government.<sup>20</sup> The instability hypothesis, and the associated single-intervention ITS design, generates P-vectors that capture either the pre-electoral or the post-electoral interventions of each government.<sup>21</sup> The length of the vector, or duration of cycles, is determined empirically by increasing the number of quarters until the cycle dies out.

### 5.3 Empirical specification of basic models

Several modifications minimize misspecification detected in standard models.

#### 5.3.1 Model for monetary policy

The model takes the form

$$m_t = C + \frac{v_1(B)B^b}{\delta(B)} USm_t - \frac{z_1}{\delta(B)} BW_t + \frac{w_1}{\delta(B)} P_t + N_t$$

$m_t$  is monetary growth (M1),  $USm_t$  is US monetary growth (M1),  $BW_t$  is the shift in monetary regime after Bretton Woods, and  $P_t$  captures either pre- or post-electoral interventions.<sup>22</sup> The permanent regime shift is measured as a binary variable:  $BW=0$  before 1973:4, and  $BW=1$  thereafter. In the model, shifts in US monetary policy induce changes in German monetary policy in the same direction ( $v_1>0$ ) (Berger and Woitek, 1997b). In the aftermath of the Bretton Woods regime, the Bundesbank gained greater power and adopted tighter monetary policy ( $z_1<0$ ) as well as targeting ( $\delta = -1$ ) (Bernanke and Mishkin, 1992).

#### 5.3.2 Model for fiscal policy

The model takes the form

$$BD_t = C - \frac{v_1(B)B^b}{\delta(B)} OP_t - \frac{v_2(B)B^b}{\delta(B)} U_t - \frac{z_1}{\delta(B)} OIL_t + \frac{w_1}{\delta(B)} P_t + N_t$$

$BD_t$  is the federal deficit as a ratio of GDP;  $OP_t$ , the openness of the economy to trade;<sup>23</sup>  $U_t$ , the unemployment rate;  $OIL_t$ , the oil shock; and  $P_t$ , pre- and post-electoral interventions. The oil shock, a regime break, is measured as a binary variable:  $OIL=0$  before 1974:4, and  $OIL=1$  thereafter. In the model, greater trade openness generates negative socioeconomic conditions that force governments to expand deficits ( $v_1<0$ ); higher unemployment increases deficits ( $v_2<0$ ); and the first oil shock permanently expanded deficits ( $z_1<0$ ).



## 5.4 Pre- and post-electoral cycles in BJT form

Table 1 summarizes the hypotheses for monetary and fiscal cycles for the three types of government: center-left, center-right, and Grand Coalition. The hypotheses concern only the  $w_1$  parameter since little is known, both theoretically and empirically, about the properties of  $\delta_1$ .<sup>24</sup> Such properties will be explored empirically from the test results.

### 5.4.1 Center-left cycles

The stability hypothesis predicts:

**(LI=LA)** post-electoral monetary tightening ( $w_1 < 0$ ) and fiscal contraction ( $w_1 > 0$ );

**(LE)** pre-electoral cycles fiscal expansion ( $w_1 < 0$ ) and monetary tightening ( $w_1 < 0$ ).

The instability hypothesis predicts:

**(LI69:4)** after 1969:4, tighter monetary policy ( $w_1 < 0$ ) and deficit cuts ( $w_1 > 0$ );

**(LA73:1)** after 1973:1, tighter monetary policy ( $w_1 < 0$ ) and deficit cuts ( $w_1 > 0$ );

**(LA77:1)** after 1977:1, monetary expansion ( $w_1 > 0$ ) and deficit cuts ( $w_1 > 0$ );

**(LA81:1)** after 1981:1, deficits expansion ( $w_1 < 0$ ), and tighter monetary policy ( $w_1 < 0$ );

**(LE72:4, LE76:4, LE80:4)** for the three consecutive elections, similar patterns of fiscal expansions ( $w_1 < 0$ ) followed by tighter monetary policy ( $w_1 < 0$ ).

### 5.4.2 Center-right cycles

The stability hypothesis predicts:

**(RI=RA)** permanent post-electoral deficit cuts ( $w_1 > 0$ ) and stable money ( $w_1 = 0$ );

**(RE)** absence of opportunistic pre-electoral monetary and fiscal cycles ( $w_1 = 0$ )

The instability hypothesis predicts:

**(RE65:3)** before 1965:3, fiscal expansion ( $w_1 < 0$ ) and monetary tightening ( $w_1 < 0$ );

**(RA65:4)** after 1965:4, fiscal expansion ( $w_1 < 0$ ) and monetary tightening ( $w_1 < 0$ );

**(RI83:1)** after 1983:1, permanent deficit cuts ( $w_1 > 0$ ) and stable money ( $w_1 = 0$ );

**(RE87:1)** before the 1987:1 election, stable fiscal and monetary policies ( $w_1 = 0$ );

**(RA87:2)** after 1987:2, deficit cuts ( $w_1 > 0$ ) until 1989 and monetary stability ( $w_1 = 0$ ).

### 5.4.3 Cycles during the Grand Coalition

**(GCI)** At the onset, the Coalition undertakes a fiscal expansion to fight the recession ( $w_1 < 0$ ) whereas the Bundesbank tightens monetary growth ( $w_1 < 0$ ).

**(GCE)** In the pre-election period, the Coalition cuts deficits to control inflationary pressures ( $w_1 > 0$ ) whereas the Bundesbank maintains monetary policy stable ( $w_1 = 0$ ).

## 6. Empirical findings

After controls, tests strongly support the PBCs model based on ideological chicken games with temporal instability. They clearly reject claims of RPT-like weaker PBCs.

### 6.1 Controls for monetary policy

Model identification and estimation yields<sup>25</sup>

$$m_t = 1.7 + \frac{0.8}{1+0.4B} USm_t - \frac{1.3}{1+1.0B} W_t + (1+0.5B)a_t.$$

Both changes in US monetary policy and the shift to the floating exchange rates regime have the predicted effects on the evolution of German monetary policy. US monetary expansions prompt the Bundesbank to quickly expand its monetary policy. The first-order transfer function indicates that a 1% growth in US money supply generates an immediate growth of 0.8%, a process of adjustment with damped oscillations ( $\delta=-0.4$ ); a new equilibrium level of 0.6% is achieved after about 3 quarters.<sup>26</sup> Moreover, following the shift to the floating exchange rate regime, the Bundesbank pursues a tighter monetary policy as well as targeting. The intervention function suggests a permanent 1.3% contraction of monetary growth as well as repetitive non-converging oscillations typical of targeting ( $\delta=1.0$ ). Accordingly, the Bundesbank allows monetary growth to oscillate between the previous level and the new lower level of -1.3%. Established PBCs research ignores the significance and distinctiveness of such shocks.

### 6.2 Controls for fiscal policy

Model identification and estimation yields<sup>27</sup>

$$BD_t = 3.0 - 0.65 OP_{t-3} - 0.9 U_{t-1} - 2.0 OIL_t + (1 + 0.3B^4)^{-1} a_t.$$

Systemic shocks and regime breaks have the predicted effects. A 1% worsening in trade increases deficits by 0.65% three quarters later. A 1% increase in unemployment expands deficits by 0.9% one quarter later. The oil shock permanently increased deficits by about 2.0%.

### 6.3 Center-left governments: monetary and fiscal cycles

Findings (Table 2) support the core instability hypothesis: namely, chicken games between the ideologically distant Bundesbank and center-left governments generate asynchronous yet unstable pre- and post-electoral monetary and fiscal cycles.



### 6.3.1 Stable cycles?

Pooled findings, which include all center-left governments, suggest the following patterns.

**(LI=LA)** In the post-electoral period, the Bundesbank maintains monetary stability ( $w_1=0$ ) while the governments abruptly ( $\delta=0$ ) cut deficits by 0.8% for seven quarters.

**(LE)** In the pre-electoral period, the governments do not expand deficits ( $w_1=0$ ) while the Bundesbank abruptly ( $\delta=0$ ) tightens money supply by 0.7% in the five quarters before elections.

These patterns refute claims of RPT-like weaker cycles of left post-electoral expansions and pre-electoral contractions. They also contradict the alternative basic model of ideological chicken games that predicts stable left post-electoral monetary and fiscal contractions, and pre-electoral fiscal expansions and monetary tightening. However, findings under the assumption of temporal instability indeed reject the stability hypotheses and lend strong support to the hypothesis of unstable left cycles.

### 6.3.2 Instability of post-electoral cycles

Findings concerning each of the center-left governments suggest the following patterns.

**(LI69:4)** Following the ideological shift from the Grand Coalition, Brandt's first government exhibits the general pattern of monetary tightening and fiscal contraction. The Bundesbank tightens monetary growth for five quarters via damped oscillations ( $\delta=-0.7$ ): the initial cut of -2.1% levels to -1.4%. The government cuts deficits by about 1.1% for 13 quarters.

**(LA73:1)** Brandt's second government also exhibits the general pattern. The Bundesbank abruptly ( $\delta=0$ ) tightens money growth by -2.5% for four quarters. The government cuts deficits for eight quarters via damped oscillations ( $\delta=-0.8$ ): the initial cut of -1.7% levels to -0.8%.

**(LA77:1)** Schmidt's government exhibits the monetary instability linked to the Louvre Accord. The Bundesbank expands money for nine quarters via damped oscillations ( $\delta=-0.7$ ): the initial expansion of 2.9% levels to 1.8%. The government cuts deficits via damped oscillations ( $\delta=-0.8$ ) for thirteen quarters: the initial cut of 2.2% levels to 1.3%.

**(LA81:1)** The fourth government exhibits the fiscal instability linked to the ideological conflict between the SPD and the FDP. The SPD undertakes a fiscal

expansion of -4.3% for the seven quarters in power. The Bundesbank tightens monetary growth by -1.8%.

These patterns lend clear support the instability model for left post-electoral monetary and fiscal cycles. Instabilities are clearly detected in the direction as well as in the dynamics and gain. Pooled analyses simply obscure the unique historical properties of such patterns.

### 6.3.3 Instability of pre-electoral cycles

Detected patterns also support the general hypothesis of pre-electoral chicken games.

**(LE72:4)** Brandt's government expands deficits gradually ( $\delta=0.8$ ) for five quarters: the initial expansion of -0.4% results in a gain of -1.4% on the election quarter. Two quarters later, the Bundesbank tightens monetary growth gradually ( $\delta=0.6$ ): the initial cut of -1.1% results in a final contraction of -1.7%.

**(LE76:4)** Schmidt's government expands deficits gradually ( $\delta=0.9$ ) for four quarters: the initial expansion -0.4% cumulates to -2.1% on the election quarter. After one quarter, the Bundesbank reacts by gradually ( $\delta=0.7$ ) tightening money growth: the initial cut of -1.2% leads to a final contraction of -2.6% on the election quarter.

**(LE80:4)** Schmidt's last government abruptly ( $\delta=0$ ) expands deficits by 0.4% for four quarters before elections. Two quarters later, the Bundesbank cuts monetary growth via damped oscillations ( $\delta=-0.8$ ): the initial cut of -2.8% levels off to -0.6% on the election quarter.

Despite differences in onset, dynamics and gain, the direction of these patterns capture well the hypothesized pre-electoral chicken games between the deficit-averse Bundesbank and the deficit-prone center-left governments: their interactions generate the predicted asynchronous left cycles of fiscal expansions followed by monetary contractions. More generally, these findings about the German center-left governments lend strong support to the instability models of left cycles. Before elections, the center-left governments engineer opportunistic fiscal expansions that the Bundesbank counters with monetary tightening. After elections, the Bundesbank engineers monetary contractions that force the center left governments to cut deficits. Responses to unusual economic conditions -- high unemployment and/or inflation -- account for deviations from these patterns. These findings clearly reject claims of RPT-like weaker cycles of left post-electoral expansions and pre-electoral contractions.



## 6.4 Center-right governments: monetary and fiscal cycles

\*Findings also support the instability hypotheses: less conflictual, and even cooperative, interactions tend to dissipate pre- and post-electoral monetary and fiscal cycles. Yet, significant differences part the historically distant governments of the 1960s and 1980s.

### 6.4.1 Stable cycles?

Pooled findings, which include all center-right governments, suggest the following patterns.

**(RI=RA)** In the post-electoral period, governments cut deficits via damped oscillations ( $\delta=-0.6$ ) but only temporarily for four quarters: the initial cut of 1.3% levels to 0.6%. The Bundesbank gradually ( $\delta=0.8$ ) tightens money growth for four quarters: the initial contraction of -0.4% increases to -1.2%.

**(RE)** The pre-electoral period exhibits no statistically significant monetary or fiscal cycles.

These patterns only provide partial support to the stability hypothesis: namely, permanent post-electoral fiscal cuts and monetary stability, and absence of pre-electoral cycles. The evidence of the post-electoral pattern suggests temporary deficit cuts as well as tighter monetary policy. Only the pre-electoral hypothesis finds some support. However, investigations of temporal instability discredit these pooled findings.

### 6.4.2 Instability of post-electoral cycles

Findings suggest the following patterns.

**(RA65:4)** Erhard's short-lived government exhibits fiscal and monetary contractions. The government cuts deficits via damped oscillations ( $\delta=-0.8$ ) during the four quarters in power: the initial cut of 2.3% levels to 0.8%. The Bundesbank tightens monetary growth gradually ( $\delta=0.7$ ) for four quarters: the initial cut of -0.7% levels to -1.8%.

**(RI83:1)** Kohl's first government permanently and abruptly ( $\delta=0$ ) cuts deficit by 2%. The Bundesbank leaves monetary policy unchanged.

**(RA87:1)** Kohl's second government abruptly cuts deficits by 1% for the first seven quarters, after which it confronts the fiscal problems of re-unification. The Bundesbank also leaves monetary policy unchanged.

These patterns clearly support the instability hypothesis concerning the significant differences between the governments of the 1960s and 1980s. Kohl's



governments in the 1980s exhibit the general pattern of fiscal cuts and monetary stability. Erhard's government in the 1960 exhibits instabilities that emerge from confronting the first severe recession in the Post-World War II era. It is therefore inappropriate to pool governments of the 1960s and 1980s: pooled finding obscure the historical specificity and uniqueness of such patterns.

#### **6.4.3 Instability of pre-electoral cycles**

A similar break is detected for pre-electoral cycles.

**(RE65:3)** Historical evidence suggests that Erhard's government engineered a fiscal expansion by boosting social expenditures that prompted the Bundesbank to tighten monetary growth. However, the evidence of fiscal expansion is weak: the coefficient has the correct negative sign but is statistically insignificant.<sup>28</sup> Instead, the Bundesbank appears to tighten money growth for three quarters before election via damped oscillations ( $\delta=-0.9$ ): the initial contraction of -1.0% levels to about -0.9% on the election quarter.

**(RE87:1)** This election shows no opportunistic monetary and fiscal cycles, thus supporting the hypotheses of the absence of opportunistic fiscal and monetary cycles.

These findings support the instability hypotheses of right pre-electoral cycles: namely, presence opportunistic cycles in the 1960s and absence of such cycles in the 1980s. As with post-electoral ideological and administrative cycles, it is therefore historically inappropriate to pool the two sets of historically distant center-right governments as they confronted vastly different economic and political conditions. The hypothesis of temporal stability obscures the historical richness of right pre- and post-electoral patterns in the two periods.

#### **6.5 Grand Coalition: monetary and fiscal cycles**

Findings also support the instability hypotheses about the Grand Coalition.

**(GCI)** At the onset, the Coalition exhibits the asynchronous pattern of fiscal expansion and monetary contraction. To counter the severe recession, the government expands deficits abruptly ( $\delta=0$ ) by -2.5% for thirteen quarters. The Bundesbank tightens monetary growth gradually ( $\delta=0.6$ ) for five quarters: the initial cut -0.7% cumulates to -1.6%.

**(GCE)** The pre-electoral period exhibits the expected pattern: the government engineers a fiscal contraction to curb rising inflation, and the Bundesbank maintains monetary stability. The Coalition cuts deficits gradually ( $\delta=0.9$ ) for four quarters before the elections: the initial cut of 0.4% cumulates to 1.4%.

These findings show that the behavior of the Grand Coalition, and indirectly of the Bundesbank, is highly influenced by economic conditions: recession, and hence unemployment, at the onset; and high growth, and hence inflation, before elections.

In sum, empirical findings lend significant support to the instability model of ideological chicken games and ensuing cycles. They thus reject the alternative of stable ideological chicken games. Equally important, they lay bare the theoretical and empirical inadequacy of the model of weaker RPT-like cycles. Thus ideological polarization engenders distinct relations between the Bundesbank and partisan-opportunistic German governments as well as distinct, albeit temporally unstable, left and right cycles.

## 7. Conclusion

How do ICBs like the Bundesbank affect the ability of partisan-opportunistic governments to generate pre- and post-electoral monetary and fiscal cycles?

This paper provides novel answers that have significant theoretical and policy implications. The Bundesbank contributes to the generation of distinct, yet temporally unstable, left and right cycles. When confronting deficit-prone center-left governments, the Bundesbank adopts restrictive anti-inflationary monetary policies: in the pre-electoral period, it counters opportunistic fiscal expansions; in the post-electoral period, it enforces fiscal responsibility. When confronting fiscally conservative center-right governments, it maintains monetary stability. Nevertheless, five significant temporal instabilities deviate from this pattern: namely, (1) the fiscal expansion of the Grand Coalition to counter a severe recession; (2) the subsequent pre-electoral fiscal contraction; (3) the monetary expansion following the Louvre Accord to pull the world economy out of stagnation; (4) the fiscal expansion of Schmidt's last center-left government to fight high unemployment; and (5) the historical differences separating the center-right governments of the 1960s and 1980s.

These findings reject the amended RPT-like model of weaker, yet stable, cycles in the presence of ICBs.<sup>29</sup> They strongly support to the instability model of partisan-opportunistic chicken games. ICBs do not simply weaken the ability of governments to generate policy cycles. The ideological polarization between ICBs and left and right governments over unemployment and inflation generates distinct relationships and cycles. Chicken games between ideologically distant ICBs and left governments produce asynchronous pre- and post-electoral monetary and fiscal left cycles. The ideological proximity between ICBs and right governments tends to generate cooperative relations



that engender fiscal and monetary stability. Yet, historically contingent events may engender temporally unstable cycles. Severe recessions emerge as crucial trigger mechanisms for cycle instability. Cycles differ with regard to their existence, direction, duration, dynamics, and gain. Pooled analyses, which assume stability, simply obscure the historical distinctiveness of cycles.

The research also suggests new research questions. First, the temporal instability of cycles emerges as an important phenomenon that requires further theoretical, methodological, and historical investigation. Clearly, it prompts investigations concerning differences in the existence, direction, duration, dynamics and gain of cycles. It also raises crucial theoretical questions of how to integrate temporal instabilities into a general theoretical and methodological framework that captures systematic patterns as well as singular historical events (Nelson, 1997). Second, as other central banks exhibit varying degrees of independence, how do these central banks affect pre- and post-electoral monetary and fiscal cycles? Third, the Bundesbank is treated as a highly conservative agent but recent research points to shifts in its ideological composition (Vaubel, 1997; Lohman, 1994). How does the ideological composition of its directorate affect interactions and the properties of cycles? Fourth, several central banks have gained independence more recently (De Haan and Vant Haag, 1995). How do such institutional innovations affect the ability of governments to generate PBCs? Fifth, the Bundesbank interacts with moderately fragmented and polarized coalitions (Sartori, 1976).<sup>30</sup> How do the interactions of ICBs with more fragmented and polarized governments affect PBCs? Sixth, beyond fiscal and monetary policy cycles, how do ICBs affect economic cycles, such as those of growth, unemployment and inflation? Finally, as aggregate deficits mask the distinctiveness of expenditure and taxation, how do left and right governments undertake their pre- and post-electoral manipulations?

This research also raises politically relevant questions, especially in the new and evolving European context. Two are especially crucial: How will the Bundesbank deal with the new center-left German government? And how will the European Central Bank, modeled after the Bundesbank, affect the strategies of European governments, thirteen of which are now on the left of the ideological spectrum? These questions have gained relevance in the context of three recent events. First, Oskar La Fontaine, chairman of the SPD, has attacked the Bundesbank's restrictive monetary policy (*Financial Times*, 10/5/98). Second, the Poertschach summit of center-left European heads of state has challenged monetary conservatism to fight unemployment (*Financial Times*, 10/24/98). And third, the ECB thereafter has coordinated euro-zone interest rate cuts to the historical low of 3% (*Financial Times*, 12/4/98). This paper suggests that the ideological polarization between ICBs and left governments over



unemployment and inflation will affect the evolution of European and domestic monetary and fiscal policies.

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**Table 1. Model predictions: post- and pre-electoral monetary and fiscal cycles**

Temporal stability	POST-ELECTORAL CYCLES			PRE-ELECTORAL CYCLES		
	Hypotheses	Fiscal	Monetary	Hypotheses	Fiscal	Monetary
<b>CL: pooled</b>	LI=LA	$w_1 > 0$	$w_1 < 0$	LE	$w_1 < 0$	$w_1 < 0$
<b>CR: pooled</b>	RI=RA	$w_1 > 0$	$w_1 = 0$	RE	$w_1 = 0$	$w_1 = 0$
<b>Temporal instability</b>						
<b>CR: 61:4 - 65:3</b>	RA61:4	*	*	RE65:3	$w_1 < 0$	$w_1 < 0$
<b>CR: 65:4 - 66:3</b>	RA65:4	$w_1 > 0$	$w_1 < 0$	RE66:3	*	*
<b>GC: 66:4 - 69:3</b>	GCI	$w_1 < 0$	$w_1 < 0$	GCE	$w_1 > 0$	$w_1 = 0$
<b>CL: 69:4 - 72:4</b>	LI69:4	$w_1 > 0$	$w_1 < 0$	LE72:4	$w_1 < 0$	$w_1 < 0$
<b>CL: 73:1 - 76:4</b>	LA73:1	$w_1 > 0$	$w_1 < 0$	LE76:4	$w_1 < 0$	$w_1 < 0$
<b>CL: 77:1 - 80:4</b>	LA77:1	$w_1 > 0$	$w_1 > 0$	LE80:4	$w_1 < 0$	$w_1 < 0$
<b>CL: 81:1 - 82:3</b>	LA81:1	$w_1 < 0$	$w_1 < 0$	LE83:1	*	*
<b>CR: 83:1 - 87:1</b>	RI83:1	$w_1 > 0$	$w_1 = 0$	RE87:1	$w_1 = 0$	$w_1 = 0$
<b>CR: 87:2 - 90:4</b>	RA87:2	$w_1 > 0$	$w_1 = 0$	RE90:4	*	*

**LEGEND**

**Temporal stability.** CR: Center-Right government. CL: Center-Left government. GC: Grand Coalition.

LI: post-electoral left cycles following an ideological shift. LA: post-electoral left cycles following an administrative shift. LE: pre-electoral left cycles. RI: post-electoral right cycles following an ideological shift. RA: post-electoral right cycles following an administrative shift. RE: pre-electoral right cycles. LI=LA: post-electoral left cycles emerging from ideological and administrative shifts are similar. RI=RA: post-electoral right cycles emerging from ideological and administrative shifts are similar.

**Temporal instability: post-electoral.** RA61:4: right administrative change in 1961:4. RA65:4: right administrative change in 1965:4. GCI: ideological shift for the Grand Coalition. LI69:4: ideological shift to center-left in 1969:4. LA73:4: left administrative shift in 1973:4. LA77:1: left administrative shift in 1977:1. LA81:1: left administrative shift in 1981:1. RI83:2: ideological shift to the center-right in 1983:2. RA87:2: right administrative change in 1987:2.

**Temporal instability: pre-electoral.** RE65:4: right election in 1965:4. GCE: election in 1969:3 during the Grand Coalition. LE72:4: left election of 1972:4. LE76:4: left election of 1976:4. LE80:4: left election of 1980:4. RE87:1: right election of 1987:1.

- (1) '\*' in the shaded cells indicates that cycles are not analyzed due to either historical or technical reasons.<sup>31</sup>
- (2) ' $w_1 = 0$ ' indicates the absence of interventions: governments leave monetary and fiscal policies unaltered, or on the same 'growth' path.
- (3) For fiscal policy ' $w_1 < 0$ ' indicates fiscal expansions as deficits become more negative; ' $w_1 > 0$ ' indicates fiscal contractions with deficits becoming less negative (smaller).
- (4) For monetary policy ' $w_1 < 0$ ' indicates monetary tightening; ' $w_1 > 0$ ' indicates monetary expansion.
- (5) The coefficients in bold indicate temporal instabilities, or deviations, in the direction (sign) of interventions.

**Table 2. Empirical findings: post- and pre-electoral monetary and fiscal cycles**

Governments	POST-ELECTORAL CYCLES				PRE-ELECTORAL CYCLES			
	DEFICITS	Gain	M1	Gain	DEFICITS	Gain	M1	Gain
CL: pooled	+ 0.8 P <sub>t+7</sub>	+ 0.8 <sub>t+7</sub>	-	0	-	0	- 0.7 P <sub>t-5</sub>	- 0.7 <sub>t-5</sub>
CR: pooled	+ $\frac{1.3}{1+0.66B}$ P <sub>t-4</sub>	+ 0.6 <sub>t+4</sub>	- $\frac{0.4}{1-0.8B}$ P <sub>t-4</sub>	- 1.2 <sub>t+4</sub>	-	0	-	0
CR: 61:4-65:3	*	*	*	*	-	0	- $\frac{1.0}{1-0.9B}$ P <sub>t-3</sub>	- 0.9 <sub>t-3</sub>
CR: 65:4-66:3	+ $\frac{2.3}{1+0.8B}$ P <sub>t+4</sub>	+ 0.8 <sub>t+4</sub>	- $\frac{0.7}{1-0.7B}$ P <sub>t+4</sub>	- 1.8 <sub>t+4</sub>	*	*	*	*
GC: 66:4-69:3	- 2.5 P <sub>t+9</sub>	- 2.5 <sub>t+9</sub>	- $\frac{0.7}{1-0.6B}$ P <sub>t-5</sub>	- 1.6 <sub>t+5</sub>	+ $\frac{0.4}{1-0.9B}$ P <sub>t-4</sub>	+ 1.4 <sub>t-4</sub>	+	0
CL: 69:4-72:4	+ 1.1 P <sub>t-13</sub>	+ 1.1 <sub>t+13</sub>	- $\frac{2.1}{1+0.7B}$ P <sub>t-5</sub>	- 1.4 <sub>t+5</sub>	- $\frac{0.4}{1-0.8B}$ P <sub>t-5</sub>	- 1.3 <sub>t-5</sub>	- $\frac{1.1}{1-0.6B}$ P <sub>t-3</sub>	- 0.7 <sub>t-3</sub>
CL: 73:1-76:4	+ $\frac{1.7}{1+0.8B}$ P <sub>t+8</sub>	+ 0.8 <sub>t+8</sub>	- 2.5 P <sub>t-4</sub>	- 2.5 <sub>t+7</sub>	- $\frac{0.6}{1-0.9B}$ P <sub>t-4</sub>	- 2.1 <sub>t-4</sub>	- $\frac{1.2}{1-0.7B}$ P <sub>t-3</sub>	- 2.6 <sub>t-3</sub>
CL: 77:1-80:4	+ $\frac{2.2}{1+0.8B}$ P <sub>t-13</sub>	+ 1.3 <sub>t+13</sub>	+ $\frac{2.9}{1+0.7B}$ P <sub>t-9</sub>	+ 1.8 <sub>t+9</sub>	- 0.4 P <sub>t-4</sub>	- 0.4 <sub>t-7</sub>	- $\frac{2.8}{1+0.8B}$ P <sub>t-2</sub>	- 0.6 <sub>t-2</sub>
CL: 81:1-82:3	- 4.3 P <sub>t+7</sub>	- 4.3 <sub>t+7</sub>	- 1.8 P <sub>t-6</sub>	- 1.8 <sub>t+7</sub>	*	*	*	*
CR: 83:2-87:1	+ 2.0 P <sub>t+15</sub>	+ 2.0 <sub>t+15</sub>	+	0	+	0	+	0
CR: 87:2-90:4	+ 1.0 P <sub>t-7</sub>	+ 1.0 <sub>t+7</sub>	+	0	*	*	*	*

**LEGEND**

- (1) CL = Center Left; CR = Center-Right, GC = Grand Coalition.
- (2) The '\*' in the shaded cells indicates the absence of interventions/cycles.
- (3) 'Gain' indicates the level of deficits and monetary growth at the end of the cycle.
- (4) All coefficients are statistically significant at the  $p < 0.01$  level.
- (5) Q-statistics, all statistically significant at the  $p < 0.01$  level, indicate the absence of residual autocorrelations.
- (6) Tests of normality of the residuals and indicate that they are randomly distributed or  $N(0, \sigma^2)$ .
- (7) '\*\*' in the shaded cells indicates that cycles are not analyzed due to either historical or technical reasons.
- (8) P<sub>t+k</sub> denotes post-electoral intervention. The subscript  $t+k$  indicates the duration of interventions from the quarter in which a government takes power.
- (9) P<sub>t-k</sub> denotes pre-electoral intervention. The subscript  $t-k$  indicates the number of quarters before elections for which interventions are detected.



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## NOTES

1. This paper focuses on monetary and fiscal policies which are the main instruments that policy makers control to achieve politically desirable economic conditions. Another paper, in the workings, examines economic cycles -- particularly output, inflation and unemployment.
2. There are two major reasons why this research stops at 1989. One is that the re-unification unleashed a variety of novel socioeconomic and political problems that represent a break with the pre-unification period. The other is that many of the relevant empirical analyses on PBCs stopped at the early 1990s.
3. The 1997 book by Alesina, Roubini and Cohen is largely a collection of previous, yet updated, articles, including the main two published in 1992 and 1993.
4. Rules were first proposed to overcome the problem of time inconsistency (Kydland and Prescott, 1977). Governments pre-commit to monetary rules, such as Friedman's  $k$ -rule and targeting, to insure greater policy stability as well as lower levels and variability of money growth and inflation. However, rules are time inconsistent as future governments can renege. ICBs can overcome the time inconsistency of rules.
5. Another line of research focuses on how the ideological interactions of ICBs, governments, labor and business affect policy outputs and economic outcomes (Franzese, 1998; Hall, 1994). However, this research does not consider the implications of such interactions for pre- and post-electoral cycles.
6. Several historical investigations suggest the ideological conflictual interactions but do not provide systematic analyses: e.g., Berger and de Han (1997), Holtfrerich (1988), Marsh (1992), Goodman (1992), Katzenstein (1987), Conradt (1989), Hancock (1989). In another paper I am investigating, in the form of event analysis, the evolution of the ideological interactions between the Bundesbank and each of the German governments since 1950.
7. '1961:4' denotes the fourth quarter of the year 1961. This notation is maintained throughout.
8. Moreover, conceptual and technical problems weaken the validity of such findings. Two examples highlight the problems. One concerns the whitening of errors with endogenous variables lagged up to 10: the strategy is inefficient and may obscure the presence of long-memory unit roots; and the interpretation of such results is difficult at best. The other concerns the analysis of unemployment: it assumes unit roots, which leads the authors to take first differences, when simply a level shift occurred (Perron, 1989).
9. Maintaining monetary policy stable means leaving it on a stable growth path. Technically, stability is captured by coefficients that are statistically insignificant.
10. The research with pooled cross-section time-series designs and panel regressions makes a stronger assumption: namely, all governments, over time and across a variety of institutional arrangements, generate similar cycles.
11. The authors acknowledge, but do not examine systematically, the problem of temporal (and spatial) cycles instability on page 205. Three comments of theirs exemplify the issue. In

the first, they establish that "In a shorter (1961-1985) sample we found that, in addition to ELE, the left-wing dummy variable was statistically significant, indicating higher budget deficits during these regimes. The extension of the sample from 1985 to 1993 eliminates this result." In the second comment, they state that "The choice of whether to reduce taxes or increase spending in any single country may vary over time and over different elections." In the third comment, they acknowledge two clear deviations from the general RPT pattern: "Examples of this fiscal conservatism in left-of-center administrations are the Socialist administrations in France in the 1980s and the Clinton administration in the United States." These three comments suggest the necessity to consider the alternative hypothesis of temporal (and spatial) instability.

12. The leftward shift meant a break with the liberal phase of right hegemony (Zweig, 1980; Leaman, 1988). It prompted greater state intervention in the economy by means of short-term fiscal stabilization to promote growth and full employment. Previous right-wing governments had resisted such measures.

13. In this section, LI denotes ideological shifts to the left; LE, left pre-electoral interventions; LA, left administrative shifts, whereby the incumbent left regains control of the executive; RI, ideological shifts to the right; RE, right pre-electoral interventions and cycles; RA, right administrative shift, whereby the incumbent right regains control of the executive.

14. The questions of whether and how economic conditions may affect governmental breakdown and electoral outcomes is obviously crucial in the research area of PBCs yet it remains unsettled (Lewis-Beck, 1990; Laver and Shepsle, 1996)

15. 'LI69:4' denotes the ideological shift to the left that occurred in the fourth quarter of 1969. This notation is kept for left and right ideological, administrative and electoral interventions.

16. The election of 1983:1 is not considered because the time elapsed between the breakdown of the center-left coalition in 1982:4, the transition to the new center-right coalition, and the call of early elections in 1983:2 is too short for meaningful opportunistic policy interventions.

17. This approach to model specification and estimation is technically more suitable than fashionable OLS-based autoregressive methods. First, it is more efficient: it parsimoniously models residuals as ARMA processes rather than by whitening with several lagged dependent variables. Second, transfer functions capture better the distinct impulses of each stochastic variable. Third, intervention functions allow for a rich variety of interventions and dynamics of cycles. For explicit discussions about the superiority of BJT over autoregressive OLS-based methods see Wei (1990) and Pankratz (1991).

18. Tests are performed using the SCA time series software (Liu and Hudak, 1992). SCA allows for the joint identification and estimation of multivariate transfer and intervention functions. Other statistical software -- e.g., SAS, RATS, S-Plus -- only allow for the identification of bivariate relations.

19. The first-order interventions function is chosen for two reasons. First, the established empirical research on PBCs considers such type of function, albeit a zero-order function where  $\delta_1=0$ . For the sake of comparability, this paper thus abides by this widespread choice but



allows the term  $\delta_1$  to take on values different than zero. The constraint of  $\delta_1=0$  only allows for behavior that triggers abrupt level shifts and thus *a priori* forbids the possibility of other forms of interventions and cycles that are captured by values of  $\delta_1 \neq 0$ . Second, systematic empirical tests of second-order terms  $\delta(B) = (1 - \delta_1 B - \delta_2 B^2)$  do not yield satisfactory and easily interpretable results.

20. Six vectors of increasing length are generated: (1) center-left, post-electoral; (2) center-left, pre-electoral; (3) center-right, post-electoral; (4) center-right, pre-electoral; (5) Grand Coalition, from the onset in 1966:4; (6) Grand Coalition, pre-electoral.

21. Eighteen vectors of increasing length are created for the nine governments considered. There is a post-electoral and a pre-electoral vector for each of the governments.

22. Data on M1, imports, exports, and GDP come from IMF-IFS. Unemployment data are from OECD-MEI.

23. The variable openness, which captures international systemic shocks, is operationalized in standard manner as imports plus exports as percentage of GDP (Garrett, 1998)

24. The PBCs research simply assumes zero-order intervention functions with abrupt onset where  $\delta_1=0$ .

25. The noise term exhibits a first-order moving-average component, or MA(1).

26. The contemporaneous response may be a statistical artifact generated by the quarterly frequency. Monthly data would more likely indicate delayed responses.

27. The noise term exhibits a first-order seasonal autoregressive component, or SAR(4).

28. One possible explanation for the weak coefficient is that the aggregate deficits may not capture well shifts in social expenditures. This puzzle suggests other types of analysis that shift away from macro variables like deficits and debts, which capture a variety of dimensions like expenditures and taxes, toward more micro variables like types of expenditures and of taxation.

29. Surely, they reject the public choice models that ignore ideological interactions.

30. Overwhelmingly, the PBCs research, but also more generally the political economy research, has focused mainly on structural properties concerning the fragmentation of political institutions. Yet, Sartori (1976) has long demonstrated that both fragmentation and polarization are important in explaining government formation and policy making and implementation. The interaction of fragmentation and polarization needs to be further investigated in research on the PBCs of multiparty systems that may exhibit significant fragmentation and polarization.

31. The pre-electoral interventions in 1982:3 are missing because the center-left government broke down after the defection of the FDP and was replaced by Kohl's center-right government without an election. The pre-electoral interventions in 1990:4 are not considered because they go beyond the cutting point of the re-unification. The post-electoral interventions of 1961:4 are not considered for technical reasons due to its closeness to the beginning of the time series

(Pankratz, 1991). The period before 1966:3 is not considered pre-electoral: the shift to the Grand Coalition occurred without elections.



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