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Counter-cyclical policy and political manipulation: An empirical analysis of Japanese government expenditures

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Abstract

Distinguishing accurately pure macroeconomic stabilization policies from election-motivated manipulations might be a difficult task within the framework of regression analysis. This paper attempts to demonstrate that the simple introduction of frequency-domain perspective provides a direct means of identifying portions of underlying components of Japanese public expenditures. We find that public investment behaves counter-cyclically over the business cycle, and not only public investment but also public consumption is manipulated for the House of Councillors elections.

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1. Introduction

In the wake of the burst of the bubble economy, Japan has been facing long slump during the last two decades in spite of the repeated fiscal stimuli in the 1990s. Bayoumi (2001) and Ihori et al. (2003) for instance argue that the effects of fiscal policy are dampened in the 1990s. As the main cause, some would concur that Japan's fiscal policy is not sufficiently counter-cyclical because of some reasons, one of which concerns political manipulation caused by policymaker's electoral motives as suggested in Kondoh (2008).[1]

This paper assesses the cyclical behavior of Japanese government expenditures towards economic stabilization and towards election-motivated manipulation in the period from the early 1980s to the late 2000s.[2] When controlling the other determinants of public spending, unlike many of our predecessors, frequency-domain analysis is primarily applied because business cycles have particular frequency bands that differ from frequency bands of election cycles.

In doing so, we also consider the compositions of the public expenditures.[3] According to the conventional wisdom of the day, the effects of fiscal policies differ between their items such as public investment or public consumption. For the Japanese economy, Eguchi and Hiraga (2009) show that, compared with public investment, public employment and transfers can lead to a negative effect on the activities of private sector using a dynamic general equilibrium model which is based on a model provided by Finn (1998).[4]

The structure of the paper is as follows. Section 2 describes the data and Section 3 details aims of our empirical analysis. Section 4 presents empirical results with some limitations of our key assumptions. Section 5 concludes.

2. Data

Our sample covers a maximum time span from 1981:Q1 to 2009:Q1. The start of the sample is due to the availability of the System of National Accounts 1993 (93SNA).

[1] Alesina and Roubini (1992) extensively discuss political cycle theories and present evidence on OECD countries. See also Potrafke (2012) for a recent empirical study of political cycles in OECD countries.

[2] There exists little empirical analysis studying Japanese fiscal cyclicality. See Lane (2003) for the evidence across OECD countries and for theoretical arguments of optimal cyclicality in fiscal policy.

[3] See Schneider (2010) for the importance of the composition of the budget in the West German states.

[4] See, for example, Ardagna (2001) for multiple European countries, and Alesina et al. (2002) for evidence on OECD countries.

Another important reason why the start is determined like this, as mentioned in Section 3, is that the range of business cycles can become more wide so that the range of business cycles might overlap that of elections if we add more past periods to the present sample. The end of the sample roughly corresponds to the first regime change in 2009.

The public spending data are discussed in this study. They are based on 93SNA and are evaluated in real terms on a chain-linking method (reference year = 2000). All the series are calculated to be the change rate corresponding to the previous year. More specifically, public consumption (*PC*) and public investment (*PI*) are used. We moreover consider the change rate corresponding to the previous year of *PC* ratio to public expenditure (*PCR*), which is defined as *PC/*(*PI*+*PC*).[5]

To examine correlations between business cycles and public expenditures, 6 primary variables of macroeconomic business conditions, i.e. the real GDP growth rate corresponding to the previous year (*GDP*), *TANKAN* DI (*TDI*), coincident composite indexes (*CI*), index of industrial production (*IIP*), effective job offer rate (*EJOR*), and the unemployment rate (*UR*), are used in this study. *GDP* is on 93SNA as before, *TANKAN* DI is of all enterprises and industries. In *EJOR*, new school graduates are not included, and *UR* is inverted. *GDP*, *CI* and *DI* are obtained from the website of Japan's cabinet office, *TDI* is from the website of the Bank of Japan, *IIP* is the website of Japan's Ministry of Economy, Trade, and Industry, *EJOR* is the website of Japan's Ministry of Health, Labour, and Welfare, and *UR* is the website of Japan's Ministry of Internal Affairs and Communications.

3. Methodology

This section explains how we capture the movements of public expenditures towards macroeconomic stabilization policy as well as towards election-motivated manipulation. At the same time that the foremost tools for studies on the determinants of public spending are regression analysis, we are unaware of any empirical studies addressing those issues using additional information with frequency-domain perspective.[6] We take particular note of cyclical features in public spending, and consequently, exploit a band-pass filter to identify a few underlying components of Japanese public expenditures.

[5] In levels, *PC* is larger than *PI*, and in recent years, *PCR* is approximately equal to 80 percent. To the extent that the change rate corresponding to the previous year is concerned, however, *PCR* is strongly and negatively correlated with *PI*.

[6] Regression analysis retains the potential to face the problem of omitted variables. So it is important to check the outcomes from other methods.

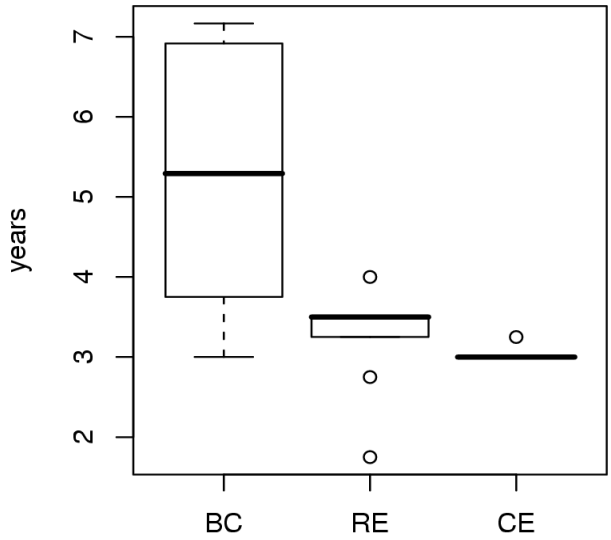

Figure 1: Durations of Business Cycles and Intervals of National Elections

While some band-pass filter approach is widely used when evaluating business cycles, it is also useful to investigate macroeconomic stabilization policy as stated in Christiano and Fitzgerald (2003). In other words, an investigation of counter-cyclicality in fiscal policies matters at frequencies of business cycles. Our sample period is from 1981:Q1 to 2009:Q1, and it is contained in the ninth through fourteenth business cycles on the basis of the date of business cycles provided by the Cabinet Office for the Government of Japan. As the related durations of business cycles (BC) are shown in Figure 1, the average in the ninth through fourteenth business cycles is approximately 5.2 years, the shortest is 3 years in the thirteenth cycle (1999:M1–2002:M1), and the longest is 7.2 years in the last (fourteenth) cycle (2002:M1–2009:M3). In sum, counter-cyclical components of public expenditures are important in the range from 3 to 7.2 years.

In addition to such macroeconomic stabilization policy, it seems that a band-pass filter is useful to identify certain particular political decision-makings as well, because they would affect the fiscal policy at higher frequency components. Of special interest are manipulations for elections that are held with more definite periodicity, especially with the House of Councillors elections. As can be seen in Figure 1, the average interval of the House of Representatives elections (RE) is approximately 3.3 years, and that of the House of Councillors elections (CE) is approximately 3 years. Notably, it must be emphasized that almost all intervals of the House of Councillors elections are 3 years, and the variance is quite small. This means that a band-pass filter is of enormous help to extract directly election-motivated policies especially for the House of Councillors elections.

4. Empirical Results

In this section we present our empirical results by utilizing the called CF filter which is developed by Christiano and Fitzgerald (2003). The CF filter is an operational asymmetry band-pass filter, and it enables us to avoid decreasing the sample size of the extracted series. To specify a CF filter, two unit root tests that are proposed by Dickey and Fuller (1979) and Elliott et al. (1996) run on all the variables. As a result, both tests show the evidence in favor of stationary, that is, they reject the presence of a unit root for all the variables. We then use them as *I(0)*.

To differentiate between raw data and the extracted components, subscript *a*-*b* is generally used for representing particular series whose cycles are between quarters *a* and *b*. Recalling from Figure 1 that, when excluding outliers, frequencies of macroeconomic stabilization policies correspond approximately to the range from 3 to 7.2 years (i.e., from 12 to 28 quarters), those of the House of Representatives elections are approximately from 3.25 to 3.5 years (i.e., from 13 to 14 quarters), and those of the House of Councillors elections are 3 years (i.e., 12 quarters), these values are adopted as a benchmark.

We begin in Figure 2 by showing the macroeconomic stabilization policy components of public spending. Note that shadow depicted in Figure 2 indicates recessions determined by the Cabinet Office for the Government of Japan. In Panel (A) of Figure 2, it is confirmed that $PC_{12\text{-}28}$ moves regardless of boom or slump. On the other hand, when looking at Panel (B) of Figure 2, $PI_{12\text{-}28}$ seems counter-cyclical to some extent. In particular, such tendency is more apparent in recessions. That is, $PI_{12\text{-}28}$ consistently rises in economic turndowns. Panel (C) of Figure 2 moreover indicates that there is a strong negative relationship between $PI_{12\text{-}28}$ and $PCR_{12\text{-}28}$ when comparing both movements to one another. These findings suggest that Japanese macroeconomic stabilization policies are executed by adjusting public investments rather than public consumption.

More quantitative evidence is presented in Table 1, which reports the partial correlation coefficient between public expenditures and the preceding 6 variables of business conditions. It should be noted that the present "partial" correlation means that *PC*, *PI*, *PCR*, and 6 variables of business conditions are detrended by Hodrick and Prescott's (1997) filter in order to circumvent the problem of spurious correlation stemming from common trends. From Table 1, similar outcomes to Figure 2 are ascertained. Neither *PC* nor $PC_{12\text{-}28}$ is correlated with all the business conditions, and stark changes between their correlation coefficients cannot be seen. On the other hand, there is a more strong negative correlation between $PI_{12\text{-}28}$ and business conditions than

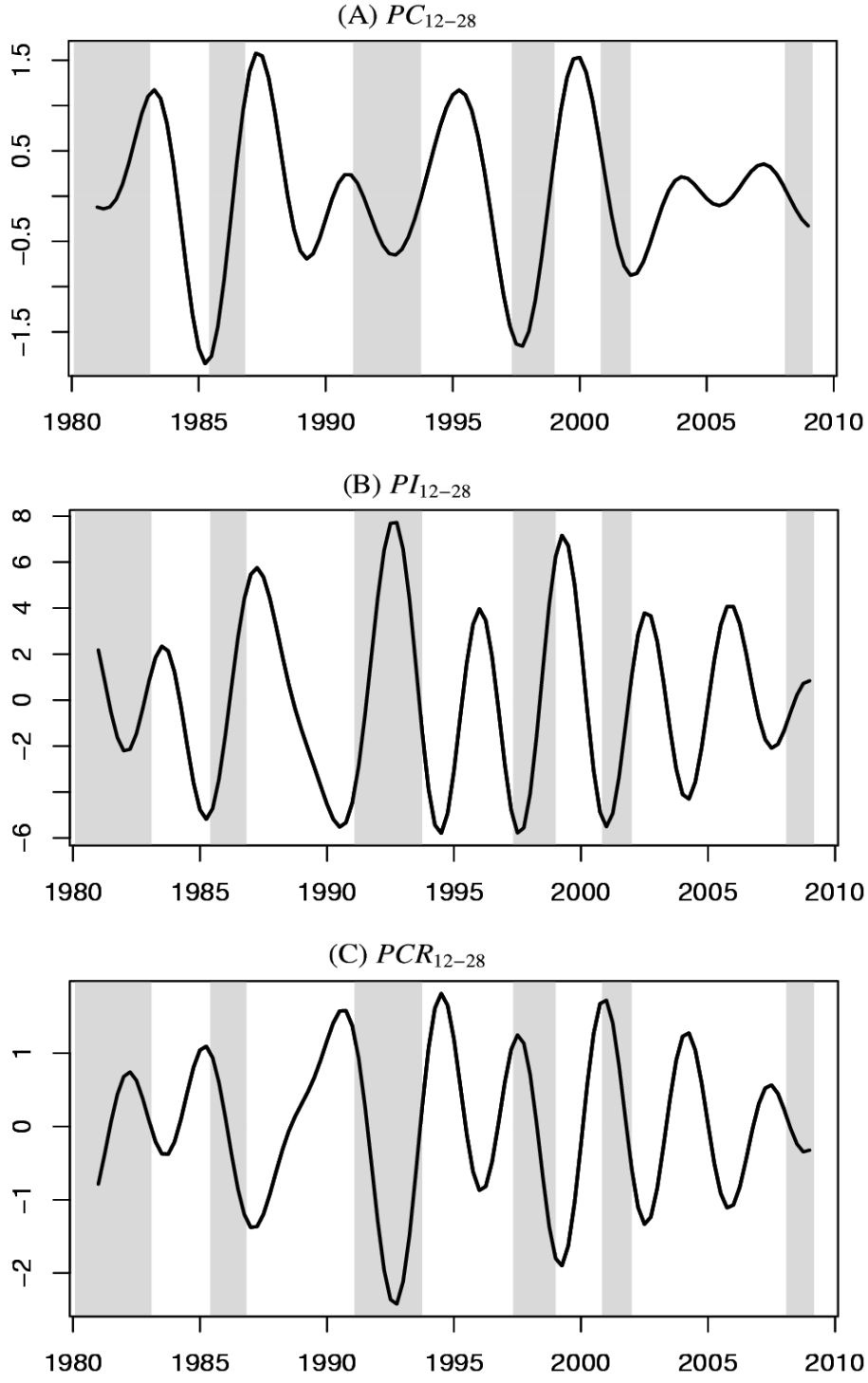

Figure 2: Business Cycle Components of Public Expenditures

Note: Shaded areas indicate recessions.

between raw *PI* and them. Furthermore, the completely reverse relationships hold between *PCR* and $PCR_{12\text{-}28}$.

Table 1: Partial Correlation Coefficient between Public Expenditures and Detrended Business Conditions

	PC	PC_{12-28}	PI	PI_{12-28}	PCR	PCR_{12-28}
GDP	−0.009	0.083	−0.099	−0.280	0.096	0.338
TDI	−0.117	−0.093	−0.327	−0.458	0.322	0.502
CI	−0.136	−0.153	−0.334	−0.460	0.325	0.480
IIP	−0.074	−0.070	−0.279	−0.353	0.265	0.371
$EJOR$	−0.165	−0.235	−0.223	−0.365	0.208	0.365
UR	−0.279	−0.280	−0.239	−0.345	0.207	0.318

Figure 3 displays estimates whose frequencies pertain to the House of Representatives elections, although their outliers are not considered pursuant to the indication of Figure 1. In this figure, fiscal years in which the House of Representatives elections were held are shaded. Panels (A) and (C) of Figure 3 indicate that the values are locally maximized in portions of the election years. This suggests the possibility of manipulating *PC* for the House of Representatives elections. On the other hand, as shown in Panel (B) of Figure 3, there is no evidence that *PI* is manipulated for the elections.

Figure 4 further presents the isolated series whose frequencies pertain to the House of Councillors elections. As before, the related fiscal years are shaded. Panels (A) and (B) in this figure exhibit that the values are locally maximized in all the election years, implying that both *PC* and *PI* are manipulated for the House of Councillors elections. Panel (C) of Figure 4 moreover indicates that *PC* relatively decreases in the election years.[7]

Lastly, we make some remarks on reservations with the above results. There is a key factor for our analysis: whether or not cycles of the several components are really different is crucial. One potential objection to our analysis concerns the possibility of failing to isolate those underlying components. In particular, it is relevant to the outcomes of the House of Representatives elections since these cycles mostly overlap minimum portions of business cycles (see Figure 1). Hence, it is possible that portions of policymaker's reaction to business cycles (i.e., components regarding short business cycles) mingle with the extracted series shown in Figure 3. This aspect leads us to doubt the interpretation, and the resultant implication for the House of Representatives elections remains in the realm of unreliability.

[7] While altering values of *a* and *b* slightly from benchmark cases, the above consequences hardly change.

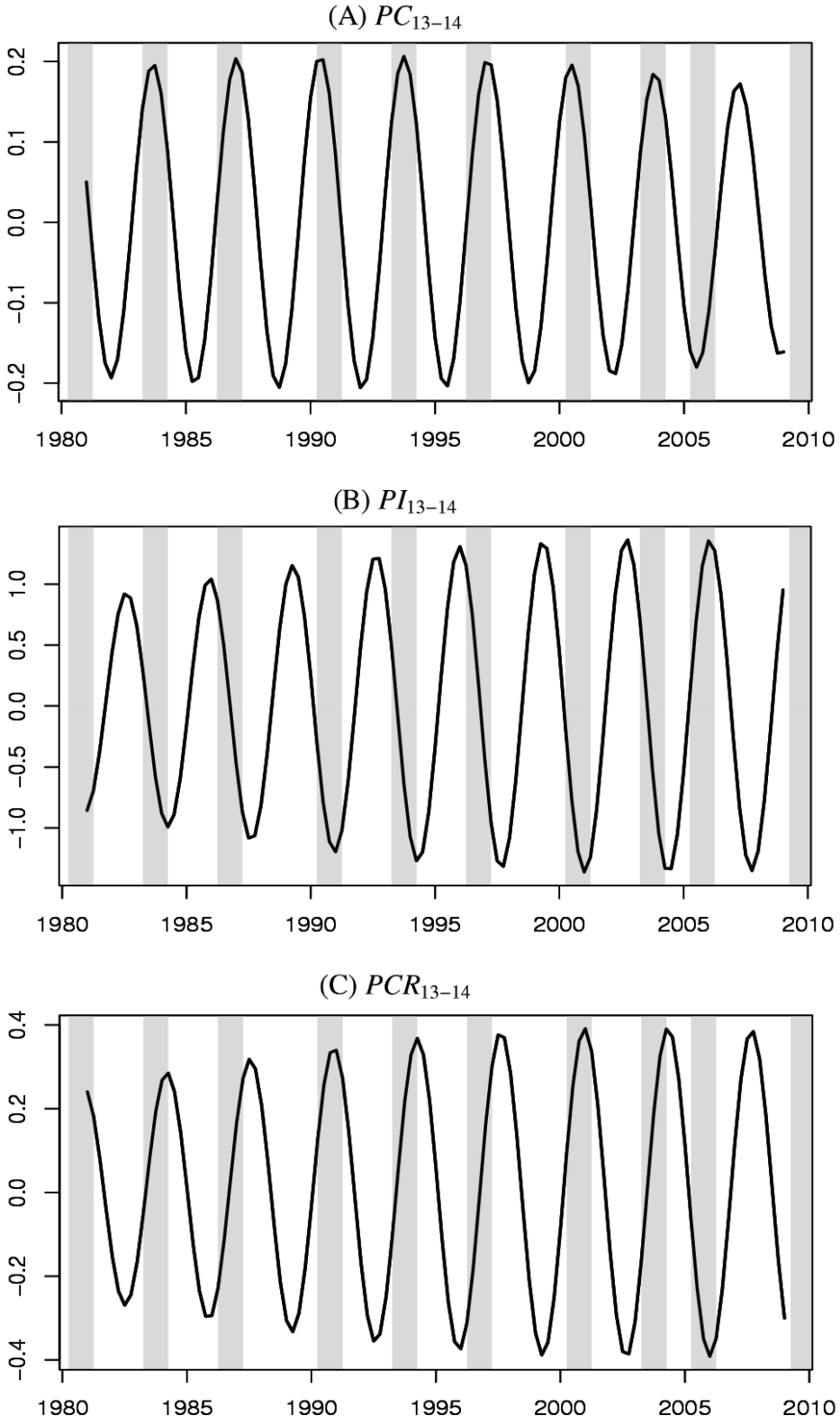

Figure 3: The House of Representatives Elections Components of Public Expenditures

Note: Shaded areas indicate a fiscal year in which the House of Representatives elections were held.

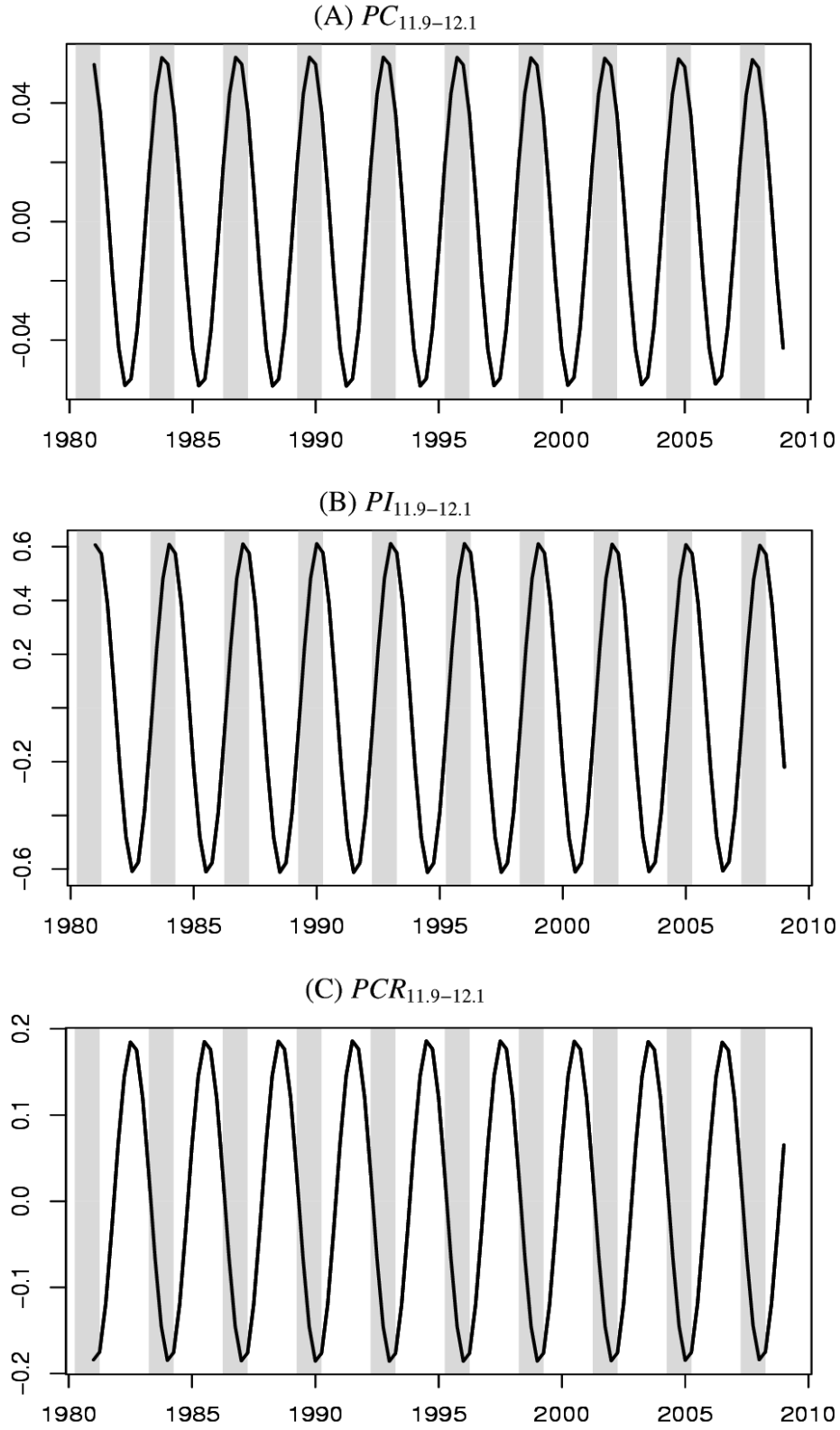

Figure 4: The House of Councillors Elections Components of Public Expenditures

Note: Shaded areas indicate a fiscal year in which the House of Councillors elections were held.

In contrast, the results of the House of Councillors elections would be properly evaluated, because the frequencies correspond strictly to 3 years and do not overlap those of business cycles. Perhaps no factor that is completely with the cycles of 3 years is considered except for the House of Councillors elections. While Kondow (2008, Table 1) points out that only *PI* is manipulated for the House of Councillors elections, our results suggest the possibility that the elections influenced the government to increase both *PI* and *PC*. Probably, the discrepancy is ascribable to the evidence shown in Panel (C) of Figure 4, which means that *PI* is more likely to be manipulated for the elections than *PC*. As a result, it becomes difficult to find policymaker's manipulation of *PC*.

5. Conclusion

There have been few previous attempts to examine empirically the determinants of government expenditures from frequency-domain perspective. This paper has explored two broad categories of cyclical components in Japanese public spending. A new feature of this exploration is making full use of information on the cyclical difference between business and election cycles. Our findings suggest that public investment serves as macroeconomic stabilization policy, and not only public investment but also public consumption is manipulated for the House of Councillors elections. The outcome regarding public consumption is not observed in early works.

The present approach is also applicable to many of other countries. The more stark differences in cycle among underlying components of interest, the more valuable this empirical strategy becomes. For example, the duration of US business cycles is averagely longer than that of Japanese ones. Hence, differentiating macroeconomic stabilization stance from political manipulation for the presidential elections would be successfully conducted in US public expenditures.

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