FINANCIAL ANOMALIES DURING THE PRESIDENTIAL ELECTIONS: THE FRENCH STYLE

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Key words: Presidential Election, Econometric Performance Assessment, Dynamic Conditional Correlation (DCC).

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Abstract

Using monthly stock return, interest rate, inflation rate, unemployment rate, production, and per capita income during four French presidential elections, five distinct pair-wise instrument-target series are formed and tested under Engle's dynamic conditional correlation. Our findings indicate the presence of strong trade-offs during the election relative to the non-election periods. An interpretation of this DCC-GARCH result is that the pre- and the post-election periods are clearly different. There is thus some evidence that the political climate of the French presidential elections has been influencing the economic/financial conditions of the country during the twelve months before the election dates.

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1. Introduction

Each of the past four French presidential elections has been unique. Overall, not only have these elections been of interest and open concern to the French nationals, they have also increasingly become phenomena that have significant economic and financial consequences in the international arena.

Considering presidential elections world-wide, several studies have already looked into the probability of predicting the election outcome (see, among others, Campbell and Mann, 1996; He, Renshaw, and Szelest, 1998; and Hoddie and Routh, 2004). Equally significant numbers of studies have also analyzed an array of social, cultural, economic, and financial variables that could offer some predictive power to forecast the election results (see, for instance, Blackley and Shepard, 1994; Levernier, 1993; and Fair, 1996) . Lacking among such studies, however, is a consideration of the economic and financial performance of the countries after the elected presidents take office.

Despite the significance of the French presidential elections, research in any of the above three categories is surprisingly scant. As a matter of fact, research on the economic and financial performance of the French economy during the post-election eras is almost non-existent. The purpose of this paper is to help fill this void by providing an assessment of the economic and financial performance of the French presidential elections after the candidates took office.

To warrant some degree of generalization based on the yielded results, the scope of this study is expanded to include the past four French presidential elections (see Table 1), covering the period of May 1, 1979, about twelve months before President Mitterrand took office, through May 1, 2007, nearly half a month before the election of the current president (Nicolas Sarkozy). Within this time domain, the scope of the paper is further constrained to address the post-election economic and financial performance of the candidates relative to twelve months prior to the election dates[1]. Consideration of lengthier time periods before the election dates may confound the results. A select array of economic and financial vectors is chosen for this purpose. Examples of such arrays, that are arguably somewhat arbitrary, are: stock return, interest rate, inflation rate, unemployment rate, production, and per capita production (income).

The approaches that could be employed to address the above analyses would depend on the frequency and availability of the data. For instance, for the last three presidential elections (Sarcozy: 16 May 2007; Chirac: 5 May 2002; and Chirac: 17 May 1995), data with weekly to monthly frequency can be compiled. However, for the earlier elections (Mitterand: 1981 and Mitterand: 1988), we are limited, at best, to monthly data. An obvious method in most instances, notwithstanding its shortcomings (see, for instance, Powell, Shi, Smith, and Whaley, 2007), is the use of dummy variables. However, this paper goes far beyond this simple and somewhat controversial approach by considering a relatively new and powerful technique, i.e., Engel's (2002) dynamic conditional correlation (DCC).

[1] In the case of Sarcozy, our analysis will be partially deficient since the post election period had to be truncated. As the data will become available, this period can be extended.

The next section briefly reviews the prior literature on the economic and financial aspects of the presidential elections. The methodology, data, and empirical applications then follow, respectively, in sections 3, 4, and 5. The last section includes the summary and conclusions.

2. Prior Literature

Among the studies that are most relevant to this paper, Fair (1996 and 1978), Laney and Willett (1983), Grier (1987 and 2000), Abrams and Butkiewicz (1995), Allvine and O'Neill (1980), Samuelson (1993), and He, Renshaw, and Szelest (1998) should be cited. A related topic that also has been addressed deals with the relationship between the presidential parties/elections and the stock and bond markets.

Considering the U.S. elections, Fair (1996 and 1978) specifies a detailed voting equation that includes incumbency variables and economic variables. The incumbency variables account for the political party that occupies the White House during the election period, whether the president is a running candidate, and the party designation of the running candidates. The economic variables consist of the growth rate of real per capita GDP and the inflation rate, both over a specified time period before the election date. In his 1996 revised and expanded work, Fair considers additional variables, i.e., the number of quarters of good news and how long the party has been in power. His estimation results are interestingly robust and, as expected under some prior assumptions, somewhat judgmental.

Laney and Willett (1983) consider the political economy of inflation and estimate a reaction function for the U.S. monetary authority. In particular, they test for the independence of money growth from the election cycle influences. They find that they

are not independent. In a similar study, Grier (1987) examines the existence of a political business cycle for the U.S. He reports that the presidential influence on the Federal Reserve leads to a cyclical effect that is stable over time and is significant. In a related study, Caporale and Grier (2000) report that changes in party control or the presidency are related with the shifts in real interest rates.

Abrams and Butkiewicz (1995) provide evidence that state-level economic conditions play a significant role in the U.S. elections. Allvine and O'Neill (1980) examine whether the U.S. economy has been managed to expand during the election year and contract thereafter.

The relationships between presidential elections and the stock and bond markets have been considerably addressed. Most of the prior literature on this topic also pertains to the U.S. presidential parties and elections. The focus of analyses has mostly been whether short- and long-term stock returns during one presidential party is higher or lower than another party. Two types of stock return patterns, i.e., election cycle returns and presidential party returns, are generally considered. In addition, returns on the large- and small-cap stocks are separately investigated. Furthermore, econometric estimates of short- and long-run returns are highlighted. Within the scope of these alternatives, drawing a consensus has not been straightforward.

While there is some evidence of short-term stock return differences between the presidential parties, the findings on the long-term returns are mixed. For example, Stovall (1992) and Huang (1985) find higher returns during Democratic (4.4 %) than Republican (2.5 %) administrations. Beyer, Jensen, and Johnson (2004) examine the joint effect of monetary and fiscal policy on long-term stock returns during U.S.

Democratic and Republican administrations. Their findings indicate that the relationships between stock returns and presidential administrations are mixed and statistically insignificant[2]. Siegel (1998) and Huang (1985), among others, have drawn similar conclusions.

Johnson, Chittenden, and Jensen (1999), considering large- and small-capitalization stocks separately, provide evidence that while the returns are the same for large-cap stocks, they are over four times higher for small-cap stocks during Democratic administrations. They also report that the real returns on bonds are substantially lower during Democratic than Republican administrations.

Using a dummy variable to differentiate Democratic from Republican administrations, Santa-Clara and Valkanov (2003) report that excess returns of both the CRSP value- and equal-weighted market index over the one-month Treasury bill rate are higher under Democratic than Republican administrations[3]. Powell, Shi, Smith, and Whaley (2007) use simulation and switching regression and expand Santa-Clara and Valkanov's (2003) data base to mid-1800s when Republican and Democratic ideologies became distinguishable from one another. They conclude that presidential party differences are insignificant. These inconclusive findings suggest an obvious fact: that there is much at stake for the U.S. presidential parties to gain the investors' recognition. Hence, research in this line of analyses has remained robust and is expected to continue.

[2] They conclude: "There is no consistent evidence suggesting the shifts in the political landscape have been systematically related to security returns." (p.108)

[3] Using CRSP data from January 1927 through December 1998, they report higher returns under Democratic than Republican administrations by as much as 9 percent and 16 percent, respectively, for value- and equally-weighted market indices.

All in all, there is sufficient support that presidential elections are related to economic and financial conditions; and that one or more facets of the economy in general may have been managed to influence the election outcome. Given that the above evidence is documented solely for the U.S., it is of interest to examine if similar election strategies have been employed in France. Hence the purpose of this study: to examine whether there are significant relations between the monetary and other economic policies and presidential elections in France. We consider six major financial/economic variables: stock return, interest rate, inflation rate, unemployment rate, production, and per capita production (income).

3. Methodology

It is well known that some aspects of monetary policy are effective in the short run, while their effect on the price level may be more persistent and linger into a lengthier time period. The Fisher effect, in general, is assumed to be holding. Further, in contrast with most of the prior studies, the relations between economic instrumental variables and the target variables may be left open to vary over time.

Considering inflation and unemployment rates as an example, the relation between them is traditionally described by the Phillips curve that establishes the amounts of the trade-off between these two variables. Within this theoretical framework, our motivation is to examine time-varying relations between a select set of pair-wise variables such as inflation and unemployment, inflation and production, and inflation and per capita production (income). Given the short-term aspects of the monetary policy, if the politicians choose to utilize the monetary policy to favorably affect the outcome of the presidential elections by creating, for instance, a decrease in unemployment level,

they would make an effort so that such short-term relations become more pronounced before the elections.

In order to investigate the time-varying relation between an economic/financial instrumental variable (for example, inflation, money supply, M2) and the target economic variable (for instance, increase in production, increase in per-capita income, and decrease in unemployment level), we use Engle's (2002) dynamic correlation coefficient GARCH model (DCC-GARCH, hereafter). DCC-GARCH enables us to compute the correlation between two variables at each point in time. Hence, if the monetary policy is focused on the presidential election prior to the election date, then there will be more negative relation between increase in money supply and decrease in unemployment level relative to the post-election period. Therefore, we construct the following null hypothesis.

H_0: The negative relation between increase in inflation rate and decrease in unemployment level is not different between the pre- and the post-election periods. The target variable, decrease in unemployment rate, could be extended to include increase in industrial production, increase in per-capita production (income), increase in stock return, and increase in interest rate.

Estimation of the dynamic correlation coefficients is performed under a two-step procedure. Below, these steps are discussed in turn.

In the first step, we obtain standardized residuals using the standard GARCH model:

$$\varepsilon_t = D_t v_t \sim N(0, H_t) \qquad (1)$$

where ε_t is a 2×1 column vector of the pair-wise variables (for instance, inflation and unemployment rates), and v_t is a 2×1 column vector of standardized residual returns. H_t is a 2×2 matrix of time-varying variances. Specifically,

$$H_t = D_t R_t D_t \tag{2}$$

where R_t is a 2×2 matrix of time-varying correlations. D_t is a 2×2 diagonal matrix of time-varying standard deviations of residual returns. The variances are obtained with univariate GARCH (1, 1) processes:

$$h_t = b_0 + b_1\varepsilon_{1t}^2 + b_2 h_{1t-1}^2 \tag{3}$$

The log-likelihood function to determine the parameters in (3) is given in (5) below:

$$\begin{aligned} l &= -0.5\sum_{t=1}^{T}\left(n\log(2\pi) + \log\left(\left|H_t\right|\right) + \varepsilon_t' H_t \varepsilon_t\right) \\ &= -0.5\sum_{t=1}^{T}\left(n\log(2\pi) + \log\left(\left|D_t R_t D_t\right|\right) + v_t' D_t^{-1} R_t^{-1} D_t^{-1} v_t\right) \end{aligned}$$

Since $\varepsilon_t' D_t^{-2}\varepsilon_t = \varepsilon_t' D_t^{-1} D_t^{-1}\varepsilon_t = \left(D_t^{-1}\varepsilon_t\right)' D_t^{-1}\varepsilon_t = v_t' v_t$, the log-likelihood function may then be computed as:

$$\begin{aligned} l &= -0.5\sum_{t=1}^{T}\left(n\log(2\pi) + 2\log\left(\left|D_t\right|\right) + \varepsilon_t' D_t^{-2}\varepsilon_t\right) - 0.5\sum_{t=1}^{T}\left(\log\left(\left|R_t\right|\right) + \varepsilon_t' R_t^{-1}\varepsilon_t - v_t' v_t\right) \\ &= l_1 + l_2 \end{aligned} \tag{4}$$

Where:

$$l_1 = -0.5\sum_{t=1}^{T}\left(n\log(2\pi) + 2\log\left(\left|D_t\right|\right) + \varepsilon_t' D_t^{-2}\varepsilon_t\right) \tag{5}$$

$$l_2 = -0.5\sum_{t=1}^{T}\left(\log\left(\left|R_t\right|\right) + \varepsilon_t' R_t^{-1}\varepsilon_t - v_t' v_t\right) \qquad (6)$$

As is shown above, the log-likelihood function is separated into two components: the log-likelihood function of variances and that of correlations. The parameters of variances in l_1 are determined without simultaneous determinations of the correlation parameters by maximizing l_1.

In the second step, correlation coefficients are estimated. The correlation coefficients between two variables *i* and *j* at time t are defined as:

$$\rho_{ijt} = \frac{E_{t-1}\left[\varepsilon_{it}\varepsilon_{jt}\right]}{\sqrt{E_{t-1}\left[\varepsilon_{it}^2\right]}\sqrt{E_{t-1}\left[\varepsilon_{jt}^2\right]}} = \frac{E_{t-1}\left[\sqrt{h_{it}}v_{1t}\sqrt{h_{jt}}v_{jt}\right]}{\sqrt{E_{t-1}\left[h_{it}v_{it}^2\right]}\sqrt{E_{t-1}\left[h_{jt}v_{jt}^2\right]}} = \frac{E_{t-1}\left[v_{it}v_{jt}\right]}{\sqrt{E_{t-1}\left[v_{it}^2\right]}\sqrt{E_{t-1}\left[v_{jt}^2\right]}} = E_{t-1}\left[v_{it}v_{jt}\right].$$

where:

$$E_{t-1}\left[v_{it}^2\right] = E_{t-1}\left[h_{it}^{-1}\varepsilon_{it}^2\right] = h_{it}^{-1}E_{t-1}\left[\varepsilon_{it}^2\right] = 1.$$

The correlations ρ_{ijt} constitute the correlation matrix R_t wherein the diagonal elements are unity.

Let $Q_t = E_{t-1}\left[v_t v_t'\right]$. Then,

$$R_t = \left\{diag\left(Q_t\right)\right\}^{-\frac{1}{2}} Q_t \left\{diag\left(Q_t\right)\right\}^{-\frac{1}{2}} \qquad (7)$$

In order to parameterize the correlation coefficient ρ_t, it is assumed that Q_t follows an autoregressive process. Specifically,

$$Q_t = \bar{\rho}\left(1-\alpha-\beta\right) + \alpha v_{t-1}v_{t-1}' + \beta Q_{t-1} \qquad (8)$$

where $\bar{\rho}$ is an unconditional correlation coefficient matrix. The unconditional correlations are determined in step 1 and used as predetermined values in step 2 (see Engle and Sheppard, 2001).

The parameters for the time-varying correlations are determined by maximizing the log-likelihood function l_2. Since $v_t' v_t$ does not involve the determination of the parameters, the log-likelihood function is reduced to:

$$l_2 = -0.5\sum_{t=1}^{T}\left(\log\left(\left|R_t\right|\right) + \varepsilon_t' R_t^{-1}\varepsilon_t\right) \qquad (9)$$

4. Data

We compiled monthly data on stock return, interest rate, inflation rate, unemployment level, industrial production, and per capita industrial production from May 1, 1979, to May 1, 2007. Our starting date reflects about twelve months before President Mitterrand took office; our ending date coincides with nearly half a month before the election of the current president (Nicolas Sarkozy). The variable per capita industrial production is considered as a substitute for per capita income. Our data source is *Datastream*.

We classify the sample into election period (twelve months prior to and including the election date) and non-election period (four years post the election date). We hypothesize that the strong relation between the inflation (or money growth) variable and the three target variables will be stronger than the ones during the non-election periods. Table 1 provides summary statistics on the French presidential election dates and Table 2 the election periods as defined above.

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Please insert Tables 1 and 2 about here.

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5. Empirical application and results

DCC(1,1) under GARCH(1,1), developed by Engle (2002) and Engle and Sheppard (2001), is employed to examine the time-varying correlation coefficients between the inflation rate and four of the target series, as well as between the interest rate and the stock return series. The politicians' intentions, if any, are hypothesized to focus on: a) a reduction in unemployment rate, b) an increase in production, c) an increase in per capita production (income), d) an increase in stock return, and e) a decrease in interest rate during the one year before the election date.

Mean difference t-test and median difference Wilcoxon z-test are used to investigate whether there are significant differences in the estimated time-varying correlation coefficients between the election and the non-election periods. Forbes and Rigobon (2002) point out that correlation coefficients are biased when there are changes in volatility. In our case, since the volatility is adjusted by the procedure we are employing, the dynamic conditional correlation coefficient (DCC) does not have any bias from volatility.

Table 3 shows the estimation results of the variance and correlation models as given in relations (3) and (8) for the first three pairs of the target-instrument series. Estimates of the variance models indicate that the pair-wise series are highly innovative. Large estimates of the innovation term (alpha) in the correlation model signal that the DCC will have very different values over time.

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Please insert Table 3 about here.

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Table 4 includes the results of the tests on the differences in DCCs between the election and the non-election periods. We have employed t-tests for the mean differences and Wilcoxon z-tests for the median differences. The results demonstrate the presence of strong trade-offs during the election periods relative to the non-election periods. This point is represented by the significance of the p values in Table 4. The results also provide evidence that: a) unemployment levels have been significantly decreasing during the election periods relative to the non-election periods, b) production has been increasing during the election periods relative to the non-election periods, and c) per capita production (income) has also been increasing during the election periods relative to the non-election periods.

To sum up, there is significant evidence that the political climate of the French presidential election has been influencing, or managing, the economic/financial conditions of the country during the twelve months before the election dates.

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Please insert Table 4 about here.

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To supplement our estimated results with a visual graph, Figure 1 provides the plot of the estimated dynamic conditional correlations (DCC) between the pair-wise series of inflation rates and changes in the unemployment rates for the sample period. It is apparent from this Figure that the trade-offs between the inflation and the

unemployment rates are stronger over the election periods, especially for the elections in 1988, 1994, and 2007. The trade-offs for the election in 2002 start a little earlier than the one year election period that we have specified. This particular situation appears inconsistent, or even inverse, during the non-election period. Overall, the DCC-GARCH model appears very effective in capturing the relations between each of the three pair-wise instrument-target series that are examined in this paper.

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Please insert Figure 1 about here.

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6. Summary and conclusions

Given the increasingly competitive presidential elections nowadays and the influential position of the political parties, not to mention the incumbent president, it is often suspected that the financial and economic variables during the pre-election period may be attuned to achieve the electoral objectives. The aftermath of such decisions, i.e., in the post-election periods, does not appear to pose a problem in the heat of the electoral campaign. Unless insiders' information becomes available, such political decisions are hard to document, except to resort to fast data that can only be compiled over time. This is the position that we have opted for.

We have chosen six major variables, i.e., stock return, interest rate, inflation rate, unemployment rate, production, and per capita income. These variables are paired to form five distinct pair-wise instrument-target series for analysis. Other variable, e.g., GNP, income distribution, bond prices, and sectoral stock returns could equally be candidates for similar analysis. While interest rate and stock market data could be

compiled at lower frequencies, other variables are at best quarterly and as such will not easily yield to the type of analysis that we have undertaken.

We have resorted to a relatively new and powerful technique, i.e., Engel's (2002) dynamic conditional correlation (DCC-GARCH). This technique appears very effective in capturing the relations between each of the five pair-wise instrument-target series. Our findings indicate the presence of strong trade-offs during the election periods relative to the non-election periods. An interpretation of this DCC-GARCH result is that the pre- and the post-election periods are clearly different. For example, unemployment levels have been significantly decreasing during the election periods relative to the non-election periods. There is thus some evidence that the political climate of the French presidential election has been influencing the economic/financial conditions of the country during the twelve months before the election dates.

Although every effort is being made to be consistent in the choice and application of the data as well as the technique, it is unavoidable, within the scope of this paper, that such empirical analyses will not be void of shortcomings. For example, global events outside of France could influence the post-election economy's performance. Whether the parliamentary elections that are held post the election dates provide a clear mandate for reform, and whether such mandates are in line with the president's agenda, could also be significant as indicators in the assessment of economic and financial performance. Consideration of these fine-tuning activities is feasible but often difficult to capture. Within an empirical framework that seeks detailed answers regarding the performance of the presidential candidates in the post-elections, such extra considerations could merit further independent studies. Our focus in this study has intentionally been kept on

financing, though indirectly, the French presidential elections. We tend to delegate the above details to future studies.

Table 1

The Fifth Republic presidents

President	Born-died	from	to	Party
Charles de Gaulle	1890-1970	December 21, 1959	April 28, 1969 (resigned)	UNR then UDR
Alain Poher	1909-1996	April 28, 1969	June 15, 1969 (interim)	PDM
Georges Pompidou	1911-1974	June 15, 1969	April 2, 1974 (died in office)	UDR
Alain Poher	1909-1996	April 2, 1974	May 19, 1974 (interim)	PDM
Valéry Giscard d'Estaing	1926-	May 19, 1974	May 10, 1981	UDF
François Mitterrand	1916-1996	May 10, 1981	May 17, 1995	Socialist
Jacques Chirac	1932-	May 17, 1995	May 16, 2007	RPR then UMP
Nicolas Sarkozy	1955-	May 16, 2007	present	UMP

Table 2

French presidential election periods

Table 1 show the French presidential election periods. The sample period starts on May 1, 1979, and ends on May 1, 2007. The election period is defined as twelve months prior to and including the election date.

Election period	President
May, 1980 – May 1981	Francois Mitterrand
May, 1987 – May 1988	Francois Mitterrand
May, 1994 – May 1995	Jacques Chirac
May, 2001 – May 2002	Jacques Chirac
May, 2006 – May 2007	Nicolas Sarkozy

Table 3

Estimated parameters of variance and correlation models

This Table provides the estimation results for the means, variances, and the correlation models for the three pair-wise instrument-target series. The methodology employed is discussed in section 3. They are, very briefly, as follows.

$$\varepsilon_t = \sqrt{h_t} v_t$$

$$h_t = b_0 + b_1 \varepsilon_{1t}^2 + b_2 h_{1t-1}^2$$

$$Q_t = \bar{\rho}(1 - \alpha - \beta) + \alpha v_{t-1} v_{t-1}' + \beta Q_{t-1}$$

The correlation models are run for the pair of: a) log of inflation rate and change in the unemployment rate, b) log of inflation rate and change in production, and c) log of inflation rate and change in per capita production (income). The p-values are given in parentheses. ρ represents the unconditional correlation coefficient in the matrix $\bar{\rho}$.

Parameter	*Inflation rate*	*Change in unemployment*	*Change in production*	*Change in per-capita production*
Variance models				
b_0	0.0516	0.0016	9.2813	9.2808
	(0.054)	(0.162)	(0.213)	(0.213)
b_1	0.9439	0.3951	0.1218	0.1218
	(0.003)	(0.000)	(0.030)	(0.030)
b_2	0.000	0.5067	0.8159	0.8159
	(1.000)	(0.000)	(0.000)	(0.000)
Correlation models				
ρ		-0.3040	-0.2446	-0.2314
		(0.000)	(0.000)	(0.000)
α		0.3282	0.2067	0.2076
		(0.000)	(0.000)	(0.000)
β		0.5854	0.7715	0.7701
		(0.000)	(0.000)	(0.000)
N		327	327	327

Table 4

Tests of the estimated DCC means and medians differences between the election and the non-election periods

This Table shows the test results of the statistical differences between the election and the non-election periods for the means and the medians of estimated DCCs for the three pair-wise instrument-target series. The DCCs are computed using the pair of: a) log of inflation rate and the change in unemployment rate, b) log of inflation rate and the change in production, and c) log of inflation rate and the change in per capita production (income). The p-values of the t-tests show the statistical significance of the mean differences. The p-values of Wilcoxson z-test represent the statistical significance of the median differences.

Panel A: Tests of differences of DCCs (inflation and change in unemployment)						
Period	N	Mean	Median	Std dev	t-test	z-test
Election period	64	-0.242	-0.381	0.497	0.000	0.000
Non-election period	263	0.108	0.161	0.462		

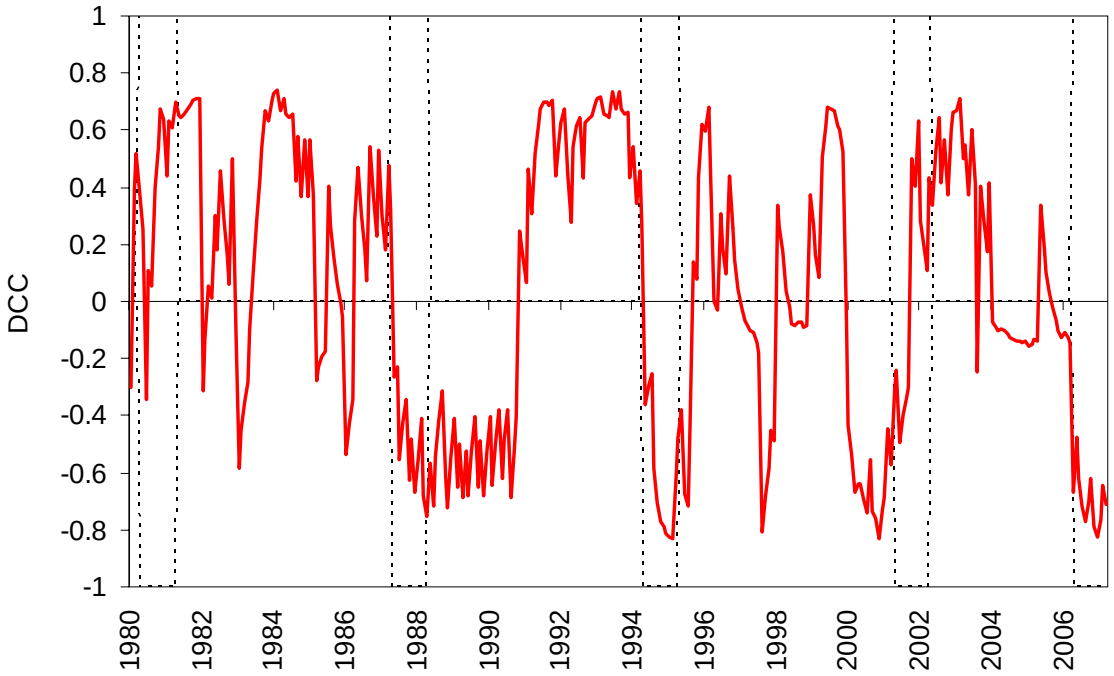
Panel B: Tests of differences of DCCs (inflation and change in production)						
Period	N	Mean	Median	Std dev	t-test	z-test
Election period	64	0.413	0.590	0.441	0.355	0.060
Non-election period	263	0.358	0.480	0.414		

Panel C: Tests of differences of DCCs (inflation and change in per-capita production (income))						
Period	N	Mean	Median	Std dev	t-test	z-test
Election period	64	0.413	0.590	0.441	0.355	0.060
Non-election period	263	0.359	0.481	0.414		

Figure 1

Estimated dynamic correlation coefficients (DCC)

This Figure graphs the estimated dynamic correlation coefficients (DCC) from May 1, 1979, to May 1, 2007, for the pair-wise instrument-target series of inflation and unemployment rate. The DCCs are also computed for the other two pair-wise series, i.e., log of inflation rate and the change in production, and log of inflation rate and the change in per capita production (income). They are not shown in this graph. They exhibit similar patterns.



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