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Monetary policy decision making: the role of ideology, institutions and central bank independence

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Abstract

The aim of this article is to evaluate whether variables related to partisan ideology, institutions and central bank independence play a role in monetary policy decision making. The annual panel data set includes 53 countries (advanced and emerging/developing economies) for the period 2001-2012. The estimation of several Taylor Rules, via system GMM dynamic panel data models, shows that the conduct of monetary policy seems not to be influenced by the factors mentioned above. The same result applies for the period after the global financial crisis.

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1. Introduction

The monetary policy decision-making process is organized in such a way that central banks are able to influence economic activity, via short-term interest rate, taking into account macroeconomic variables such as inflation and output gap, amongst others. However, central bankers are chosen from those who can be deeply influenced by several other outside factors. For instance, a leftist or rightist government in power (partisan ideology) might be inclined to choose a more dovish or hawkish central banker. Monetary policy committees can also be influenced by their respective countries' institutional quality (perceived levels of corruption and bureaucracy). The same applies for the degree of central bank independence.

This raises an important question of whether or not these factors are relevant for monetary policy decisions, and if they are significant in the specification of an alternative interest rate (Taylor) rule. This is precisely the goal of this article. The econometric methodology used in the empirical analysis is a series of system GMM dynamic panel data models, for the period 2001-2012 and for a panel of 53 countries (advanced and emerging/developing economies). The main results show that the conduct of monetary policy is not strongly influenced by neither central bank independence, institutions nor partisan ideology. Similar results are found for the period after the global financial crisis.

Besides this introduction, this article is structured as follows. Section 2 presents the literature review. Section 3 outlines the econometric methodology and the data. Section 4 reports the estimation results and section 5 talks about robustness tests and other possible specifications. Section 6 concludes.

2. Literature Review

Nordhaus (1975) analyzed how economic decisions, such as government investments, could be manipulated by politicians. The author built a model in which non-partisan opportunistic politicians dealt with voters and economic agents who were non-rational and had non-rational expectations (Alesina, 1988).[1] Hibbs (1977) made similar assumptions about voters and economic agents, but considered partisan ideology by examining whether macroeconomic policies and outcomes could be related to left-wing and right-wing governments. Rogoff and Sibert (1988) asked whether non-partisan opportunistic politicians, dealing with rational voters and economic agents with rational expectations, could generate some type of political business cycle. Alesina (1987) assumed partisan ideological politicians, rational voters and economic agents with forward-looking expectations, and considered the interaction of two political parties with different goals concerning inflation and unemployment.[2]

Kydland and Prescott (1977) argued that the commitment to a certain type of monetary rule provided a mechanism to reduce inflationary bias and increase credibility. Given the interaction among policymakers and economic agents, Barro and Gordon (1983a; 1983b) stated that central banks could increase their reputation through commitment to a rule. Rogoff (1985) suggested that the appointment of a

[1] This line of research is known as "New Political Macroeconomics". Some other important articles are: Alesina et al. (1989), Alesina and Rosenthal (1995), Alesina, Roubini and Cohen (1997), Drazen (2000a).

[2] For more research on the relationship between politics and macroeconomic policy decisions see, for instance, Cukierman and Meltzer (1986), Rogoff (1990), Persson and Tabellini (1990), Rogoff and Sibert (1988), Drazen (2000a, 2000b).

hawkish central banker, who placed more weight on inflation stabilization rather than on output (employment), could make society better off.

Following the line of research related to credibility, reputation and delegation, Cukierman, Webb and Neyapti (1992) developed some measures of central bank independence based on the rate of turnover of central bank governors, on an inflation-based index, and a legal independence index. Cukierman (1992, 2008) made a thorough review of issues related to legal and measures of central bank independence.

There is no doubt that sound macroeconomic policies, openness to international trade, and the absence of capital account controls as important measures of fostering economic growth and increasing per capita income. Frankel and Romer (1999), for instance, argued that long-run economic development is more likely to rely on policies such as low inflation, increase in trade and financial integration to the world and fiscal discipline. Based on this set of arguments, we do have a reason to include measures of institutional quality in our empirical analysis, in order to address its role on the conduct of monetary policy.[3]

Boix (2000) analyzed a panel data of 19 OECD countries and found no relationship between macroeconomic policies and partisan ideology, especially after the early 1980s up until mid-1990s. However, the author did find some influence of partisan governments and macroeconomic policies for the period between 1960 and 1980.

Cusack (2001) used a panel dataset for 14 countries, for the period 1961-1994, and found support for the importance of partisanship in fiscal policy design and for the argument that central banks are non-neutral. The estimations showed no support for the thesis that central bank independence prevents monetary policymakers from being influenced by the political party in power. Also, the interaction between fiscal and monetary policies becomes more difficult when left-wing parties are in power.

Clark (2003) modeled an economy in which policymakers are able to control both monetary and fiscal policy, but central bank independence and capital mobility curb such control. The author's findings demonstrated that the electoral calendar plays an important role in monetary and fiscal policies' decisions, but there was little evidence that a government's party orientation influence economic policy decisions.

Bearce (2003) used an annual panel dataset (1975-1992) for 22 OECD countries and found that left-wing oriented governments tend to search for more monetary autonomy and currency variability, compared to right-wing governments. For a panel dataset of 15 OECD countries, from 1980.Q1 to 2005.Q4, Belke and Potrafke (2012) showed that short-term nominal interest rates tend to be higher under left-wing governments, suggesting that they delegate the conduct of monetary policy to conservative central bankers.

Mukherjee and Singer (2008) focused on inflation targeting countries to analyze the relationship between monetary institutions and partisanship. By using a yearly panel dataset of 49 countries for the period 1987-2003, their results provided strong statistical support for the argument that a right-wing government and a "dependent" central bank is expected to be connected with the adoption of an inflation targeting system.

Sakamoto (2008) focused on industrialized economies and examined how different government parties influence economic policy, and how the interaction between fiscal and monetary policymakers could affect the conduct of monetary

[3] See Calderón, Duncan and Schmidt-Hebbel (2012), Huang and Wei (2006), and Hussain and Siddiqi (2012) for more examples of institutional quality measures.

policy. The results showed that the benefits from central bank independence, under a leftist government, were not as strong as on center governments, mainly because of their restrictive fiscal policies. On the other hand, the interaction between a right-wing government with an independent central bank led to loose monetary policy.

As for researches related to specific countries, Faust and Irons (1999) and Tempelman (2007), for the case of the US, Berger and Woitek (1997), for Germany, Serletis and Afxentiou (1998), for Canada, found no support for the influence of partisan ideology on main monetary and fiscal policy decisions.

Belke and Cui (2010) looked for some evidence of interdependence between the ECB and the Fed, by analyzing Taylor Rules based on VEC models for the period 1999-2006. The empirical findings suggested the existence of a monetary policy interdependence between the two central banks. There was indication of a long-run equilibrium relationship between the interest rates of the two monetary authorities, as well as a leader-follower pattern, once the general VEC showed that the ECB followed the Fed. Belke and Gros (2005) showed that the leader-follower pattern began to change after September 2001, with some evidence of an asymmetry. The authors also found a structural break in the relationship between the short-term interest rates of the Fed and the ECB, when comparing the period before and after the Euro adoption.

3. Data and Empirical Strategy

The annual panel data set includes 53 countries (advanced and emerging/developing economies)[4] for the period 2001-2012. The selection was based on data availability for the real effective exchange rate. Data related to interest rate, GDP, inflation and exchange rates were taken from IMF International Financial Statistics, whereas political institution (partisan ideology) data were obtained from Beck et al. (2001), with updates until December 2012. The political party definition is: *i*) Right: conservative, Christian democratic, or right-wing parties; *ii*) Left: communist, socialist, social democratic, or left-wing parties; *iii*) Center: centrist parties. The central bank independence data were taken from Sturm and de Haan (2001) and Dreher, Sturm and de Haan (2008, 2010). The proxy used is the annual number of actual turnovers, which is an indicator of how susceptible to political influences a central bank is. The institutional quality data, gathered from the International Country Risk Guide, are: *i*) Bureaucracy: institutional strength and quality of the bureaucracy, which is a shock absorber that tends to minimize revisions of policy when governments change; *ii*) Corruption: a measure of corruption within the political system that is a threat to foreign investment by distorting the economic and financial environment, reducing the efficiency of government and business by enabling people to assume positions of power through patronage rather than ability, and introducing inherent instability into the political process.

The econometric strategy accounts for both time series dimension and cross-section characteristics of the panel data, through the estimation of a series of system

[4] Algeria, Australia, Austria, Bahamas, Bolivia, Brazil, Canada, Chile, China, Costa Rica, Croatia, Denmark, Dominican Republic, Ecuador, Finland, France, Germany, Ghana, Greece, Hungary, Iceland, India, Ireland, Israel, Italy, Japan, South Korea, Malawi, Mexico, Netherlands, New Zealand, Nigeria, Norway, Pakistan, Paraguay, Peru, Philippines, Poland, Portugal, Russia, Slovakia, Slovenia, South Africa, Spain, Sweden, Trinidad and Tobago, Tunisia, Ukraine, UK, USA, Uruguay, Venezuela, Zambia.

GMM (two-step) dynamic panel data models[5]. This methodology is able to deal with non-observable country specific effects, making it more efficient than one-step dynamic panel GMM estimators. However, the standard errors related to the two-step GMM estimator tend to be downward biased, as reported by Arellano and Bond (1991) and Blundell and Bond (1998). Therefore, to make two-step robust estimations more efficient, we follow Windmeijer (2005) and estimate our regressions using a finite sample correction to the covariance matrix.

In order to reduce the problem related to the potential bias and inaccuracy of weak instruments[6], especially when applying difference GMM, we estimate the so-called system (GMM) of regressions in differences and levels, developed by Arellano and Bond (1991), Arellano and Bover (1995) and Blundell and Bond (1998). In fact, the use of a system GMM for panel data estimation is ideally designed for small T (time series dimension), large N (cross-section dimension), which makes the time span of 12 years suitable to address the behavior of Taylor Rule functions before and after the international financial crisis. The use of a longer time period, to capture long-term relationships, for instance, would lead to instrument proliferation (see Roodman, 2009) since more time dummies as instruments would be required.

Regarding the equation to be estimated, it resembles a typical monetary policy (Taylor) rule, as in Taylor (1993), taking into consideration the interest rate smoothing case, the influence of exchange rate, GDP output gap and inflation rate, besides the variables related to ideology (left-wing, center, right-wing government), institutions (corruption and bureaucracy quality) and central bank independence (number of actual turnovers). Additional control variables include: i) Dummy Developed: for advanced and emerging/developing economies; ii) Dummy IT: for inflation targeting countries; iii) Dummy Crisis08: to focus on the post-crisis period (2008-2012).

As in Belke and Potrafke (2012), the general representation for the monetary policy rule (Taylor Rule) can be given by the following equation:

$$i_{jt} = \beta_0 + \beta_1 i_{jt-1} + \beta_2 \pi_{jt} + \beta_3 e_{jt} + \beta_4 y_{jt} + \beta_5 ideo_{jt} + \beta_6 CBI_{jt} + \beta_7 inst_{jt} + \varepsilon_{jt} \quad (1)$$

with j = 1, ... , 53, t = 1, ..., 12, and where: i = interest rate (% year); π = log of CPI inflation rate(1st difference); e = log of real effective exchange rate (HP Filtered); y = GDP Gap (log of real GDP - HP Filtered); *ideo* = dummy right-wing, dummy left-wing = dummy describing governments' partisan ideological orientation; *CBI* = degree of central bank independence; *inst* = two measures of institutional quality (Bureaucracy, Corruption).

4. Estimation Results

The strategy is first to estimate the monetary policy (Taylor) rule expressed in Equation 1 for the whole sample. After that, the sample is broken down and particular emphasis is given to the period after the 2008 crisis. We also address possible endogeneity problems of the explanatory variables and the correlation between the error term and the lagged-dependent variable, which is a common issue

[5] See Vieira et al. (2013) for more details on the methodology. Fixed and random effects models are not reported here for convenience, but the results are available upon request. Table 1A, in the Appendix, reports the panel unit roots tests for the variables used. They are all variables are stationary.

[6] The use of weak instruments is associated with an increase in variance. In small samples, the variance coefficients can be biased.

present in this sort of analysis, by a system of regressions in differences and levels as suggested by Blundell and Bond (1998).

4.1. Results: Monetary Taylor Rule (Whole Period: 2001 – 2012)

Table 1 reports the estimation results for the whole period. As expected, the estimated coefficients for the lagged interest rate are positive and statistically significant in all regressions performed. It means that inflation deviations lead to a reaction of monetary policy of the same sign. The interest rate smoothing mechanism seems to be the case in the design of monetary policy around the world, indicating no abrupt disturbance in the interest rate even during the crisis. The inflation rate coefficient is statistically significant in all regressions, showing their importance even in the presence of variables such as GDP and exchange rate. As for the output gap coefficients, there is no statistical significance in any of the models estimated. A similar result is found for the exchange rate, which is an indication that central banks would not be attempting to smooth exchange rate fluctuations by making use of interest rates.

Table 1
Monetary Taylor Rule (Whole Period: 2001 – 2012)

MODELS	1	2	3	4	5	6
Interest Rate (t-1)	0.246	0.244	0.256	0.239	0.240	0.259
(s.e.)	(0.057)***	(0.060)***	(0.044)***	(0.061)***	(0.057)***	(0.044)***
Inflation	0.220	0.230	0.203	0.220	0.227	0.194
(s.e.)	(0.099)***	(0.100)***	(0.809)***	(0.089)***	(0.097)***	(0.074)***
Exchange Rate	0.229	0.236	0.224	0.222	0.231	0.208
(s.e.)	(0.187)	(0.179)	(0.175)	(0.171)	(0.180)	(0.152)
GDP Gap	0.045	0.050	0.090	0.042	0.060	0.104
(s.e.)	(0.075)	(0.085)	(0.072)	(0.090)	(0.074)	(0.072)
Bureaucracy		-0.003			-0.004	
(s.e.)		(0.004)			(0.005)	
Corruption			-0.003			-0.010
(s.e.)			(0.0032)			(0.008)
CBI	0.002	0.002	0.003	0.002	0.003	0.003
(s.e.)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Dummy Right-Wing	-0.006	-0.006	-0.005	-0.006	-0.006	-0.004
(s.e.)	(0.005)	(0.005)	(0.0065)	(0.005)	(0.005)	(0.006)
Dummy Left-Wing	-0.018	-0.018	-0.014	-0.017	-0.018	-0.013
(s.e.)	(0.013)	(0.012)	(0.010)	(0.013)	(0.012)	(0.007)
Dummy Crisis08	-0.006	-0.006	-0.005	-0.007	-0.007	-0.004
(s.e.)	(0.002)***	(0.002)***	(0.001)***	(0.002)***	(0.002)***	(0.001)***
Dummy Developed	-0.0019	0.050	0.008	-0.001	0.006	0.021
(s.e.)	(0.0033)	(0.006)	(0.009)	(0.003)	(0.008)	(0.015)
Dummy IT				0.011	0.003	0.011
(s.e.)				(0.003)	(0.003)	(0.008)
AR(2)	0.197	0.188	0.193	0.210	0.191	0.179
Hansen	0.995	0.996	0.998	0.998	0.995	0.997
Number of Countries	53	53	53	53	53	53
Number of Instruments	89	89	89	89	89	89

Note: All Estimated Models are System GMM (2 Step Procedure), with a constant term included.
Stata Command using Laglimits (1 1) to control for instrument proliferation.
Standard errors (s.e.) are robust. Number of Observations = 535.
*, ** and *** indicate significance at 10%, 5% and 1%.

Regarding the variables of interest in this work, the coefficients related to central bank independence and partisan ideology showed no statistical significance in

any of the models estimated. As for institutional quality, there was no robust evidence that it matters for monetary policy either, once the coefficients on bureaucracy and corruption were not statistically significant in any of the estimated models. In spite of that, the negative (expected) sign of the estimated coefficients indicate that a better institutional quality is associated with lower interest rates.

The dummy included to determine whether there was a difference in the conduct of monetary policy before and after the 2008 financial crisis, shows that the overall interest rates declined worldwide after 2008. This means that, as economic activity became very weak with the crisis, central banks decided to decrease interest rates to put their economies back on track again. On the other hand, the dummy variable for inflation targeters is not significant, indicating no difference in the conduct of monetary policy between rich and developing countries. The dummy variable for advanced economies is not significant either, showing that there was no difference in the conduct of monetary policy between rich and developing countries.

4.2. Results: Monetary Taylor Rule (Post-Crisis Period: 2008 – 2012)

The outburst of the 2008/2009 financial crisis may have affected how central banks and governments conduct their monetary policies, and how ideology, institutions and central bank independence influence monetary policy decision making. Therefore, we now turn to the results, reported in Table 2, related to the two-step system GMM models for the period after the beginning of the financial crisis.

Table 2
Monetary Taylor Rule (Post-Crisis Period: 2008 – 2012)

MODELS	1	2	3	4	5	6
Interest Rate (t-1)	0.175	0.165	0.164	0.170	0.183	0.165
(s.e.)	(0.097)*	(0.076)**	(0.085)*	(0.101)*	(0.100)*	(0.092)*
Inflation	0.161	0.144	0.146	0.158	0.146	0.147
(s.e.)	(0.053)***	(0.057)**	(0.043)***	(0.049)***	(0.057)***	(0.043)***
Exchange Rate	0.027	0.019	0.020	0.024	0.024	0.020
(s.e.)	(0.040)	(0.031)	(0.031)	(0.035)	(0.036)	(0.032)
GDP Gap	0.057	0.065	0.098	0.056	0.076	0.104
(s.e.)	(0.078)	(0.064)	(0.072)	(0.007)	(0.074)	(0.079)
Bureaucracy		-0.003			-0.006	
(s.e.)		(0.003)			(0.007)	
Corruption			-0.002			-0.002
(s.e.)			(0.001)			(0.001)
CBI	0.003	0.003	0.001	0.003	0.002	0.001
(s.e.)	(0.004)	(0.003)	(0.004)	(0.004)	(0.004)	(0.005)
Dummy Right-Wing	-0.008	-0.008	-0.006	-0.008	-0.008	-0.006
(s.e.)	(0.006)	(0.004)*	(0.005)	(0.006)	(0.005)	(0.005)
Dummy Left-Wing	-0.006	-0.007	-0.006	-0.006	-0.007	-0.006
(s.e.)	(0.007)	(0.004)	(0.005)	(0.007)	(0.006)	(0.005)
Dummy Developed	0.001	0.008	0.006	0.001	0.013	0.007
(s.e.)	(0.003)	(0.009)	(0.005)	(0.003)	(0.017)	(0.005)
Dummy IT				-0.0005	0.002	0.0004
(s.e.)				(0.002)	(0.011)	(0.005)
AR(2)	0.324	0.298	0.150	0.332	0.304	0.163
Hansen	0.484	0.605	0.661	0.457	0.470	0.585
Number of Countries	53	53	53	53	53	53
Number of Instruments	33	33	33	33	33	33

Note: All Estimated Models are System GMM (2 Step Procedure), with a constant term included.
Stata Command using Laglimits (1 1) to control for instrument proliferation.
Standard errors (s.e.) are robust. Number of Observations = 196.
*, ** and *** indicate significance at 10%, 5% and 1%.

Firstly, the sample size used was able to detect statistical significance, with a positive sign, for the estimated coefficients on the lagged interest rate, which is the interest rate smoothing coefficient. The inflation rate coefficient was also statistically significant in all regressions performed. This is the same result found for the whole sample, reported in Table 1. The only difference is that, in the period after the financial crisis, all coefficients related to lagged interest rate and inflation are smaller, which is an indication that monetary policy responded less aggressively to the above mentioned variables.

There was no statistical significance in any other variable. It seems that, due to the intensification of the global financial crisis, central banks started to focus on inflation and interest rate smoothing for monetary policy decision making. The other macroeconomic variables, as well as issues related to ideology, institutions and central bank independence seem to have lost importance.

All estimated models, reported in Tables 1 and 2, have no problems of second order autocorrelation since we do not reject the null for the AR(2) test. Regarding Hansen overidentification tests, all instruments are valid. Some restrictions were applied for each model when the number of instruments was significantly larger than the number of countries, and by looking at the probability of the Hansen-Difference statistics. When this statistic converges to one (1.000), it is necessary to reduce the number of instruments. The null hypothesis of the Hansen-Difference test is that the subset of instruments is exogenous.

5. Robustness Tests and Other Possible Specifications

As a robustness test, we followed Belke and Gros (2005) and Belke and Cui (2010) and checked whether the US interest rate was significant in the Taylor Rule specification, and if the partisan hypothesis still held. In this case, the US interest rate was included as an additional explanatory variable, and it was excluded from the list of 53 countries. The estimated coefficients were negative and not statistically significant in the six estimated models, meaning that there is no evidence in favor of a transmission from the US interest rate in the estimated Taylor Rule for a set of 52 countries. One difference from Table 1 is that the GDP GAP still shows positive coefficients, but now they are statistically significant in all estimated models.

We also tested whether the interaction between central bank independence and government ideology played a role in our analysis. This is important because ideology-induced politicians might try to interfere in central banks' decisions. No statistical significance was found.[7]

There are other alternatives of Taylor Rule specifications. For instance, Belke and Klose (2011) make use of real time data and forward-looking variables, such as inflation specifications, for the European Central Bank. This type of specification enhances the analysis and it is much easier done if the researcher is focusing on either only one country or on a small set of countries, which is not our case. Belke and Klose (2013) call the attention for the estimation of Taylor Rules in the presence of zero-lower-bound on nominal interest rates. If this is the case, the monetary authority might influence inflation expectations by means of a quantitative easing. Another possibility is to test whether the estimated coefficients change if ideology is taken into account (Lucas Critique), as in Belke (2000). The author tests the Lucas Critique by making use of the concept of super exogeneity based on an ECM framework.

[7] Due to page limitation, these results are not included in the paper. They are available upon request.

Conclusion

The aim of this article was to evaluate whether partisan ideology and central bank independence play a role in monetary policy decision making. Our panel data covered 53 countries (advanced and emerging/developing economies) for the period 2001-2012.

In the first stage of the analysis, we focused on the entire period, from 2001 to 2012, and estimated a series of the two-step system GMM dynamic panel data models. Our Taylor Rule estimations showed that the conduct of monetary policy seemed not to be affected by variables related to central bank independence, institutions nor partisan ideology. When we focused on the analysis of the period after the global financial crisis, similar results were found.

In summary, our work has shown that, in general, partisan ideology doesn't seem to play a central role in monetary policy decisions. This result is similar those found, for instance, by Berger and Woitek (1997), Serletis and Afxentiou (1998), Faust and Irons (1999), Boix (2000), Cusack (2001), Clark (2003), Tempelman (2007). On the hand. Alesina, Roubini and Cohen (1997), Bearce (2003), Mukherjee and Singer (2008), Sakamoto (2008), Belke and Potrafke (2012), found opposite results.

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Appendix

Table 1A
Panel Unit Roots Tests

Variables	Method	Statistic	Prob.	Non-Stationary or Stationary
Interest Rate	Levin, Lin and Chu	-36.518	0.000	Stationary
	Im, Pesaran and Shin W-stat	-9.992	0.000	Stationary
	ADF - Fisher Chi-square	239.874	0.000	Stationary
	PP - Fisher Chi-square	273.342	0.000	Stationary
Inflation	Levin, Lin and Chu	-12.467	0.000	Stationary
	Im, Pesaran and Shin W-stat	-7.959	0.000	Stationary
	ADF - Fisher Chi-square	276.266	0.000	Stationary
	PP - Fisher Chi-square	473.382	0.000	Stationary
Exchange Rate	Levin, Lin and Chu	-6.944	0.000	Stationary
	Im, Pesaran and Shin W-stat	-6.846	0.000	Stationary
	ADF - Fisher Chi-square	242.925	0.000	Stationary
	PP - Fisher Chi-square	218.906	0.000	Stationary
GDP GAP	Levin, Lin and Chu	-6.361	0.000	Stationary
	Im, Pesaran and Shin W-stat	-4.737	0.000	Stationary
	ADF - Fisher Chi-square	192.215	0.000	Stationary
	PP - Fisher Chi-square	172.158	0.001	Stationary

Notes: Probabilities for Fisher tests computed using an asymptotic Chi-square distribution. All other tests assume asymptotic normality. Im, Pesaran and Shin; ADF - Fisher and PP - Fisher - Null Hypothesis: Unit Root (Individual Unit Root process). Levin, Lin and Chu Test - Null Hypothesis: Unit Root (Common Unit Root process).
Newey-West automatic bandwidth selection and Bartlett kernel.