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Togay, Selahattin and Nezir Köse

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Money Price Relationship under the Currency Board System: The Case of Argentina

Selahattin Togay
Department of Economics, Faculty of Administrative Sciences
Gazi University 06500 Besevler, Ankara TURKEY

Nezir Kose[1]
Department of Econometrics, Faculty of Administrative Sciences
Gazi University 06500 Besevler, Ankara TURKEY

Abstract. In this study, the endogenous money hypothesis is examined for the Argentinean economy employing exogeneity tests by using monthly data for the time period 1991-2001 within the frame of money and price relationship in a Currency Board-like system. Empirical results support the hypothesis which suggests that money supply is endogenous.

Keywords: Currency Board, Argentina, Money Supply Endogeneity, Exogeneity Test.
JEL Classification: C12, C22, E51, E58

1. Introduction

Currency Board system is a particular state of fixed exchange rate regime. According to this, money supply becomes endogenous when the national currency is convertible and central bank doesn't make sterilizing interventions in an economy in which fixed exchange rate system is implemented. Hence money supply is determined by the supply-demand conditions in the foreign currency market (Hanke, 2005). The quantity theory is typically used as a starting point for analyzing the long-term relationship between the money stock and prices. Central to most thinking about monetary theory and monetary policy is a version of the quantity theory of money. According to monetarists, the money multiplier is stable. As a natural result of this, the central bank can control money supply by controlling the monetary base. Thus, for monetarists, both the monetary base and the money supply are exogenous. The reason of increases in general price levels is the increases in money supply. Therefore, inflation is always and a monetary phenomenon in every place. Two fundamental emphases are very important in analysis of Post-Keynesian economists who claim that inflation is not a monetary phenomenon. The first one is the price setter behaviour of economic units in goods and labour markets. The second one is the role that commercial and the central banks play in meeting the credit demands of economic units. These two entities reverse the causal

[1] Corresponding author. e-mail: nezir@gazi.edu.tr

relationship between monetary aggregates and general price levels. And not only the money supply but also the monetary base becomes endogenous (Moore, 1998).

Which one is the endogenous, the money supply or general level of prices, is a continuous debate in the literature. While there are studies that investigate the relationship between monetary aggregates and general level of prices in accordance with the main idea of quantity theory, there are studies that investigate this relationship within the framework of fundamental evidences of Post-Keynesian money theory. For example, Belrs and Jones (1993) investigated money price relationship in accordance with the main idea of quantity theory for Algeria; Pradhan and Subramanian (1998) for India, Sun and Ma (2004) for Chinese economy; Pinga and Nelson (2001) for 26 countries. Vymyatnina (2006), however, investigated money price relationship in accordance with the means of Post Keynesian Theory evidences for Russia. To our knowledge, despite the fact that this is emphasized theoretically; the endogeneity of the money supply has never been examined for any of the Currency Board implementations.

This study analyzes the issue of money supply for Argentinean Currency Board implementation in the context of the relationship between monetary aggregates (monetary base, M1 and M2) and general price levels. This paper aims to contribute to the literature in the following ways: (1) The exogenous/endogenous nature of money supply is analyzed empirically for the first time for a country that implements Currency Board system. (2) This analysis is performed for Argentina as Argentinean Currency Board implementation has a very significant difference from the other Currency Board implementations (Hong-Kong (1983), Estonia (1992), Lithuania (1994) Bulgaria (1997), Bosnia Herzegovina (1997)). Even though the other Currency Board implementations still continue, Argentinean Currency Board implementation that had started in April-1991 period ended in December-2001. Considered from this point of view, the data set regarding Argentinean Currency Board contains not only information about transition to Currency Board system and functioning process of the system but also the information concerning the termination of the Currency Board system. Argentinean Currency Board implementation has become a historical example for Currency Board discussions. (3) The endogenous nature of money supply in orthodox Currency Board implementation is emphasized theoretically. However, none of the modern Currency Board implementations has the characteristics of Orthodox Currency Board (Salater, 2004). For this reason, empirical testing that examines whether the money supply in Orthodox Currency Board system is endogenous or not, is not possible for modern Currency Board implementations. It is seen that one third of the assets of the Argentinean central bank

(BCRA) consist of domestic assets and BCRA has made sterilizing interventions (Hanke, 2002). In other words, BCRA has implemented an active monetary policy. However, the monetary policy is in a passive state in Orthodox Currency Board system. For this reason Argentinean Currency Board implementation is not an Orthodox Currency Board implementation either. It is a Currency Board-like system. Considered in this framework, an answer is sought in this study to the question that “does the money supply become endogenous in a Currency Board-like system in which the currency is convertible and the central bank makes sterilizing interventions?” (4) The concept of exogeneity has been one of the important research areas in econometrics. Engle, Hendry, and Richard (1983, here after EHR) consider three definitions for exogeneity as weak, strong, and super. In many empirical studies, causality through the error correction term is used as a test for weak exogeneity since it shows how the short-run coefficients of the variables adjust towards their long-run equilibrium values (Engle and Granger, 1987). Unlike weak exogeneity, Granger causality does not involve parameters of interest and, thus it is not related to their estimation. Indeed, Granger non-causality is neither necessary nor sufficient for weak exogeneity. Granger non-causality in combination with weak exogeneity, however, defined strong exogeneity (Ericsson et.al., 1998). Therefore, the existing causality studies do not make a clear distinction between exogeneity and causality. Thus, the presence of causal relationship from price to money supply, in Granger sense, is neither a necessary nor a sufficient condition for testing of the endogenous money hypothesis. In this paper, the endogenous money hypothesis is tested by using formal exogeneity tests under a framework proposed by EHR. This paper is a first attempt to apply the EHR framework to examine empirically the endogenous money assumption by Johansen (1992) procedure. Then the alternative tests for weak and super exogeneity have also been carried out using Engle-Hendry (1993) procedure since we got robust results.

The plan of the paper is as follows. Section 2 discusses the econometric methodology to test the endogenous money supply hypothesis. Section 3 reviews the data. Section 4 presents the test results and some concluding remarks are given in Section 5.

2. Econometric Methodology

Engle, Hendry, and Richard (1983) consider three definitions for exogeneity as weak, strong, and super. The joint distribution of m_t and p_t can be written as

$$f(m_t, \mathrm{p_t}) = f(m_t \mid \mathrm{p}_t)\ f(\mathrm{p_t}) \tag{1}$$

where $f(m_t \mid p_t)$ is conditional distribution of m_t given p_t and $f(p_t)$ is the marginal distribution of p_t. According to Engle, Hendry, and Richard, a variable p_t is said to be weakly exogenous for estimating a vector of parameter of interest, λ, if inference on λ conditional on p_t involves no loss information. If conditional distribution $f(m_t \mid \mathrm{p_t})$ involves the parameter λ, weak exogeneity implies that the marginal density $f(p_t)$ does not include the parameter λ. In other words, if there are no cross-restrictions between the parameters of the marginal and conditional distributions, $\mathrm{p_t}$ becomes weakly endogenous. Weak exogeneity is a necessary condition to have strong and super exogeneity. In addition, each of them requires an extra condition. In particular, strong exogeneity requires that $\mathrm{m_t}$ is not a Granger cause for p_t. For super exogeneity, λ is invariant to changes in the marginal distribution of p_t.

Weak exogeneity test was conducted by being used the framework proposed in Johansen and Juselius (1992). In a VAR model explaining two variables such as p_t and m_t, there can be at most one cointegrating vector. If there is one cointegrating vector, we estimate the following system by using the lagged residuals from the cointegrating vector.

$$\Delta m_t = \alpha_1(m_{t-1} - \theta_0 - \theta_1 p_{t-1}) + f(\Delta m_{t-i}, \Delta p_{t-i}) + \varepsilon_{1t} \tag{2}$$

$$\Delta p_t = \alpha_2(m_{t-1} - \theta_0 - \theta_1 p_{t-1}) + f(\Delta m_{t-i}, \Delta p_{t-i}) + \varepsilon_{2t} \tag{3}$$

where Δ is the first order difference operator. If α_1 is nonzero and α_2 is zero in the above system, it can be concluded that m_t does not contribute to the explanation of the parameters of the equation for p_t. Therefore p_t can be treated as an exogenous variable since m_t does not affect its value. Following Johansen and Juselius (1992), tests for weak exogeneity in a cointegrated system exclusively focus on the error correction coefficients in equations (2) and (3). Price level will be weakly exogenous in the money supply equation, when the error correction coefficient is significantly different from zero in equation (2) $\{\alpha_1 \neq 0\}$, but insignificantly different from zero in equation (3) $\{\alpha_2 = 0\}$. This is known as the weak exogeneity test. However, if p_t is weakly exogenous and there is Granger non-causality from m_t to p_t, then p_t is said to be strongly exogenous.

If p_t is weak and strong exogenous, the above system can be transformed as follows:

$$\Delta m_t = \alpha_1(m_{t-1} - \theta_0 - \theta_1 p_{t-1}) + f(\Delta m_{t-i}, \Delta p_{t-i}) + \varepsilon_{1t} \tag{4}$$

$$\Delta p_t = f(\Delta p_{t-i}) + \varepsilon_{2t} \tag{5}$$

Equation (4) is the conditional process of m_t given p_t; Equation (5) is the marginal process for p_t. If there is a structural break in the conditional model, it should correspond to a structural break in the marginal model. If there are some structural breaks, it means that the parameters of the processes are not constant within the sample. If the structural breaks for the conditional and marginal processes coincide in time, that is they appear for the same time period, it is likely that the structural break in the conditional model has been caused by variability in the parameters of the marginal model. If this is the case, the hypothesis of structural invariance (hypothesis of super exogeneity) can be rejected (Charemza and Deadman, 2003:239). Both the marginal process for p_t and the conditional process are re-estimated by recursive least square and the one-step recursive residuals for each process are calculated. If the structural breaks in the residuals of marginal process do not coincide with breaks in the conditional process, p_t should be accepted as super exogenous in this model.

The most usual way of checking the structural invariance of the parameters of a conditional model is to verify the significance of the squares of the residuals estimated in the marginal model within the model itself. This type of test was proposed by Engle and Hendry (1993). Their procedure can be used to test the joint hypothesis of weak and super exogeneity. In this approach, to test the weak exogeneity of p_t, the conditional model for m_t augment with $\hat{\eta}_t$ that are residuals from obtained marginal process for p_t as an additional regressor and test for the coefficient of $\hat{\eta}_t$ statistical significance. To test for super exogeneity of p_t, Engle and Hendry suggest adding $\hat{\eta}_t$ and $\hat{\eta}_t^2$ to the conditional model for m_t and test their joint significance. In these cases, a significant test value indicates a rejection of the exogeneity assumptions.

3. Data

The principal purpose of the analysis is to test the endogenous money hypothesis by using monthly Argentina data under the currency board program for the time period April.1991-December.2001. Producer price index is used as aggregate price variable. We use three different measures for money variable which are M1, M2, and reserve money (RM). The list of the variables used in this study will be as follows:

LPPI : Log of producer price index (1995=100)

LM1: Log of M1 (Million Peso)

LM2: Log of M2 (Million Peso)

LRM: Log of reserve money (Million Peso)

The data set is obtained from “International Financial Statistics” CD-ROM produced by the IMF. Figure 1 shows a time plot of the data set over the sample period that appears to have an upward trend with a non-deterministic structure. Moreover, all variables include structural breaks in 1995 and/or 2001.

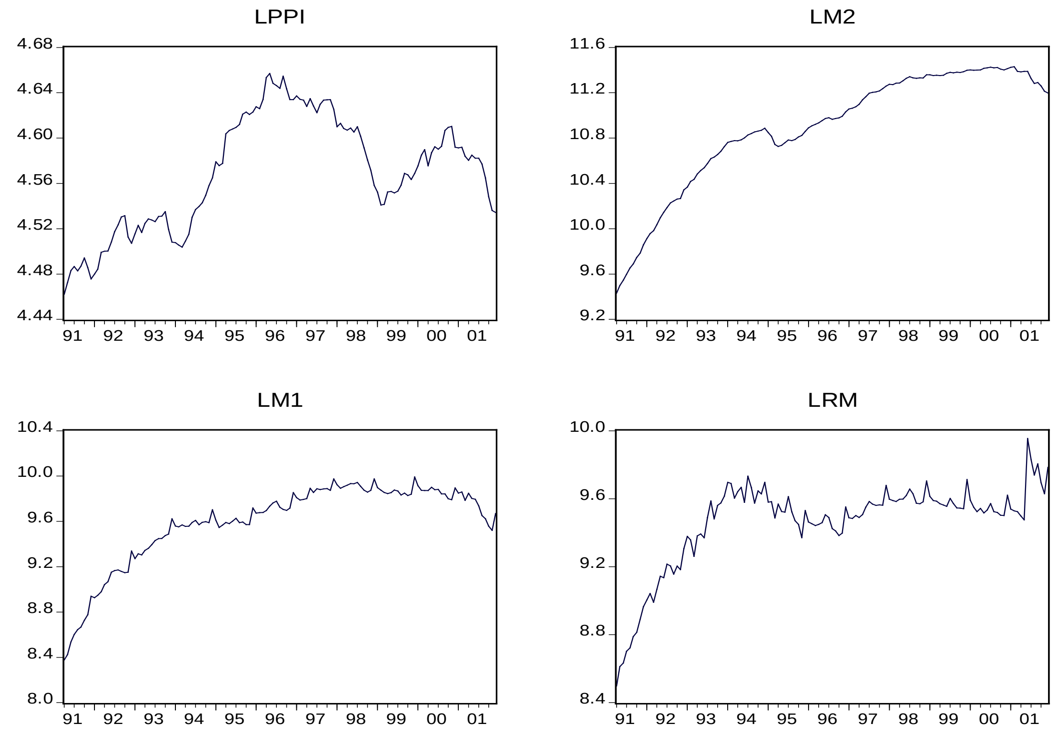

Figure 1: Time Plot of the Data Set

4. Empirical Results

In the first step, all the series were tested for the unit roots. Perron (1989) showed that the test of power reduces when the Augmented Dickey Fuller (1981, ADF) unit root test is used in the presence of a structural break. To solve this problem, Perron (1989) proposed including dummy variables that allow for one known, or exogenous, structural break unit root test. More recently, Zivot-Andrews (1992), Perron (1997), and others, proposed unit root tests that allow for a structural break to be determined endogenously from the data. In order to check whether a unit root is present in the data or not, we used Perron (1997) test because of structural breaks in our series. Perron (1989) defined three types of models for one-time break in the trend function (Model A, Model B, Model C). Model A allows for a one-time change in the intercept of the trend function. It is known as the “Crash Model”. Model B allows only a change in the slope of the trend function at the time of the break. Model C includes a one-time change in both level and trend. As suggested in Fig.1, there is only a change in the slope of the trend function after 1998 for LM1 series. However, there is a change in both level and trend for other series. Therefore, we use Model B for LM1 and Model C for the other series. The results for the Perron (1997) unit root test are reported in Table 1. The unit root null hypothesis cannot be rejected for all variables at 5% significance level. These results indicate that all series are difference-stationary processes.

Table 1
The Results of Perron (1997) Unit Root Test

Series	Estimated Break Point: T_B	Model	Lag	t-Statistic	Methods	Critical Value at 5%
LPPI	1995:02	C	1	-3.3266	Min t_{α}	-5.08
	1995:01	C	3	-3.0474	Max $t_{\hat{\alpha},\hat{\theta}}$	-4.91
LM1	1998:02	B	6	-3.1267	Min t_{α}	-4.36
	1998:12	B	6	-2.0205	Max $t_{\hat{\alpha},\hat{\theta}}$	-4.34
LM2	2000:07	C	1	-3.3887	Min t_{α}	-5.08
	1995:03	C	0	-3.6086	Max $t_{\hat{\alpha},\hat{\theta}}$	-4.91
LRM	2001:03	C	5	-4.3088	Min t_{α}	-5.08
	2001:04	C	6	-4.2700	Max $t_{\hat{\alpha},\hat{\theta}}$	-4.91

* The appropriate lag length is determined through general to specific testing which is suggested by Perron (1989).

The next step is to perform the cointegration test between money (LM1, LM2 or LRM) and price (LPPI). Since the trace statistic and the maximum eigenvalue statistic may yield conflicting results, we use both the trace and maximum eigenvalue type cointegration tests of Johansen and Juselius (1990). The number of cointegrating rank in a VAR requires the investigator to perform a sequence of cointegration test. As shown in Johansen (1992), this type of procedure assumes that the correct lag length of the VAR process is known. Thus, the asymptotic theory for the determination of cointegration rank is valid when the true lag order is a priori known. It is well known that the results of cointegration tests using this technique depend on the deterministic components included in the VAR and on the chosen lag length. The appropriate lag length is selected by using two types of information criteria (Schwarz and Hannan-Quinn). When the two selection criteria determine different lag order, Modified-Wald test, developed by Toda and Yamamoto (1995), is performed to eliminate lags from a general to a more specific model. In order to estimate the number of cointegrating equations, we supposed that level data have linear trends but the cointegrating equations have only intercept terms since all series are difference-stationary processes. This corresponds to Johansen's "case 3", that of an "unrestricted constant". The results of the cointegration test are presented in Table 2. The trace and maximum eigenvalue test statistics indicate that there is one cointegrating equation at the 5% significance level for the bivariate models.

Table 2
Johansen's Cointegration Tests

Variables included in VAR	The number of cointegrating relations	Trace statistic	Max-Eigen statistic
Model 1 LPPI, LM1	None	34.29 (0.0000)	31.50 (0.0000)
	At most 1	2.79 (0.0947)	2.79 (0.0947)
Model 2 LPPI, LM2	None	26.90 (0.0006)	25.04 (0.0007)
	At most 1	1.86 (0.1731)	1.86 (0.1731)
Model 3 LPPI, LRM	None	18.21 (0.0190)	15.99 (0.0264)
	At most 1	2.23 (0.1358)	2.23 (0.1358)

1. Values in parentheses are MacKinnon-Haug-Michelis (1999) p-values
2. Maximum lag length is selected as 12. The order of the Model 1 and Model 2 is estimated as 2 using Schwarz and Hannan-Quinn information criteria. For the Model 3, the two selection criteria were determined different lag order as 1 and 2, respectively. Modified-Wald test developed by Toda and Yamamoto (1995) was performed to eliminate lags, and the appropriate lag length is estimated as 2.

Table 3 shows the results of the weak exogeneity tests for the cointegrating vector while the cointegrating rank is one. The Likelihood Ratio (LR) test statistics for zero restrictions on adjustment coefficients show that the error correction coefficient enters significantly in the money equation of the vector error correction model, but insignificantly in the price equation of the vector error correction model. The results show that price is weakly exogenous for the parameters of interest in the conditional models for money variables.

Next, the Granger causality test based on vector error correction models is conducted to check for the existence (or absence) of a causal relationship between money variables (M1, M2 and RM) and price. The existence of a cointegrating relationship among variables suggests that there must be Granger causality in at least one direction, but it does not indicate the direction of short run (temporal) causality between the variables (Granger, 1988). Hence, in the presence of cointegration, Granger noncausality hypothesis must be tested within the error correction model to examine the short run and the long run Granger causality. Such tests are carried out on stationary time series to guarantee that inferences made from the tests are valid (Engle and Granger, 1987). A variable is weakly exogenous through the error correction term. The definitions developed by Engle, Hendry, and Richard (1983) can be used to determine whether a variable is strongly exogenous (Charemza and Deadman, 2003). Therefore, if a variable is weakly exogenous through the error correction term and the lagged values are also jointly significant, then the variable is said to be strongly exogenous.

Table 3
Results of Weak Exogeneity Test

Null Hypothesis	Test Statistic (Chi-square)	P-Value
$LPPI_t$ is weakly exogenous for the parameter of interest of the $LM1_t$ conditional model	0.04	0.8403
$LM1_t$ is weakly exogenous for the parameter of interest of the $LPPI_t$ conditional model	28.70*	0.0000
$LPPI_t$ is weakly exogenous for the parameter of interest of the $LM2_t$ conditional model	1.43	0.2318
$LM2_t$ is weakly exogenous for the parameter of interest of the $LPPI_t$ conditional model	22.09*	0.0000
$LPPI_t$ is weakly exogenous for the parameter of interest of the LRM_t conditional model	1.20	0.2724
LRM_t is weakly exogenous for the parameter of interest of the $LPPI_t$ conditional model	12.18*	0.0005

*Statistically significant at the 1% level

Recalling the exogeneity concepts discussed earlier, weak exogeneity is a necessary condition for a variable to be strongly exogenous. The LR test shows that price is weakly exogenous for the parameters of interest in the conditional models for money variables. This implies that money variables are not Granger cause price (but not vice versa) in the long-run. In addition, if the coefficients of lagged money variables in the price equation of the vector error correction model are not significantly different from zero, money variables are not Granger cause price in the short-run. The results in Table 4 indicate that money variables are not Granger-cause price in the short run at the conventional level of significance. Therefore, we conclude that the price variable is strongly exogenous.

Table 4
Results of Short-Run Granger Causality Test

Null Hypothesis	Test Statistic (Chi-square)	P-Value
ΔLM1 does not Granger Cause ΔLPPI	2.49	0.1144
ΔLM2 does not Granger Cause ΔLPPI	0.04	0.8361
ΔLRM does not Granger Cause ΔLPPI	0.0009	0.9755

Δ is the first order difference operator.

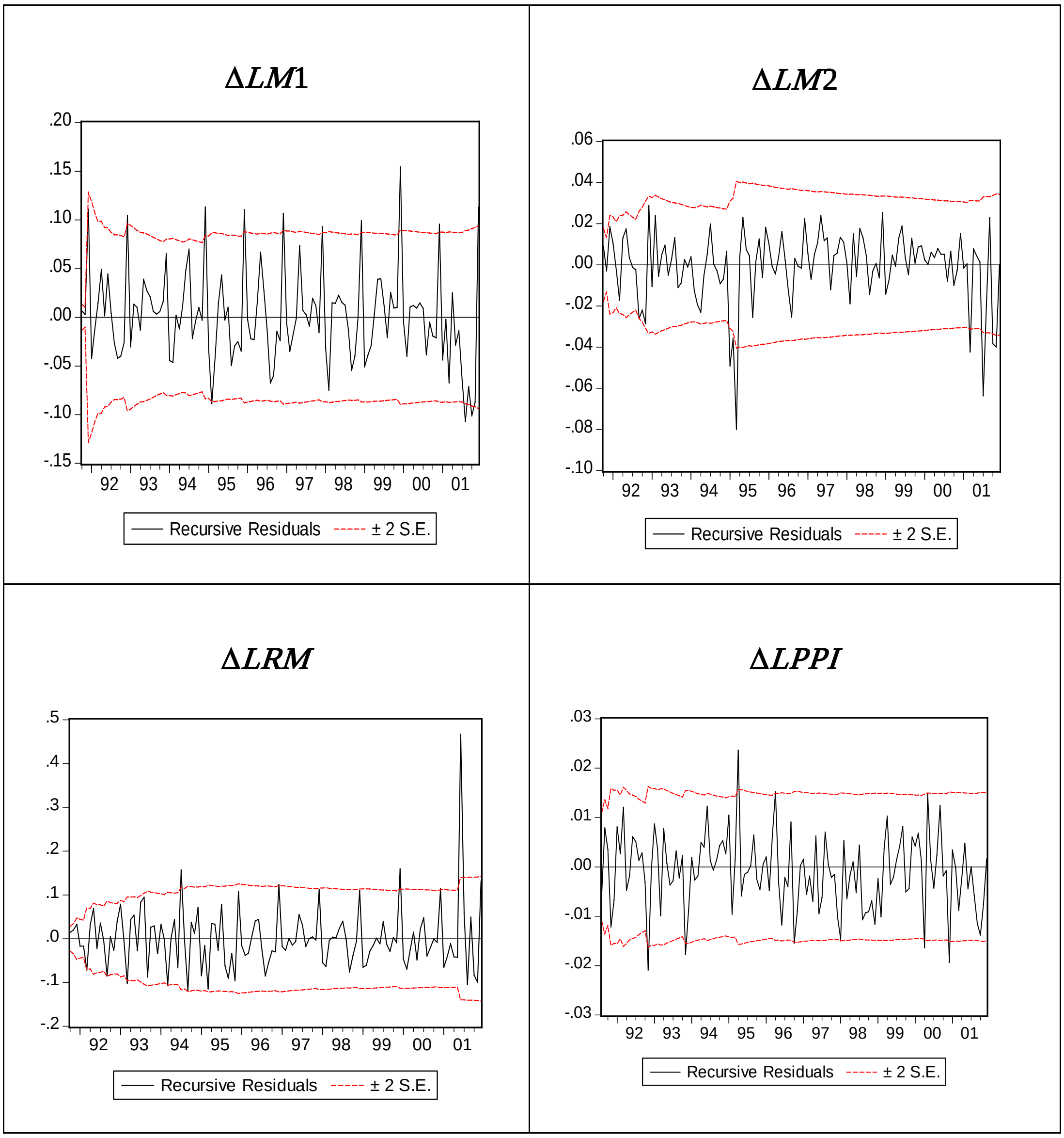

Figure 2 : One-Step Recursive Residuals

According to our empirical results obtained from the weak and strong exogeneity tests, the conditional processes for money ($\Delta \text{LM1}, \Delta \text{LM2}, \text{and } \Delta \text{LRM}$) and the marginal process for price can be written as follows:

$$\Delta m_t = \lambda_0 + \alpha_1 \left(m_{t-1} - \theta_0 - \theta_1 p_{t-1} \right) + \beta_1 \Delta m_{t-1} + \beta_2 \Delta p_{t-1} + \varepsilon_{1t} \quad (6)$$

$$\Delta p_t = \lambda_1 + \tilde{\beta}_1 \Delta p_{t-1} + \varepsilon_{2t} \quad (7)$$

where m_t and p_t stand for log of money variables and log of producer price index, respectively. Both the marginal process for inflation (Δp_t) and the conditional processes (θ_0 *and* θ_1, normalized cointegrating coefficients, were estimated) were re-estimated by recursive least square and the one-step recursive residuals for each process were calculated. Figure 2 is the graph of these residuals.

If the structural breaks in the marginal process do not coincide with breaks in the conditional models for $\Delta LM1_t$, $\Delta LM2_t$, and ΔLRM_t variables, $\Delta \mathrm{LPPI}_t$ is said to be super exogenous. The structural breaks of the conditional models appear in almost same dates with the breaks in the marginal process. Therefore, we can say that $\Delta \mathrm{LPPI}_t$ is not super exogenous in the conditional models with respect to the graphs of one-step recursive residuals.

Another test for super exogeneity has also been carried out using Engle and Hendry (1993) procedure since we got robust results. Since the empirical results which are obtained from their procedure produce a great number of tables, they are presented only for M2[2].

The specification of conditional process for money growth ($\Delta \mathrm{LM2}$) is based on error correction model that includes dummy variable for structural changes. These dummy variables are defined as D95 and D01[3]. Since money variable is not the Granger cause of inflation, the regression model for marginal process is specified as a simple autoregressive model with additional dummy variables.

The estimated equations for money growth and inflation are given in Table 5 and Table 6, respectively. The diagnostic tests that are reported in these tables are the Godfrey LM test for first- and second order serial correlation (Serial [1] and Serial [2]), the Engle test for first- and second order autoregressive conditional heteroscedasticity (ARCH[1] and ARCH[2]), the White test for heteroscedasticity (WHITE), the Jarque-Bera test for normality (J-B), and the Ramsey test for model misspecification (RESET). While the results of the diagnostic tests for the marginal equation indicate that the model is adequacy, we have seen that the White's test and the Engle test for first- and second order autoregressive conditional heteroscedasticity in the conditional model reject homoscedasticity at the conventional level of significance. Engle-Hendry super exogeneity test is valid in the case of homoscedastic error. Therefore, for super exogeneity test of inflation, we add lagged values of $\hat{\eta}_t^2$ to the conditional model and test of joint significance of the regression coefficients for $\hat{\eta}_t$, $\hat{\eta}_t^2$ and lagged values of $\hat{\eta}_t^2$.

2 Similar results for weak exogeneity tests have been also observed for M1 and RM. However, the empirical results suggest that the inflation is super exogenous in the money growth equation for M1 and RM. Detailed results are available upon request from the authors.

[3] D95=1 for Jan., Feb., March and April in 1995 and D95=0 if otherwise,
D01=1 for months between March and December in 2001 and D01=0 if otherwise

Table 5
The Money Growth Equation (Conditional Process)

Estimated Equation:

$$\Delta LM2_t = 0.017 - 0.057D95 - 0.029D01 - 0.029(LM2_{t-1} - 0.819LPPI_{t-1} - 7.153)$$
$$(7.731)^a \quad (-4.990)^a \quad (-3.299)^a \quad (-6.894)^a$$
$$+ 0.030\Delta LM2_{t-1} - 0.372\Delta LPPI_{t-1}$$
$$(0.323) \qquad (-2.009)^b$$

R^2 = 0.686; F(5,127) = 53.034
Serial [1] F(1,120) = 0.001; Serial [2] F(2,119) = 0.647
RESET [1] F(1,120) = 1.628; RESET [2] F(2,119) = 2.330
ARCH[1] $\chi_1^2 = 12.59$; ARCH[2] $\chi_2^2 = 16.42$
WHITE $\chi_8^2 = 45.275$; Jarque-Bera $\chi_2^2 = 0.988$

Values in parentheses are t-statistics
a. Statistically significant at the 1% level
b. Statistically significant at the 5% level

Table 6
The Inflation Equation (Marginal Process)

Estimated Equation:

$$\Delta LPPI_t = 0.0004 + 0.008D95 - 0.004D01 + 0.242\Delta LPPI_{t-1}$$
$$(0.688) \quad (2.157)^b \quad (-1.975)^b \quad (2.853)^b$$

R^2 = 0.151; F(3,127) = 7.311;
Serial [1] F(1,122) = 1.887; Serial [2] F(2,121) = 2.017
RESET [1] F(1,122) = 2.362; RESET [2] F(2,121) = 1.758
ARCH[1] $\chi_1^2 = 0.67$; ARCH[2] $\chi_2^2 = 0.97$
WHITE $\chi_4^2 = 7.223$; Jarque-Bera $\chi_2^2 = 2.184$

Values in parentheses are t-statistics
b. Statistically significant at the 5% level

Table.7 summarizes the results of the weak and super exogeneity tests. When the residuals obtained from the inflation equation were added to the money growth equation, the coefficient of $\hat{\eta}_t$ is not statistically significant at the conventional level. This result shows that the inflation is weakly exogenous in the money growth equation. The appropriate lag length for $\hat{\eta}_t^2$ is determined as 13 using Akaike Information Criteria. At 5% level, we find that the hypothesis of super exogeneity of inflation can be rejected. This result suggests that the inflation is not super exogenous in the money growth equation.

Table 7
Results of Weak and Super Exogeneity Tests

Null Hypothesis	Lag	Akaike Information Criteria	F-Statistic
Inflation is weakly exogenous	-	-5.6494	0.2376
Inflation is super exogenous	0	-5.6337	0.1188
	1	-5.6280	0.7753
	2	-5.6038	0.6233
	3	-5.5788	0.5023
	4	-5.5828	0.5083
	5	-5.5582	0.4336
	6	-5.5383	0.4392
	7	-5.5401	0.6112
	8	-5.5271	0.6843
	9	-5.5818	1.2765
	10	-5.5995	1.7989[b]
	11	-5.5929	1.8137[b]
	12	-5.6350	2.0174[a]
	13	***-5.7161***	***2.5047[a]***

a. Statistically significant at the 5% level
b. Statistically significant at the 10% level

5. Conclusion

Currency regime which was applied during the period of April-1991 – December-2001 in Argentina can be called a currency board-like system. The exogenous/endogenous nature of Argentina's money supply for the period 1991-2001, when the currency board system was implemented, has been tested by formal exogeneity tests under a framework proposed by EHR using three monetary aggregates. The empirical results of exogeneity tests indicate that monetary base; M1 money supply and M2 money supply are endogenous with respect to general price level. The evidences that are obtained from our empirical results support the following inferences: (1) The attempt of central bank in a currency board-like system to implement an active policy by controlling monetary aggregates does not yield effective results. Therefore the monetary aggregates cannot be used as a policy tool in an economy where the money supply has become endogenous. (2) For this reason, the best solution for a country transiting to currency board system is to direct towards an orthodox currency board system since the money supply also becomes endogenous in currency board-like system.

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