Abstract

In this paper we investigate the failure to reduce inflation persistence via the implementation of systematic countercyclical monetary policy. Our test case is Argentina's policy and inflation outcomes during the 1966 to 1999 period. Using an adaptive learning framework, we develop a model that uses a real contracting rigidity in conjunction with an interest rate rule and an IS curve. The model equilibrium indicates that only an aggressive anti-inflation policy enables agents to learn the REE inflation forecast. The model also shows that inflation persistence has a negative relation with policy aggressiveness. The empirical implications of our model are that monetary policy was more aggressive and inflation less persistent during the convertibility period of the 1990s (as opposed to other periods and policy regimes). We also find that, for the period of analysis, there is no domestic institutionalized mechanism to conduct countercyclial monetary policy, particularly when it comes to preventing inflationary spirals.

Barriers to Countercyclical Policy Implementation: Inflation Dynamics in Argentina*

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1 Introduction

Price stability is profoundly linked to social and political stability. Perhaps no country better illustrates this relation than Argentina in the second half of the twentieth century, with Argentine citizens experiencing price instability and the ensuing social explosion and political chaos at seemingly almost regular intervals. While some observers had hoped this cyclical experience was a thing of the past following ten years (1991-2001) of relative price, social, and political stability, in 2002 Argentine citizens found themselves once again returning to habits of the past (waiting in exchange house lines, hoarding dollars, spending pesos rapidly) in the face of renewed price instability (as well as substantial political and social chaos).

At its core, Argentina's inflationary experience is a product of fiscal and monetary policy mistakes. While policy errors are made in every country and in any era, what is noteworthy is the character and consistency of policy errors in Argentina. Throughout this period, like many countries that experienced long periods of inflation, stagflation, and hyperinflation—Argentine authorities failed to aggressively counteract price surges. An aggressive anti-inflation policy stance consists of (among other things) a willingness to

respond forcefully to deviations from a pre-specified inflation target.[1]

Using the adaptive learning framework that is central to contemporary macroeconomics, we show that an aggressive price stabilizing policy helps economic agents to achieve rational expectations equilibrium (REE) forecasts of inflation. In using policy to assist agents in achieving REE forecasts, policymakers also reduce inflation persistence. While our focus is on effect of agent expectations on inflation dynamics, this framework is applicable to numerous policy settings. For example, models that include agent expectations figure prominently in questions of policy effectiveness such as fiscal, monetary, and exchange rate policy (Persson and Tabellini 2000).

The failure to engage in aggressive price stabilizing policy practices is influenced by political and institutional factors (Jones, Sanguinetti and Tommasi 2000; Tommasi and Spiller 2000; Haggard and McCubbins 2001), but we argue that a focus on the aggressive implementation of price stabilizing monetary policy is central to any investigation of inflation. These erroneous Argentine policy practices continue today, as is evidenced by the country's current economic crisis. While we recognize that many of the roots of Ar-

[1]Price stabilizing policy aggressiveness can also be defined as a policy of high short-term real interest rates or a ratio of short-term interest rates to inflation that exceeds unity (Granato 1996).

gentine problems are fiscal (Mussa 2002), given space limitations we narrow our focus to monetary policy, since inflation is our concern, and since monetary policy reflects fiscal mistakes. Nevertheless, in our discussion of the empirical results we link fiscal policy to monetary policy (see Section 6).

Section 2 reviews Argentine political history to establish the setting for our investigation. Section 3 presents a model of inflation and how it can be influenced by policy. Section 4 explains the rational expectations equilibrium and how an aggressive price stabilizing policy influences inflation persistence. Section 5 reports the empirical estimation of the model, and Section 6 provides a narrative of the policy errors and the empirical results. Section 7 concludes.

2 Argentine Regimes and Politics in the Post World War II Era

Critical to implementing and maintaining a systematic countercyclical policy tack is regime stability. It is difficult for a specific policy to be maintained when the institution charged with implementing it (i.e., the government) is constantly changing in a dramatic and unpredictable manner.

Politics in Argentina during the latter half of the twentieth century is often described as a pendulum, swinging from democracy to dictatorship and back. Integral to this pendular process was the presence and actions of Juan Domingo Perón. Perón's first presidency, 1946-55, saw dramatic changes in Argentine politics and society: the working class was fully incorporated into the economic and political system, Import Substitution Industrialization (ISI) was deepened and extended, and the government adopted a much more active role in the management of the economy than had hitherto been the case (Waisman 1987; Cortés Conde 1998). Perón was overthrown in a military coup in 1955, and would not return to office until 1973. However in the intervening 18 years he continued to exercise a tremendous amount of influence over politics in Argentina (Lewis 1990).

Following Perón's overthrow, the military governed briefly with the goal of handing power back to non-Peronist politicians: a task accomplished in 1958 when Arturo Frondizi of the Unión Cívica Radical Intransigente (UCRI) assumed the presidency. Frondizi's government lasted only until 1962 when he was removed by the military because of his increasing ties to the Peronists. Frondizi was replaced by José María Guido, who served out the remainder of his term. New presidential elections were held in 1964, with Arturo Illia of

the Unión Cívica Radical del Pueblo (UCRP) elected president. Illia would however only serve two years, being overthrown in 1966 by a military coup.

Whereas previous military interventions in politics had always been designed to remove an undesirable (from the standpoint of the military) president with the intention of returning the government to civilian rule, that of 1966 was a new development. The majority opinion of the military at this point in time was that the problems facing Argentina could not be resolved by the current civilian politicians. Their solution was to have a military government that planned to be in power for a substantial period of time (Rock 1987; Lewis 1990).

Unfortunately for the military, the growing economic and particularly social chaos (including armed attacks, bombings, kidnappings, and political assassinations) proved to be beyond their capacity to manage by the early 1970s, and they were forced to allow new free and fair elections in 1973. These were won by the Peronist candidate Hector Cámpora, after which Perón himself was allowed to return to Argentina and compete in new elections (following the planned resignation of Cámpora), which Perón handily won in September of 1973.

The chaos that Perón had sown to pressure the military to allow his re-

turn (as the only one capable of ending it) proved to be more difficult to manage than he had imagined, and in any event his health rapidly deteriorated during the first half of 1974, resulting in his death in July of that year. Perón was replaced by his vice-president (and third wife), Isabel Martínez de Perón. Under her government the social and political chaos worsened, with her government incapable of resolving most issues as well as plagued by growing factionalism. The military waited until the political, economic, and social situation had deteriorated to such a point that their coup in March of 1976 met with only minimal opposition (Rock 1987; Lewis 1990).

The military government that assumed power in March of 1976 was wholly convinced that the country's civilian political class was incapable of adequately governing the country. The name adopted by the military government (The Process of National Reorganization, or El Proceso) signified its desire to completely remake Argentine politics and society, a task that would require the military be in power for an indeterminate amount of time (Rock 1987; Lewis 1990).

Yet, six years later, the military government's disastrous defeat at the hands of the British in the 1982 Falklands (Malvinas) War and mismanagement of the economy (not to mention growing public consciousness of the

military government's brutality and murder of its own citizens) resulted in the return of democratic government in late 1983 with the election of President Raúl Alfonsín of the Unión Cívica Radical (UCR).

By the latter third of his six year term (1983-89) Alfonsín was confronted by growing economic difficulties (particularly hyperinflation). These problems contributed to electoral difficulties for the UCR, which lost the 1989 presidential election to the Partido Justicialista's (PJ, the Peronist Party) Carlos Menem, with Alfonsín resigning five months prior the constitutionally mandated transfer date. Once in office, Menem soon began a dramatic neoliberal reform program that, at least in the beginning, was quite successful. Central to Menem's reform program was the 1991 Convertibility Plan. This anti-inflationary policy fixed the Argentine peso at par with the United States dollar and had much to do with the end of hyperinflation.

Menem's first term, however, was much more successful than his second, which ended with the country immersed in a two year recession and beginning to suffer the consequences of an unsustainable debt burden. Menem was replaced by Fernando de la Rúa (UCR-Frepaso Alliance) who was elected in late 1999. De la Rúa would remain in power for two years until resigning in the face of massive public protests in late 2001.

As the country began an economic and social meltdown, De la Rúa was replaced by a succession of presidents until the election (by a legislative assembly) of Eduardo Duhalde (PJ) on January 1, 2002 to serve the remaining two years of De la Rúa's term. In sum, after the relative political stability of the 1990s, by 2002 at least two factors which many Argentines had believed to be in their past were back (temporarily as it turned out) with a vengeance: political instability (e.g., five presidents during a two week period and a constantly shifting date for new elections) and price instability (an inflation rate of 28 percent during the first semester of 2002).

3 A Model of Inflation and Monetary Policy

3.1 The Inflation Specification

To capture the inflation dynamics in Argentina, and how this relates to policy, we develop a standard overlapping nominal wage contracts model (Taylor 1980; Fuhrer 1995; Fuhrer and Moore 1995a, 1995b). Granato and Wong (2002) apply this model to the study of aggressive policy and inflation persistence.

The inflation rate (π_t) is defined as:

$$\pi_t = \frac{1}{2}\left(\pi_{t-1} + E_t\pi_{t+1}\right) + \gamma y_t + \eta_{1t}, \tag{1}$$

where $E_t\pi_{t+1}$ is the expected inflation rate over the next period and η_{1t} is an iid stochastic shock. We note that the output term in equation (1) can be characterized as a moving average of the current and the lagged output gap, $\frac{\gamma}{2}\left(y_t + y_{t-1}\right)$. However, Fuhrer (1995) assumes the output term is the current output gap (y_t), and that is the specification we employ.

Equation (1) captures the main characteristic of inflation persistence and inflation cycles. Since agents care about their real wages, both past and future, we use the lagged inflation (π_{t-1}) and their expectations of inflation ($E_t\pi_{t+1}$) into consideration as they adjust (negotiate) their real wage at time t.

3.2 The Demand Function

The IS curve, which is the demand function we use, reinforces using agent expectations. The IS curve also provides an avenue for the influence of real interest rates and policy.

McCallum and Nelson (1999) derive their IS curve from microfoundations. Agents maximize their lifetime utility by choosing a mix between consumption and the stock of real money balances. In equation (2), we modify[2] McCallum and Nelson's (1999) IS specification by using the output gap level (y_t) rather than the actual output level:

$$y_t = -\beta \left(r_t - E_t \pi_{t+1} - r^* \right) + \eta_{2t}, \tag{2}$$

where r_t is nominal interest rate, r^* is the target real interest rate, η_{2t} is an iid stochastic shock, and $\beta > 0$. If the real interest rate, $r_t - E_t \pi_{t+1}$, is below the targeted real interest rate $[(r_t - E_t \pi_{t+1}) - r^* < 0]$, then agents increase their consumption and also raise the output level ((y_t) in equation (1)) above the natural level, $(y_t > 0)$. The opposite occurs when the real interest rate is above the target.

[2] We omit expected output for the next period ($E_t y_{t+1}$). This has no bearing on our results and is done for simplicity. The results for the full version of the McCallum and Nelson IS specification can be found in Wong (Forthcoming).

3.3 The Taylor Policy Rule

The contingency plan or policy rule that policymakers follow can be characterized by the Taylor rule (1993, 1994, 1999a,b,c), which has become a widely used basis for describing, analyzing and evaluating monetary policy performance[3]:

$$r_t = \pi_t + \alpha_\pi (\pi_t - \pi^*) + \alpha_y y_t + r^*. \tag{3}$$

Taylor (1999a) asserts that his policy rule is useful for describing historical time periods in the United States as diverse as the gold standard era and the 1990s. Taylor's policy rule is useful for understanding when there were policy mistakes in different policy regimes. We will make use of his rule to describe and analyze Argentine monetary policy.

Taylor rules have been augmented to include open economy concerns such as exchange rates (Ball 1999; Siklos 1999). To date the effects of exchange rates in Taylor type rules have been small, but this could be due to the indirect effect exchange rates have by way of inflation and output on targeted short-term nominal interest rates (Taylor 2001). Consequently, a

[3]The main alternative rule is for constant money growth, as suggested by Milton Friedman (1960). This rule was the analytical benchmark for the history of monetary policy in the United States written by Friedman and Schwartz (1963).

"closed economy" policy rule such as (3) could account for open economy and exchange rate effects, even though they are not modeled explicitly.

Policy can be procyclical or countercyclical. As is well known, countercyclical monetary policy is when the policymaker is willing to raise (lower) the real interest rate when there is inflationary (deflationary) pressure in the economy (Bullard and Mitra 2002; Clarida, Gali, and Gertler 2000; Taylor 1999b).

Countercyclical policy is refined further when we use a Taylor rule (3). In general, countercyclical policy is called aggressive if both α_π and α_y in the Taylor rule are greater than zero. These positive values of α_π and α_y indicate a willingness to raise (lower) real interest in response to the positive (negative) changes in the output gap level (y_t) and the target inflation rate ($\pi_t - \pi^*$). Empirical studies of the Taylor rule in the United States have shown that α_π and α_y range in value between $[0, 2]$ (Clarida, Gali, and Gertler, 2000; Taylor 1999a).[4]

[4]Unemployment has been substituted for output in the Taylor rule (e.g., Mankiw 2001; Ball and Tchaidze 2002):

$$r_t = \pi_t + \alpha_\pi (\pi_t - \pi^*) + \alpha_u u_t + r^*.$$

If one chooses to use unemployment as opposed to output, then a negative sign in α_u indicates aggressive countercylical policy.

4 Aggressive Policy and Inflation Dynamics

This section details the hypotheses linking policy actions with agent behavior. To tie policy aggressiveness to inflation dynamics requires we model the behavior of economic agents. From Section 3.3 we define an aggressive policy stance as a Taylor rule where both α_π and α_y are *greater than zero* (see equation 3).

As is consistent with modern treatments of rational expectations, we assume agents are boundedly rational and that they learn in an adaptive manner. Instead of assuming that rational expectations means that economic agents somehow know the conditional expectations of the relevant variables, we assume that they must learn them on the basis of their observation of the economy. The next step is to determine whether the learning dynamics allow agents to reach the rational expectations equilibrium (REE) when they start from a point of reference that contains nonequilibrium values.

4.1 Inflation Equilibrium and Determinacy

Dynamic macroeconomic models involving expectations are known to give rise to multiple solution paths. Since McCallum (1983), the standard technique for reducing the multiplicity of solution paths is the practice of using

the minimal number of state variables "from which it is impossible to delete ... any single variable ... while continuing to obtain a solution valid for all admissible parameter values" (1983, p. 145). This technique is know as the minimal state variable (or MSV) solution.

Our stability analysis proceeds in the following way. We determine the reduced form for the inflation rate by substituting equation (3) into equation (2), solve for y_t, and then put that result into equation (1). The reduced form for the inflation rate (π_t) is:

$$\pi_t = \Omega_0 + \Omega_1 \pi_{t-1} + \Omega_2 E_t \pi_{t+1} + \xi_t, \tag{4}$$

where $\Omega_0 = \frac{\gamma\beta\alpha_\pi\pi^*}{1+\beta\alpha_y+\gamma\beta(1+\alpha_\pi)}$, $\Omega_1 = \frac{1+\beta\alpha_y}{2[1+\beta\alpha_y+\gamma\beta(1+\alpha_\pi)]}$, $\Omega_2 = \frac{1+\beta\alpha_y+2\gamma\beta}{2[1+\beta\alpha_y+\gamma\beta(1+\alpha_\pi)]}$ and $\xi_t = \frac{\gamma\eta_{2t}+(1+\beta\alpha_y)\eta_{1t}}{1+\beta\alpha_y+\gamma\beta(1+\alpha_\pi)}$. Equation (4) shows that current inflation depends on the first-order lag of inflation and also expected future inflation.

Using the method of undetermined coefficients we now close the model and solve for the REE. We accomplish this by taking the conditional expectations at time $t+1$ of equation (4) , and substituting this result into equation (4). The result is:

$$\pi_t = A + B\pi_{t-1} + \xi'_t, \tag{5}$$

where $A = \frac{\Omega_0}{1-\Omega_2 B-\Omega_2}$ and $B = \frac{1\pm\sqrt{1-4\Omega_1\Omega_2}}{2\Omega_2}$.

Equation (5) is the minimal state variable (MSV) solution of inflation, which depends solely on the lagged inflation rate. The coefficient of lagged inflation (B), which indicates how long inflation persists, is a quadratic, since we are taking contemporaneous expectations. We define the two values as $B^+ = \frac{1+\sqrt{1-4\Omega_1\Omega_2}}{2\Omega_2}$ and $B^- = \frac{1-\sqrt{1-4\Omega_1\Omega_2}}{2\Omega_2}$.

We also consider whether the model is determinate. In equation (5) this requires that $|B| \leq 1$, although we expect $B > 0$. Since B takes two values, B^+ and B^-, we show that B^- is a unique stationary solution if $\alpha_\pi \geq 0$.[5] Consistent with our argument, policymakers do stabilize inflation (the economy) when they respond to deviations from their inflation target in an aggressive manner.

Proposition 1 *For the reduced form in equation* (5)*, there exists a unique stationary REE if* $\alpha_\pi \geq 0$.

Proof. See Appendix. ■

[5] We focus primarily on the behavior of α_π (as opposed to including α_y) since α_π centers on the degree to which policy adjusts to attain an inflation target.

4.2 Adaptive Learning by Economic Agents: Expectational Stability

Up to this point, we have a conventional REE. We now assume agents learn in an adaptive manner and form expectations as new data becomes available over time. Evans and Honkapohja (2001) present the general specification of equation (4) in the context of an adaptive learning model. They first assume that agents are able to obtain the current value of the inflation rate π_t at time t. If we assume that agents learn (and update) in a manner consistent with recursive least squares, then we can summarize the stability of equation (5) in the following proposition:

Proposition 2 *For equation* (4), *the expectational stability or E-stability conditions for the MSV solutions are* $\Omega_1\Omega_2\left(1-\Omega_2 B\right)^{-2}<1$ *and* $\Omega_2\left(1-\Omega_2 B\right)^{-1}<1$. *If an MSV solution is stationary and E-stable, then it is locally stable under recursive least squares* (RLS) *learning* (*Evans and Honkapohja* $(2001:202)$).

Evans and Honkapohja (2001) also demonstrate that the existence of the observable current value of the inflation rate π_t at the time of expectations formation can create a simultaneity problem. To avoid this problem, they assume that agents observe only the lagged inflation rate π_{t-1}. This as-

sumption alters the E-stability conditions: B^+ is always unstable, but B^- is E-stable with the form:

$$-\sqrt{1-4\Omega_1\Omega_2} < 1-2\Omega_2. \tag{6}$$

Equation (6) is a necessary and sufficient condition for E-stability. In particular, if $\Omega_2 < \frac{1}{2}$, the MSV solution is sufficient for E-stability.

The E-stability condition is the basis for the policy implications of this model. If E-stability conditions are satisfied, then agents are able to learn the REE. The REE has specific empirical implications: under the REE aggressive countercyclical policy reduces inflation persistence.

We rely on the necessary and sufficient conditions for E-stability to demonstrate the link between policymaker aggressiveness (α_π), agent learning, and inflation persistence. In equation (4), Ω_2 is less than half if $\alpha_\pi > 1$. This sufficient condition implies that agents are better able to learn the inflation equilibrium if policymakers are aggressive enough in fighting inflation. The necessary condition ($\alpha_\pi > 0$), which is consistent with our definition of aggressive policy, suggests a less vigorous response.

Proposition 3 *For equation* (4), *assuming that agents do not observe the*

current value of the inflation rate π_t at the time of expectations formation, the MSV solution (5) *is E-stable if* $\alpha_\pi > 0$.

Proof. See Appendix. ■

4.3 Inflation Persistence

The policy rule affects inflation persistence in this model. Equation (5) represents the AR(1) process of the inflation rate. The equation shows that an increase in α_π raises inflation persistence under B^+ but reduces the persistence under B^-.

Proposition 4 *Provided that the model is determinate and E-stable, the persistence of inflation is reduced as policymakers aggressively respond to the deviation of the inflation rate from its target.*

Proof. See Appendix.

■

4.4 Policy Implications

The intuition of these results is consistent with standard countercyclical policy. The aggressive application of a price stabilizing policy means interest rates will be raised (via the Taylor rule) in response to any inflation shock. Our model shows that this reduces aggregate demand and eventually inflation reaches the prespecified target. Inflation will not persist in this situation since agents can substitute the prespecified inflation target for past inflation. As long as the policymaker consistently hits the inflation target there is no uncertainty on the outcome.

This has ramifications for the labor market since wage contracts now reflect the inflation target. And since they have an effect on the overall inflation rate, the stability that wage contracts now exhibit is translated into stability in the price level.

On the other hand, a nonaggressive (even procyclical) policy toward price stability, implies that interest rates will not respond to inflation shocks and, sometimes perversely, interest rates may decrease in response to an inflation shock. In this case the price rigidities in the economy (i.e., contracts in the aggregate supply function) mean that the inflation shock will not die out soon. Agents fail to determine the inflation target and must rely on past inflation to make their inflation forecasts. High inflation, even hyperinflation,

are distinct possibilities under this type of policy stance.

There is also the issue of how high interest rates need to be raised (lowered) in response to a inflation target deviation. Since a negative relation exists between α_π and inflation persistence (B), the necessary and sufficient conditions for E-stability provide further specificity on the size that α_π must be for the relation to hold. So long as $\alpha_\pi > 0$ (necessary condition), the relation holds. However, if $\alpha_\pi > 1$ (sufficient condition), this suggests that inflation persistence will be reduced to a greater degree than would result if the necessary condition, $\alpha_\pi > 0$, is met.

To expand on the issue of the interest rate response further, there are three cases to consider. If the policy rule is not aggressive (procyclical) ($\alpha_\pi < 0$), then parameters A and B (from (5)) are indeterminate (agents cannot get the REE). This case would be associated with hyper- or high inflation episodes. Second, if the policy rule is aggressive but the value of α_π is small but positive (the policy rule does not have enough power to target π^* consistently), agents forecast current inflation by looking at past inflation with the weight of B. Note this is still an REE forecast, but that it involves past inflation. The third case is if the policy rule is the most aggressive ($\alpha_\pi \to \infty$). In this situation policymakers consistently make the

inflation rate equivalent to π^*, consequently agents only need π^* to predict the current inflation rate ($B \to 0$ and $A = \pi^*$). These latter two cases would be associated with relatively moderate inflation.

5 Empirical Findings

5.1 Policy Aggressiveness and Inflation Persistence

We begin by estimating a policy rule for Argentina in the years 1966 to 1999 similar in form to (3). The data are annual time series spanning the period 1966-1999.[6] However, for purposes of a complete specification we choose the unemployment rate (u_t) along with the inflation target deviation $(\pi_t - \pi^*)_t$.[7] We assume that unemployment stability, since it reflects real economic factors, can readily substitute for output stability as specified in equation (3). Therefore, we argue that in equation (7) $\alpha_u^* \approx \alpha_y$. This substitution is not without precedent (Mankiw 2001; Ball and Tchaidze 2002). For example,

[6] The data (which are based on official government reports) are from two sources: the Centro de Estudios para el Desarrollo Institucional (CEDI) de la Fundación Gobierno y Sociedad (FGyS) and the Fundación de Investigaciones Ecónomicas Latinoamericanas (FIEL). We employ annual data due to severe constraints in the availability of Argentine unemployment data.

[7] We assume the inflation target follows a smoothed process as presented by Hodrick and Prescott (1980).

in his analysis of the Taylor rule for the United States during the 1970s, Orphanides (2002) uses unemployment as opposed to output.

We make two further modifications to (3). If one were to estimate (3), but intended to focus on aggressive price stabilizing policy, simple substitution shows that one would need to look at $(1 + \alpha_\pi)$. Since our focus is on α_π, we will move the inflation rate (π_t) to the left hand side and estimate the empirical analogue for $(r_t - \pi_t)$.

The second issue is to account for the most significant monetary policy reform during this period — the Convertibility Plan of 1991. Recall that open economy effects may already have an influence on the policy rule through changes in the policy weights in the Taylor rule. To account for this we create a dummy variable (Convertibility) that accounts for the period of time when the Convertibility Plan was in effect. We expect the Convertibility Plan to have a positive relation with policy price stabilizing aggressiveness (α_π).

A final consideration is to examine overall open economy, exchange rate effects. This is particularly relevant considering the Convertibility Plan. As in Taylor (2001) we estimate the contemporaneous and lagged effect of the exhange rate for the entire period. The addition of these variables has no

influence on the magnitude or significance of $\alpha_{\pi}^{'}, \alpha_{u}^{'}, \alpha_{\pi}^{Con}, \alpha_{u}^{Con}$.

We estimate equation (7), an adaptation of the Taylor rule (3), using ordinary least squares:

$$\begin{aligned} i_t^{30} - \pi_t &= \varphi + \alpha_{\pi}^{'} \left(\pi_t - \pi^*\right)_t + \alpha_{u}^{'} u_t + \delta \mathbf{Convertibility} \\ &+ \alpha_{\pi}^{Con} \left[\left(\pi_t - \pi^*\right)_t * \mathbf{Convertibility}\right] \\ &+ \alpha_{u}^{Con} \left[\mathbf{u}_t * \mathbf{Convertibility}\right] + \varepsilon_t \end{aligned} \tag{7}$$

The dependent variable is the difference between the 30 day interest rate (i_t^{30}) (average) and the annual inflation rate (α_{π}).[8] Only $\left(\pi_t - \pi^*\right)_t$ for the entire sample and during the period of the Convertibility Plan are significant (p-values below .05). Unemployment, like output, has no affect on the policy rule.

The most important finding in Table 1 is that the Convertibility Plan

[8] The adjusted $R^2 = .87; F = 39.10$. As Taylor (1999a) found in estimating an equation of this form, there is evidence of serial correlation. This is in part due to the fact that this equation is the reduced form of many structural equations. But, Taylor also argues that the serial correlation indicates characteristic policy mistakes. Since serial correlation affects the standard errors we estimated an alternative model that "removes" serial correlation to determine if the standard errors were altered enough to corrupt hypothesis tests. We find that the standard errors change but not enough to alter the substantive conclusions in the model. All results are available from the authors.

reverses the non-aggressive policy stance of the previous period. The 95 percent confidence intervals for both $(\pi_t - \pi^*)_t$ and $(\pi_t - \pi^*)_t * \textbf{Convertibility}$ never overlap. More importantly, the convertibility plan now shifts α_π into an aggressive direction ($\alpha_\pi > 0$). Given the relation between our theoretical and empirical model, these magnitudes are consistent with a reduction in inflation persistence, although not at the magnitudes that would come when the sufficient conditions are met ($\alpha_\pi > 1$).

Table 1

Policy Rule Results

Dependent Variable: $(i_t^{30} - \pi_t)$

Variable	**Coefficient**	**Standard Error**
$\boldsymbol{\varphi}$	**-52.79**	**186.56**
$(\pi_t - \pi^*)_t$	**-1.04**	**.09**
$\mathbf{u}_t$	**-51.90**	**38.09**
Convertibility	**37.04**	**500.62**
$(\pi_t - \pi^*)_t * \textbf{Convertibility}$	**1.06**	**.50**
$\mathbf{u}_t * \textbf{Convertibility}$	**52.9**	**47.54**

From our reduced form in (5) we estimate a first-order autoregressive process [AR(1)] of the Argentine inflation rate. Again, we use ordinary least squares (OLS) to estimate the persistence parameter (B) in (5). The results in Table 2 show that an AR(1) can serve as a baseline to indicate whether inflation does persist. Using the sample, 1966-1999, the persistence parameter (B) equals 0.51 with a standard error of 0.152.[9] The intercept, A, is not significant.

In the next section we will examine the relation between policy and inflation persistence. The results in Table 1 indicate that inflation persistence should fall during the Convertibility Plan.

Table 2

Inflation Results

Dependent Variable: π_t

Variable	**Coefficient**	**Standard Error**
A	**1.37**	**2.11**
π_{t-1}	**0.51**	**0.152**

[9]The adjusted $R^2 = .26; F = 11.24$. The model passes a variety of diagnostic tests. All diagnostic results are available from the authors.

6 The Relation Between Policy Mistakes and Inflation Dynamics: 1966-1999

Until the establishment of the Convertibility Plan in 1991, Argentine policymakers did not effectively target inflation in an aggressive, countercyclical manner. Previously there had been shifting emphasis on the part of policymakers in the time period studied. If one were to summarize the last thirty-five years in Argentine policy and outcomes, it would come down to this. There has been no credible history of sustaining a domestic countercyclical monetary policy that aggressively addresses the matter of inflation, except for the period of the Convertibility Plan.

This specific failure is representative of the general failure of Argentine governments to adopt, implement, and sustain optimal public policy initiatives (Tommasi and Spiller 2000). The combination of political regime instability and flawed political institutions has imbued the Argentine government with a short term perspective. This perspective has in turn resulted in low quality, incoherent, fragile, and unpredictable public policy.

In regard to the Convertibility Plan, with no historical precedent for addressing price stability and with monetary policy focused on financing

government spending, the consequence was bound to be cyclical episodes of rising inflation. In the absence of an institutionalized policy stance, the Convertibility Plan, which linked the peso to the dollar on a one-to-one basis, amounted to a delegation of monetary policy to an outside authority, the United States Federal Reserve bank.

Yet, as recent events (2001-02) made clear, such arrangements are unstable, because they delay the internal development and maintenance of a policy rule along the lines described in this paper. Yet, this unstable policy mix had been known by scholars for decades. In 1923, Keynes asserted: "if the external price level is unstable, we cannot keep both own price level and our exchanges stable. And we are compelled to choose" (p. XX). Add to this policy mix Argentina's open capital markets and you are faced with the "Open Economy Trilemma" where a country cannot simultaneously maintain fixed exchange rates and an open capital market while pursuing a monetary policy oriented toward domestic goals (Obstfeld and Taylor 1998).

As Figures 1 and 2 illustrate, policy indicators, as measured by money growth (M1) and the interest rate ratio,[10] invariably precede and accompany cyclical patterns in inflation. In this section we discuss this pattern in each

[10] The interest rate ratio is the 30 day interest rate $\left(i_t^{30}\right)$ (average) divided by the annual rate of inflation (see Footnote 1).

of the five major political periods since 1966. As we will see these episodic policies and bouts of inflation persistence are related to transitions from one political era to the next; highlighting one of the direct negative consequences engendered by Argentina's endemic political instability.

(Figure 1 About Here)

(Figure 2 About Here)

In 1966 the military assumed power in the "liberating revolution." Under the military dictatorship the growth rate of M1 was not out of line with historical standards.[11] From Figure 1, the interest rate ratio shows that there was no clear aggressive price stabilizing component to policy. A very low real nominal interest rate was tolerated by the monetary authority. Inflation in Argentina during this time was consistent with the post World War II experience, which was not one of price stability but one of double digit inflation (20 to 30 percent annually).

In 1973, with the return of the Peronist government, considerable sectoral conflict contributed to pressures on fiscal and monetary policymakers that would have the consequence of stimulating aggregate demand. Government

[11] Note that these were and are very high increases by the standards and experiences of the United States and other OECD countries in the post World War II era.

spending increased above historical trends, budget deficits increased commensurately, and pressure was put on the monetary authority to finance the new government debt (Cortés Conde 1998).

Between 1974 and 1975, Figure 1 shows that M1 increases from an annual growth rate of 50 percent to 150 percent. The interest rate ratio follows a similar pattern of nonaggressiveness ($\approx$ zero). Real interest rates remain as negative or more negative than before. Inflation rises from a 60 percent annual rate in 1973 to over 180 percent in 1975 and in 1976, the year that Isabel Perón was overthrown (March, 1976), the inflation rate reached a then historical record of nearly 450 percent.

The political, social, and economic chaos associated with this inflation cycle helped engender the 1976 military coup. Upon assuming office, the goal of the Proceso dictatorship, in particular its Minister of Economy, José Martínez de Hoz, was addressing the economic chaos left by the Isabel Perón government. On the fiscal side, the government reduced the deficit from 14 percent to 4 percent of GDP by the end of 1976 (Cortés Conde 1998). However, monetary policy did contradictory things. On the stimulative side, monetary authorities devalued the currency to stimulate agricultural exports and production. However, the drop in the deficit reduced the pressure to

monetize. The net was a drop in the growth rate of M1, from the historic high in 1977 through 1981. The drop in the money growth however was now to the rates of early 1970s when the inflation cycle began.

Figure 1 indicates that there also is little evidence of aggressive price stabilizing countercyclical policy. The interest rate ratio, while no longer as low as it was in 1975 and 1976, still is lower than in 1970. The lack of a domestic interest rate rule to stabilize an inflation target is further manifested in the December, 1978 adoption of the La Tablita exchange rate policy. The behavior of inflation reflects these events. Inflation falls from its peak in 1976 to an annual rate of 100 percent in 1981. However, this reduction was still much higher than before the previous inflation cycle, where inflation was consistently below 40 percent.

In 1983, during a time of crisis, the military relinquished power. Inflation was now running at an annual rate of nearly 350 percent, rivaling only the final year of the Isabel Perón administration. President Alfonsín was elected in the midst of this economic situation. For the first year and a half, his administration did virtually nothing to arrest the inflation. In fact, its stimulative fiscal policies aggravated inflation. From the end of 1983 to mid-1985, M1, the interest ratio, and inflation all indicate policy and outcomes

were not in any way geared towards price stability.

By the middle of 1985, inflation was at an annual rate of nearly 700 percent. To reduce this inflation cycle, the Austral Plan was adopted in June, 1985. The essential fiscal components of the plan were tax increases and utility rate increases; all geared to close the deficit. The monetary component, on paper one with profound implications, was to liberate the monetary authority from its obligation to monetize government debt. There was also a price and wage freeze.

Initially the Austral plan worked. Figure 2 shows that the rate of M1 declined precipitously from a peak annual growth rate of nearly 200 percent in 1985 to 50 percent in 1986. The interest rate ratio rises slightly but again not enough to indicate an aggressive countercyclical policy, and inflation falls to a 90 percent annual rate by the end of 1986.

Unfortunately, the fiscal and monetary policy mix lacked a credible brake on national government and provincial spending. Government deficits increased from 4 to 7 percent of GDP, but more importantly the monetary authority never ceased monetizing government debt. As a result, the period 1987 to 1989 is marked with the largest increases in M1 growth rates ever. There is again no evidence of countercyclical policy to stem inflation as the

interest rate ratio is now at its lowest point in the nearly 35 year period of study, and inflation reaches over 3000 percent in 1989 (see Figure 2).

The economic and social collapse in 1989 forced Alfonsín to leave office five months early. He was replaced by then President-elect Carlos Menem in July, 1989. After some unsuccessful attempts to arrest inflation, President Menem in April, 1991 adopted the Convertibility Plan **(CITATION)**. The primary component of this plan was the establishment of a currency board, which exclusively made financing government debt a process that drew from foreign reserves. In this way, government financing could not be monetized.

The results were almost immediate. In the ensuing period, M1 never exceeded a 15 percent annual rate, and for the first time the interest rate ratio moves in the direction of, and eventually exceeds, unity. There was now evidence of an aggressive countercyclical domestic monetary policy (see Table 1). It is clear that inflation targeting is not strongly adhered to but rather the Convertibility Plan is used instead to achieve price stability. This is perhaps due to the lack of credibility placed in policymakers ability to aggressively fight inflation.

The results for inflation are consistent with the behavior of M1. By the fourth quarter of 1991, inflation had dropped to a 2 percent annual rate. In

the following years this inflation cycle was one consistent with price stability, until the Convertibility Plan was terminated in early 2002.

Following our narrative and figures above, we examine one last piece of evidence on the relation between policy and inflation persistence. We reestimate the persistence parameter in (5) using both recursive least squares and rolling regression (30 year window). The purpose is to examine the dynamic behavior of inflation persistence, as reflected in the change in B_t, and relate this to our narrative on policy. One concern is the positive association between inflation persistence ($B_t \rightarrow 1.0$) and whether the spikes in persistence and explosiveness ($B_t > 1.0$) correspond to hyper- or high inflation in the narrative. We use both estimation procedures to ensure robustness (see Figure 3).

The recursive and rolling regression estimates should be either near-integrated ($B_t \rightarrow 1.0$), integrated ($B_t = 1.0$) or explosive ($B_t > 1.0$) during the following three periods: 1975-77 (end of the Isabel Perón regime and beginning of the Proceso dictatorship), 1983-85 (end of the Proceso dictatorship and first years of the Alfonsín government), and 1989-90 (end of the Alfonsín government and first year of the Menem government).

One commonality that all of these periods share is that the explosion

occurred during the final year of a regime, and was of a sufficiently powerful nature that it contributed in a very important manner to the regime's early (and non-institutionalized) departure from power, leaving the task of addressing the explosion to the next government.

The results in Figure 3 indicate that for both estimation processes, the most persistent or explosive years are 1976, 1984, 1985, and 1989 which squares directly with the three periods above. Note also that persistence falls precipitously after 1991, which is in keeping with our findings in Table 1 on the Convertibility Plan's influence on aggressive price stabilizing policy.

(Figure 3 About Here)

7 Conclusion

This paper considers the effect of an aggressive monetary policy stance on inflation persistence. One of the most serious economic problems in the developing world, and particularly in Latin America, is persistent high inflation. No country in Latin America better exemplifies this dilemma than Argentina.

Argentina in many ways represents an historic tragedy. In the early part

of the twentieth century and well into the 1930s, Argentina was considered as rich as Australia, Canada, France, and Germany (Waisman 1987). On a variety of tangible per capita measures of economic wealth, be it telephones or motor vehicles, Argentina rivaled these countries.

Yet, economic policy mistakes that occur under either democratic or non-democratic regimes were and continue to be characteristic and consistent, just one of many direct consequences of the country's chronic regime instability and weakly institutionalized political institutions. These characteristic mistakes contribute to inflation persistence and price instability. The relation between price instability and instability in economic growth (Ramey and Ramey 1995) has contributed to a precipitous long-term decline in Argentina's once lofty economic status. Per capita GDP has fallen way below the long-run trend established nearly 100 years ago.

With this political and economic history in mind, we first derive a small scale macroeconomic model of inflation and policy that follows from Fuhrer (1995), Fuhrer and Moore (1995a, 1995b), and Taylor (1993, 1994, 1999). We further assume that agents learn about inflation in an adaptive manner (Evans and Honkapohja 2001). Under specific stability conditions, agents are able to learn the REE of inflation only if the policy rule stabilizes prices

aggressively. This result shows that aggressive anti-inflation policies lower inflation persistence.

Using annual postwar data in Argentina for the period 1966 to 1999, we find inflation persistence is episodic, rising when monetary policy is particularly non-aggressive. Further, the spikes and explosiveness in persistence are consistent with bouts of very high inflation or hyper-inflations. We also find no evidence of aggressive price stabilizing policy having a domestic source. During the 1990s, there is some evidence of aggressive price stabilizing policy, but that occurred in conjunction with the 1991 Convertibility Plan. The rising inflation since the suspension of the Convertibility Plan is consistent with the absence of a domestic and institutionalized policy dedicated to maintaining price stability.

While this paper is an attempt to isolate monetary policy's affect on inflation persistence, it is clear that Argentine monetary policy is subject to enormous political pressure. Unlike the monetary authority in the United States and other countries, which possess various institutionalized mechanisms to minimize political influence (this independence is related to price stability), Argentina's monetary authority monetizes public debt as a matter of course (Kydland and Zarazaga 1997). This linkage (and secondary role)

to fiscal policy points the way to the next generation of monetary policy models on the topic of inflation persistence, and by extension, the issue of economic development. As a start, our view is that policy rules and the priority attached to stabilizing inflation and output (unemployment) must be endogenous to these various political pressures, fiscal and otherwise.

8 Appendix: Proofs of Propositions

8.1 Proof of Proposition 1

We need to show that only B^- is less than 1 when $\alpha_\pi \geq 0$. We consider all values of α_π by separating it into 3 intervals: $\alpha_\pi < 0$, $\alpha_\pi = 0$, and $\alpha_\pi > 0$.

For $\alpha_\pi < 0$, we can assign a numerical value of $\alpha_\pi < 0$ such that both B^+ and B^- are inside the unit circle. This implies that multiple equilibria exist when $\alpha_\pi < 0$. When $\alpha_\pi = 0$, we have $B^+ = 1$ and $B^- = 1 - \frac{2\beta\gamma}{1+2\beta\gamma+\beta\alpha_y} < 1$.

For the case of $\alpha_\pi > 1$, B^+ is a strictly increasing function with respect to $\alpha_\pi > 0$. This can be shown by taking the derivative of B^+ with respect to α_π:

$$\frac{\partial B^+}{\partial \alpha_\pi} = \frac{\beta\gamma\left(1+\Phi\right)}{\left(1+2\beta\gamma+\beta\alpha_y\right)\Phi} > 0 \quad \forall \alpha_\pi > 0$$

where $\Phi = \sqrt{1 - \frac{(1+\beta\alpha_y)(1+2\beta\gamma+\beta\alpha_y)}{(1+\beta\gamma(1+\alpha_\pi)+\beta\alpha_y)^2}}$. On the other hand, B^- is a decreasing function with respect to $\alpha_\pi > 0$ and asymptotically converges to 0. The derivative of B^- is:

$$\begin{aligned} \frac{\partial B^-}{\partial \alpha_\pi} &= \frac{\beta\gamma\left(-1+\Phi\right)}{\left(1+2\beta\gamma+\beta\alpha_y\right)\Phi} < 0 \qquad for\ 0 \leq \alpha_\pi < \infty \\ &= 0 \qquad\qquad\qquad\qquad\qquad\qquad for\ \alpha_\pi \to \infty \end{aligned}$$

and the limiting value of B^- as $\alpha_\pi \to \infty$ is 0 :

$$\lim_{\alpha_\pi \to \infty} B^- = 0$$

8.2 Proof of Proposition 3

For convenience, we first define that the left hand side and right hand side in equation (6) as $LHS = -\sqrt{1 - 4\Omega_1\Omega_2}$ and $RHS = 1 - 2\Omega_2$. Since Ω_1 and Ω_2 are a function of α_y and α_π (from equation (4)) we substitute the expressions of Ω_1 and Ω_2 into equation (6). It follows that $LHS = RHS$ only if $\alpha_\pi = 0$. LHS is nonlinear and decreasing over α_π, while RHS is nonlinear and increasing over α_π^2. We conclude that the condition in equation (6) holds if $\alpha_\pi > 0$.

8.3 Proof of Proposition 4

We extend proposition 2. Given that B^+ is not E-stable, we know that under the proof of proposition 2, B^- decreases as α_π increases and B^- converges to 0 as α_π approaches ∞.

References

[1] Ball, L. 1999. "Policy Rules for Open Economies." In *Monetary Policy Rules*, ed. J. B. Taylor. Chicago: University of Chicago Press.

[2] Ball, L., and R. R. Tchaidze. 2002. "The Fed and the New Economy." *American Economic Review* 92: 108-114.

[3] Bullard, J., and K. Mitra. 2002. "Learning About Monetary Policy Rules." *Journal of Monetary Economics* 49: 1105-1129.

[4] Clarida, R., J. Gali, and M. Gertler. 2000. "Monetary Policy Rules and Macroeconomic Stability: Evidence and Some Theory." *The Quarterly Journal of Economics* 115: 147-180.

[5] Cortés Conde, R. 1998. *Progreso y Declinación de la Economía Argentina*. Buenos Aires: Fondo de Cultura Económica.

[6] Evans, G. W. and Honkapohja, S. 2001. *Learning and Expectations in Macroeconomics*. Princeton, New Jersey: Princeton University Press.

[7] Friedman, M. 1960. *A Program for Monetary Stability*. New York: Fordham University Press.

[8] Friedman, M., and A. Schwartz. 1963. *A Monetary History of the United States, 1867-1960.* Princeton, New Jersey: Princeton University Press.

[9] Fuhrer, J. 1995. "The Persistence of Inflation and the Cost of Disinflation." *New England Economic Review*: 3-16.

[10] Fuhrer, J. and G. Moore. 1995a. "Inflation Persistence." *The Quarterly Journal of Economics* 110: 127-159.

[11] Fuhrer, J. and G. Moore. 1995b. "Monetary Policy Trade-offs and the Correlation between Nominal Interest Rates and Real Output." *American Economic Review* 85: 219-239.

[12] Granato, J. 1996. "The Effect of Policymaker Reputation and Credibility on Public Expectations: An Application to‘ Macroeconomic Policy Changes." *Journal of Theoretical Politics* 8: 549-570.

[13] Haggard, S., and M. D. McCubbins, eds. 2001. *Presidents, Parliaments, and Policy.* New York: Cambridge University Press.

[14] Hodrick, R. J., E. C. Prescott. 1980. "Post-War U. S. Business Cycles: An Empirical Investigation." Typescript.

[15] Jones, M.P., P. Sanguenetti, and M. Tommasi. 2000. "Politics, Institutions and Fiscal Performance in a Federal System: An Analysis of the Argentine Provinces." *Journal of Development Economics* 61: 305-333.

[16] Keynes, J. M. 1923. *A Tract on Monetary Reform.* London, England: MacMillan.

[17] Kydland, F. E., and C. E. J. M. Zarazaga. 1997. "Is the Business Cycle in Argentina Different?" *Federal Reserve Bank of Dallas, Economic Review* 21-36.

[18] Lewis, P. H. 1990. *The Crisis of Argentine Capitalism.* Chapel Hill: University of North Carolina Press.

[19] Mankiw, N. G. 2001. "U.S. Monetary Policy During the 1990s." National Bureau of Economic Research Working Paper No. 8471.

[20] McCallum, B. 1983. "On Nonuniqueness in Linear Rational Expectations Models: An Attempt at Perspective." *Journal of Monetary Economics* 11: 134-168.

[21] McCallum, B. and E. Nelson. 1999. "An Optimizing IS-LM Specification for Monetary Policy and Business Cycle Analysis." *Journal of Money, Credit and Banking* 31: 296-316.

[22] Mussa, M. 2002. *Argentina and the Fund: From Triumph to Tragedy.*" Washington, D.C.: Institute for International Economics.

[23] Obstfeld, M., and A. Taylor. 1998. "The Great Depression as a Watershed: International Capital Mobility over the Long Run." In *The Defining Moment: The Great Depression and the American Economy in the Twentieth Century*, eds. M. Bordo, C. Goldin, and E. White. Chicago: University of Chicago Press.

[24] Orphanides, A. 2002. "Monetary-Policy Rules and the Great Inflation." *American Economic Review* 92: 115-120.

[25] Persson, T., and G. Tabellini. 2000. *Political Economics: Explaining Economic Policy.* Cambridge, Massachusetts: The MIT Press.

[26] Ramey, G. and V. Ramey. 1995. "Cross-Country Evidence on the Link Between Volatility and Growth." *American Economic Review* 85: 1138-1151.

[27] Rock, D. 1987. *Argentina 1516-1987: From Spanish Colonization to Alfonsín.* Berkeley: University of California Press.

[28] Siklos, P. 1999. "Inflation-Target Design: Changing Inflation Performance and Persistence in Industrial Countries." *Review: Federal Reserve Bank of St. Louis* November/December: 47-58.

[29] Taylor, J. 1980. "Aggregate Dynamics and Staggered Contracts." *Journal of Political Economy* 88: 1-23.

[30] Taylor, J. 1993. "Discretion Versus Policy Rules in Practice." *Carnegie-Rochester Conference Series on Public Policy* 39: 195-214.

[31] Taylor, J. 1994. "The Inflation/Output Variability Trade-Off Revisited." In *Goals, Guidelines, and Constraints Facing Policymakers,* ed. J. C. Fuhrer. Boston: Federal Reserve Bank of Boston.

[32] Taylor, J. 1999a. "An Historical Analysis of Monetary Policy Rules." In *Monetary Policy Rules*, ed. J. B. Taylor. Chicago: University of Chicago Press.

[33] Taylor, J. 1999b. "Commentary: Challenges for Monetary Policy New and Old." In *Symposium Proceedings of New Challenges for Monetary*

Policy: , eds. G. H. Sellon, Jr., and C. H. Buskas. Kansas City: Federal Reserve Bank of Kansas City.

[34] Taylor, J., ed. 1999c. *Monetary Policy Rules*. Chicago: University of Chicago Press.

[35] Taylor, J. 2001. "The Role of the Exchange Rate in Monetary Policy Rules." *American Economic Review* 91: 263-267.

[36] Tommasi, M., and P. Spiller. 2000. *Los Fuentes Institucionales del Desarrollo Argentino*: *Hacia un Agenda Institucional*. Buenos Aires: EUDEBA/PNUD.

[37] Waisman, C. H. 1987. *Reversal of Development in Argentina: Post-war Counterrevolutionary Policies and Their Structural Consequences*. Princeton: Princeton University Press.

[38] Wong, S. M. C. Forthcoming. "Learning Dynamics in Monetary Policy: The Robustness of an Aggressive Price Stabilizing Policy." *Journal of Macroeconomics*.

Figure 1
Policy Indicators
(Shade = Dictatorship)

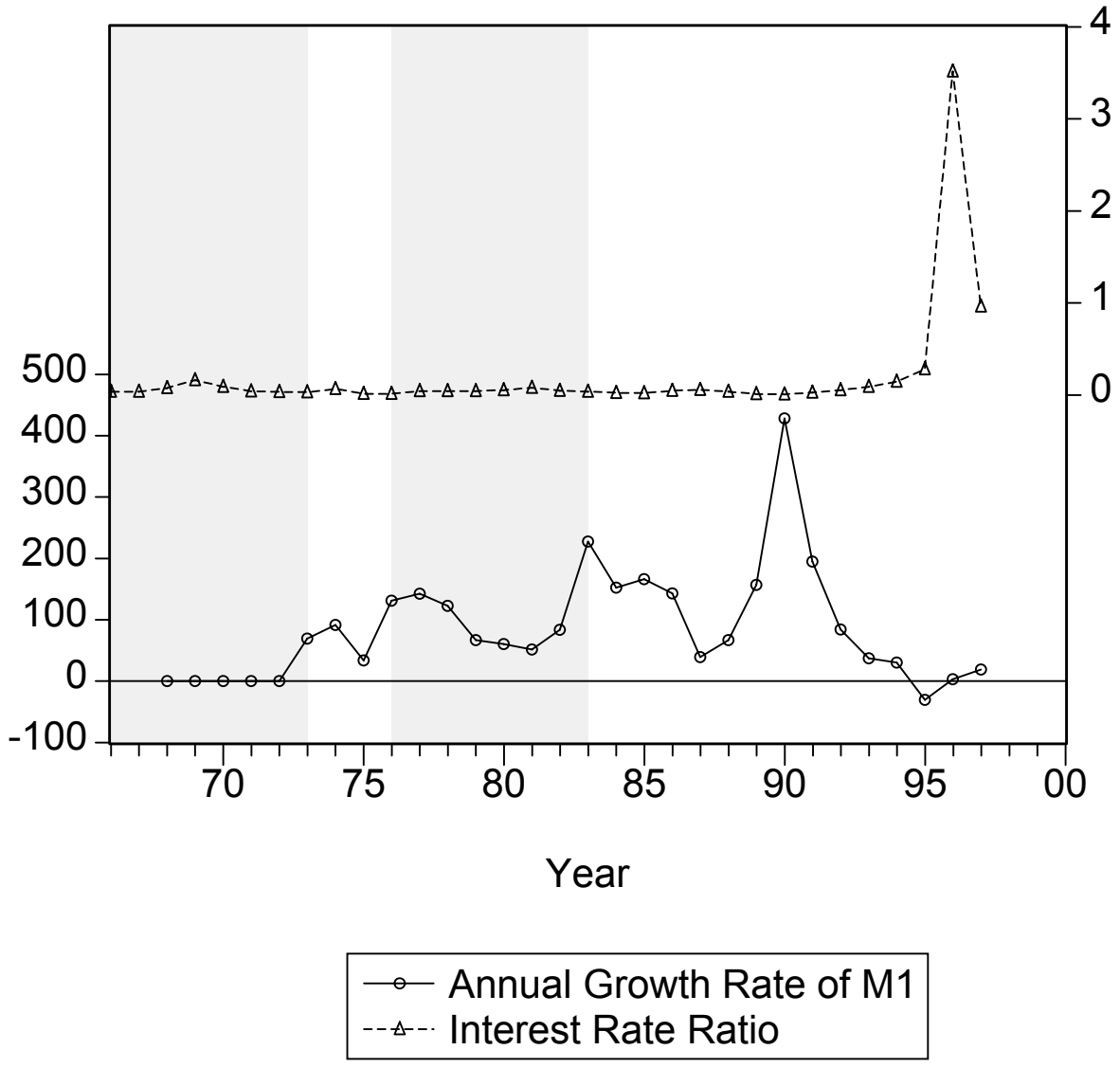

Figure 2
The Money Supply and Inflation
(Shade = Dictatorship)

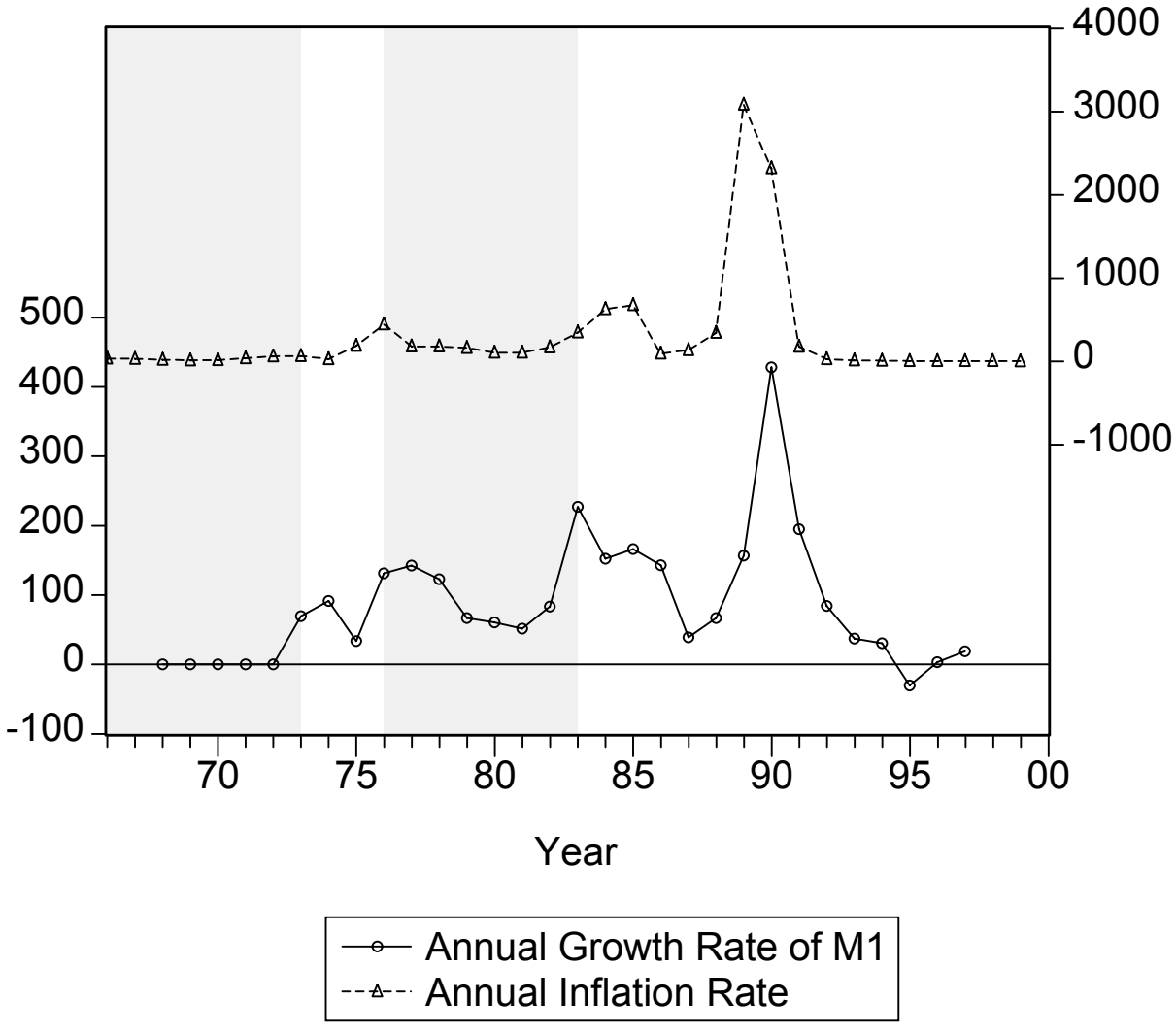

Figure 3
Time Varying Estimates of Inflation Persistence
(Line for Transition Years)