

Reply to Referee Report on Economics MS 764

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I thank my anonymous referee for evaluating this lengthy paper and for feeling very positive about the approach, since "it is among the first/very few contributions to introduce Forex intervention in a New Keynesian macro model" (citing Benes et al., 2013 as another recent paper that does this), and "presents a very clear and intuitive exposition of the model and a clean introduction of Forex intervention via a policy rule and the central bank/government budget constraint". The referee makes several remarks on 6 issues that "could add value to the paper". I will first tackle the 6 specific issues raised and then address the novelty of the approach (which in my papers goes back to at least 2006).

1. The 6 issues

1.1. Ad-hoc vs. utility based loss functions. Using a utility based loss function is a component of my research agenda but certainly implies an additional paper since this one is quite long already. I believe that obtaining such a utility based loss function is a relevant and useful reference point. A typical way of doing this is to obtain a second order approximation of the period household utility, find a way of doing away with the first order terms to ensure that the resultant approximation adequately orders the losses obtained with different policy regimes, and use this, along with first order approximations of the non-policy model equations to implement optimal policy under commitment in a linear-quadratic optimal control framework. Doing this is a very tedious process when one has a moderately complex model, but it does enrich the analysis. Not only does the optimum policy reflect household utility maximization but also the loss function can be expressed in terms of welfare relevant gaps which depart from the simple gaps with respect to the non-stochastic steady state that I use.

However, I probably have a more nuanced view with respect to the importance of such an approach. The ad hoc loss function approach can be considered more general since, if one has adequate target values in the loss function, the loss function obtained from the approximation to utility is a particular case, i.e., gives specific values to the exogenous weights used in the ad hoc procedure. One can argue that if we used a sufficiently varied set of exogenous weights, one of them would be close to the one that could be obtained through a second order approximation of utility. The ad hoc procedure is also more general in that we do not need to assume that policymakers are 'altruistic' (or 'benevolent') in the sense that they unanimously decide to reflect the preferences of the private sector when making decisions. Making monetary and exchange rate decisions is a complex process where many people intervene, with differing views with respect to the 'correct' model and the 'preferred' outcome of the policymaking. Usually, more than one model is used. One of the less defensible aspect of typical DSGE models is that they usually ignore distributive aspects by making households homogeneous or only heterogeneous in certain technical details. Distributive aspects are usually very important in policymaking, at least in less developed economies, but in my view also in developed economies. (Should the central bank sit by watching large financial institutions reap huge profits while macroeconomic risks are increasing?). And monetary and exchange rate policy is an integral part of the political process in both developed and less developed economies. Hence, unless we invest a large

dose of research effort in trying to reflect household heterogeneity, how much do we really gain by obtaining the policies that maximize the welfare of a fictitious ‘representative household’ that we use in the model to avoid complexity? And if we do reflect this heterogeneity we may find that different participants in the decision process have different preferences with respect to the outcomes of the policy decisions. Not only is there household heterogeneity but there is also policymaker heterogeneity.

A related, but less philosophical, reason for the claim of greater generality of the ad hoc procedure is that it is a generally accepted fact that central banks usually choose to avoid changing their intermediate targets too sharply. This is typically dealt with by introducing the lagged interest rate in the interest rate policy rule. The typical second order approximation of utility, however, will not justify this preference for ‘inertia’ by policymakers. Hence, the typical models with simple policy rules usually introduce policymaker preferences that cannot easily be justified by household utility.

My principal objective in this paper was to show, using a relatively simple and communicable model, that there are significant gains from using two simultaneous policy rules, instead of only one of them, no matter what the specific policymaker preferences are. That is why I defined different central bank preferences (or styles) and measured the increase in losses from not using both rules for each of these.

As mentioned above, I think that obtaining the optimal policy from the point of view of the household that is actually modeled is relevant and deserves to be done. However, I am not sure that I agree with the part of the following statement that is in (my) italics: "The author may still analyze whether simple (ad hoc) loss functions approximate the optimal policy, *but the hierarchy of results would be clear*". The hierarchy I see is that the ad hoc procedure appears to be more general than the utility based procedure since we do not make any assumption on policymaker homogeneity or ‘benevolence’, nor do we need to have much faith on the distributive implications of the model while using it. The results can give arguments to different participants in the decision process that have different preferences. Some may be more inflation aware, some more output aware, and some more external-competitiveness aware. Each will know how individual coefficients in the simple policy rules affect their particular objectives.

Is there a hierarchy between, on the one hand, the use of preferences for the evaluation of policy alternatives by policymakers which are consistent with the preferences used to model the private sector and, on the other, the use of an admittedly misspecified model (at least in the distributive aspects) with a range of preferences for the stabilization of some of the main model variables (and changes in operational target variables) that we know policymakers care for? To me these are complementary approaches and there is no need to rank them in a hierarchy.

I am not at all convinced that policymakers anywhere in the world and in any time in history are poised to reflect through their decisions the preferences of ‘the private sector in general’. I believe that, as scientists, we should try to reflect the world as it is and, as generators of models with their consequent projections, we should try to help in the decision-making process. How we can help the decision-making process depends very much on country-specific and institution-specific factors. Furthermore, we should recognize that there is a unity in the

social-economic-political process that, due to a sometimes unfortunate but necessary division of labor and specialization, as economists we tend to look at from a biased vantage point. As economists who have the ability to make abstract models and implement them numerically we should not fail to look at what other social scientists, say in this case political scientists, have to say. And even within our narrow economic perspective, there are topics such as principle-agent theory, electoral cycles, lobbies, etc., that can help us look deeper into possible ways of modeling the actual decision-making process.

One last point is that the degree of importance we give to obtaining the optimal policies that reflect household welfare is probably very much related to the degree of confidence we have on the basic structure of New Keynesian theory. Recognizing that it is the best we have at present, we should not forget that the treatment of nominal rigidities, which lies in the very core of monetary macroeconomics, is ad hoc.

1.2. Dynare’s osr command typically finds local optima. Dynare’s ‘osr’ command invokes one of a series of search engines that begin at given numerical values. There is no guarantee that the coefficients found give a global optimum. Indeed, with different initial values the command often finds a different set of optimal coefficients and a different loss. When constructing Table 12 in the paper I used various different initial coefficients for the simple policy rules and chose the one that gave the lowest loss, except in a few cases in which a slightly lower loss was obtained with some coefficients exorbitantly high (in absolute value). In no case did I find a corner policy outperforming the two rules policy. Clearly, more thorough searches for the optimal simple rules can be performed, and I thank the references in the referee report on looping over the parameter space. I think that going deeper into the robustness of the optimal simple rules can be the subject of another paper.

This not knowing if a global optimum has been found and the possibility that there may be more than one, is one of the reasons I additionally used the optimal policy under commitment framework (through the ‘ramsey’ command). Here the optimum found is necessarily global and unique. And the results confirmed what I had found in the ‘osr’ framework: that large gains can be made using two policy rules under typical Central Bank (CB) preferences.

1.3. Drop the discussion of non-optimal simple rules and explore whether an interest rate rule with XR target would perform similarly to two rules specialized to domestic/XR target, respectively. Although it’s true that the 6 page discussion in section 3.1 is somewhat lengthy, I see no reason for omitting most of what is there and sound reasons for preserving most of it. One of the reasons I sent my paper to the Economics e-Journal is that it does not place limits on number the of pages. In that section I explore a set of issues which are very relevant for understanding the functioning of the model. First, because the (2 simple policy rules) model is a generalization of the standard DSGE New Keynesian model I think it is important to explore its relation with one of the most characteristic features of the standard model: the Taylor Principle (in the generalization of Woodford (2003)), which states that Blanchard-Kahn stability requires that the sum of the inertial and inflation coefficients in the interest rate feedback rule must be greater than one ($h_0 + h_1 > 1$). To me it was very interesting

to find that in the extended model (with 2 rules) this was still true whenever the coefficient in the second policy rule that responds to CB international reserves is negative ($k_4 < 0$). However, it ceased to be true when $k_4 > 0$. Not only that but when $k_4 > 0$ the Taylor Principle is turned on its head and $h_0 + h_1 < 1$ is required for BK stability. I also found it remarkable that for positive values of k_4 less than 0.24 (even those very close to zero like 0.0001) I obtained BK stability even if all the other coefficients in the 2 policy rules were zero. Notice that this is equivalent to assuming that the intervention in the money market is such that it keeps the nominal interest rate constant (at its NSS value) no matter what happens with the rest of the economy, and that the intervention in the FX market is such that the rate of nominal depreciation is (directly) proportional to the gap between the CB reserves to GDP ratio and its desired level.

Although the detailed analysis of the effects of some of the crucial coefficients in the policy rules on the standard deviations of a set of endogenous variables is a bit tedious, it gives information that we would lose if we only restricted the results shown to those under ‘optimal simple rules’. We can see in detail the effects on the standard deviations not only of the typical target variables but also others that underlie them as well, as the standard deviations of the instruments r and b , and of period utility U .

Another type of analysis found in this section is Table 6, which shows the intervals within which the individual coefficients in the policy rules can be moved while preserving the rest at a baseline level. This is basic information on the workings of the model, and shows that the ranges are in general very wide and therefore that the model under simple policy rules is very stabilizable through policy.

The referee suggests that instead of these analyses I could explore "whether an interest rate rule with exchange rate target would perform similarly to a combination of interest rules with domestic variables only and a Forex intervention policy with exchange rate target". This implies comparing a special version of the floating exchange rate (FER) regime (where there is only the first rule) with a special version of the managed exchange rate (MER) regime (where there are 2 rules). Notice that in section 3.2 I do compare the PER and MER regimes but in each case, and for each CB style, assuming that optimal simple rules are used. For the most relevant styles (A-D) Table 12 shows that the losses for the optimal PER regime coefficients are between 3 and 11 times higher than for the optimal MER regime coefficients. Of course, placing zero restrictions on some of the coefficients of the simple rules in the PER and MER regimes can possibly change this relative loss, but this is much less interesting than comparing the best possible coefficients in each regime.

1.4. Sensitivity to the degree of capital mobility. As the referee states, "standard open economy models suggest the degree of capital mobility to be a crucial determinant for the effectiveness and/or feasibility of Forex intervention". She/he poses a series of questions:

1.4.1. *How large would the CB balance sheet (risk exposure) become to stabilize the XR for a given configuration of shocks?* The model is constructed so that the long run CB international reserves to GDP ratio is a target set by the authorities. Since there is no growth in the model in this paper (only temporary productivity shocks), the long run GDP is given and hence so is the asset side of the CB balance

sheet (er). The use of policy instruments make r and one of the components of the liabilities side (b) vary, but the assumption that the CB net wealth is kept at zero gives the equation for the CB balance sheet: $e_t r_t = b_t + m_t$. Subject to this constraint the actual size of the CB balance sheet can vary from period to period. However, by the nature of first order approximation in a stochastic model the size of the CB balance sheet always remains within a (small) range of the non-stochastic steady state (see Woodford (2003), Appendix A.3). Nevertheless, the MER policy in the paper effectively uses the CB balance sheet to influence the economy, because through the use of its instruments it changes both the size of the balance sheet and the composition of liabilities during the (infinite) transition period. This can be easily seen by slightly extending the Dynare code of the model by introducing a new endogenous variable, say $CBbs$, defined as $CBbs = e * r$. Looking at the IRFs for any of the shocks and using simple policy rules, the responses of $CBbs$, m and b show the dynamics of the size of the CB balance sheet as well as the composition of its liabilities. This is true for any of the 3 regimes (MER, FER, and PER). But under the FER regime the dynamics for $CBbs$ is only due to changes in e , and under the PER regime both e and r have dynamics but if we look at the liabilities side, only m changes.

In the calibration I assumed that the CB has a long run target for international reserves that amount to 13% of GDP. However, using a typical set of simple policy rules coefficients (say, those of the optimal simple rules under style A and the MER regime) shows that changing this target to 1% or 200% does not affect the BK stability of the model.

1.4.2. *Which is the friction that allows for effective FX intervention?* The crucial parameter concerning the degree of capital mobility is the elasticity $\bar{\varepsilon}_D$ of the exogenous risk premium function (of the endogenous foreign debt ratio $\gamma_t^D \equiv e_t d_t / Y_t$), which is directly related to the elasticity ε_D^φ of the risk premium function in the risk-adjusted UIP (as I show in section A.1.2.1 of the Appendix). To obtain calibrations for the parameters α_1 and α_2 in the exogenous risk function $\bar{\tau}_D(\gamma_t^D) \equiv \alpha_1 / (1 - \alpha_2 \gamma_t^D)$, I calibrate the long run household foreign debt ratio γ^D and the elasticity ε_D^φ . I show that the latter elasticity (and hence the former, since I show that they are directly related by $\varepsilon_D^\varphi = \bar{\varepsilon}_D (2/\gamma^D) [1 - \beta (1 + i^*) \phi^*]$) is crucial for the effectiveness of the use of the two policy rules). This is the essence of Table 18, showing that when ε_D^φ (varepsphiD in the notation used for the Dynare mod file) tends to zero so does the gain in loss obtained by using two policy rules instead of one (corresponding to FER or PER) in the context of optimal policy under commitment (which necessarily gives a global minimum). Table 19 also highlights the importance of the volatility of the shock to the exogenous international risk/liquidity parameter ϕ^* . Under the most typical CB styles (A-D) the increase in loss obtained by going from the use of 2 policy controls (MER regime) to 1 (either FER or PER regime) is increasing in this volatility. And is still quite significant even when the volatility as low as 0.01.

1.4.3. *How would the model perform under alternative closure rules as in Schmitt-Grohé and Uribe (2003)?* SG-U (2003) list 5 alternative ways of dealing with what used to be a standard small open economy model that generated a unit root. One of them is assuming the existence of a complete set of asset markets, and another is maintaining non-stationarity, neither of which I am interested in exploring. Aside from these, the remaining ones are (1) using an endogenous discount factor

(Uzawa-type preferences); (2) using a debt-elastic interest-rate premium; and (3) using convex portfolio adjustment costs. They find that all these models "deliver virtually identical dynamics at business-cycle frequencies, as measured by unconditional second moments and impulse response functions." Clearly, my modeling has so far centered in (2) and while for the moment I do not plan to explore alternative assumptions I may in a future paper.

1.4.4. *Comparison of model moments with actual data moments.* The objective of this paper has been to show that under calibrations that are quite standard for SOE DSGE models and adding some additional features that also require calibrating, in general policymakers can get closer to their objectives if they use 2 policy rules instead of only one, i.e., if they systematically intervene in the FX market in addition to the usual open market operations in the money market. In the much more complex model of Escudé (2009) I did some preliminary Bayesian estimation using Argentine data. Returning to Bayesian estimation is in my research agenda but this is clearly subject matter for another paper. I am not sure that I would use this particular model for future parameter estimation and moment comparison since for that objective I would probably prefer to, for example, reintroduce investment.

Notice that I do not claim that Argentina or any other country has actually implemented the MER policy of the paper in any particular period of time. In the preliminary Bayesian estimation of the model in Escudé (2009) using Argentine data for the period 2002.3 to 2007.4 and 10 observable variables, the model where the CB uses the two feedback rules generated a significantly lower marginal data density conditional to the model than the model where it uses only the foreign exchange intervention feedback rule. Hence, it would appear that the CB of Argentina was not using the two policy rules during this period.

1.4.5. *Pricing to market or export price stickiness.* Local currency pricing was one of the features of the model in Escudé (2007), where there were "*two kinds of goods exported: primary and manufactured. Primary sector firms export all output that is not sold to the domestic sector at the (exogenous) international price. The Law of One Price holds for these firms. On the other hand, firms that export manufactured goods differentiate the domestic goods bundle (which is their input) and sell in the LRW through sticky local currency pricing (see ALLV (2005)). Importing firms differentiate the bundle of goods produced abroad to sell in the SOE through sticky local currency pricing.*" These features, although of great interest, were left behind in the simplification process that led to the present model and paper.

2. On the novelty of the approach: setting the record straight

I think it is very auspicious that recently some researchers have finally taken interest in modeling and analysis with two intermediate targets of which one is related to the exchange rate (as in the paper cited by the referee: Benes et al (2013)). It has been a mystery to me why this did not happen much earlier, since it is in the nature of general equilibrium modeling to include all the relevant interconnected variables and their relations. And certainly intervention in the FX market while there is some other form monetary policy has a long history. The diffusion process for new ideas in economic modeling, as in so many other issues, appears to be extremely slow. Hence, I am not surprised to find in Benes et al (2013) the assertion "...we believe our paper is the first to formalize the use of FX intervention alongside

standard monetary policy rules in a new-Keynesian framework" (even though one of its authors was in the Conference Organizing Committee for the 12th (2011) IMF Jacques Pollack Research Conference that rejected the present paper).

I have been developing DSGE models and writing papers with basically the same approach to policymaking during the last 7 years (at least) within the Research Department at the Central Bank of Argentina (CBA). In these models the CB has the possibility of using 2 simultaneous policy rules that determine, respectively, the CB's *intermediate targets*: the nominal interest rate and either the rate of nominal currency depreciation or the CB international reserves. An intrinsic aspect of the approach is that there are 2 corresponding *instruments* (domestic currency CB bonds and foreign currency CB international reserves) that policymakers use in the bond (or 'money') and FX markets, respectively, in order to achieve their intermediate targets. Since the model frequency is quarterly (or lower), there is no model to reflect in detail how, at high frequency, the use of an instrument determines the corresponding intermediate target. However, in an adequate modeling setup the sectorial budget constraints do determine the levels that the instruments must have at the end of the quarter. In the CB balance sheet, if the exchange rate floats throughout the quarter, CB reserves remain constant, and if there is no intervention in the money market, the stock of CB bonds remain constant. In the general regime (which I denominate Managed Exchange Rate regime -MER) both instruments are used and there are two operational targets. For this setup it is essential to include the CB budget constraint and make some explicit assumption with respect to the CB's (financial) profit or quasi-fiscal surplus. I make the assumption that this is handed over period by period to the Treasury.

I have written three previous papers that developed DSGE models using this framework and they appear in the References of the present paper. Another paper that used this modeling of two simultaneous policy rules (to which I contributed the modeling aspects) is Eloseguy et al (2007). The model there described was not microfounded, was estimated using GMM, implemented in WinSolve, and used for a number of years for macroeconomic projections at the CBA. Only the Spanish version of the complete paper is published in the CBA website but there is also an English version of a three page Executive Summary. Complete English versions of the 3 papers in the References have been in the website of the CBA (and in other websites, as I detail in the References below) for a number of years. They are also in the BIS's Central Bank Research Hub.

Below I very briefly describe the basic characteristics of my 3 previous DSGE models in the order in which they were elaborated by quoting a few sentences from their Introductions (in italics).

The first is Escudé (2006), which "*develops a dynamic stochastic general equilibrium (DSGE) model for a small open economy (SOE) that can be calibrated to simulate the macro dynamics of a semi-industrialized developing country like Argentina. It is built so as to accommodate various alternative monetary/exchange rate policies. The model assumes rational expectations and optimizing behavior by a subset of the agents involved, who coexist with agents who make decisions based on "rules of thumb"...Foreign investors demand a risk premium for purchasing Government bonds. This premium is assumed to have an exogenous component as well as an endogenous component that varies positively with the public sector's net foreign*

currency debt. Money demand is introduced through a stylized transactions technology where holding money saves on transaction costs in terms of the exportable or non-tradable good that is transacted. Arbitrageurs make the uncovered interest parity condition hold between domestic currency (Central Bank) bonds and dollar denominated (Government) bonds.... We close the model with four alternative monetary/exchange rate policies: 1) a fixed exchange rate with a single currency (the U.S. dollar), 2) a fixed exchange rate with a trade weighted basket of currencies, 3) inflation targeting under a pure float, and 4) inflation targeting under a managed float. The Central Bank is assumed to have a policy of handing over any "quasi-fiscal" surplus or deficit to the Government and thus keeping a balance sheet that in each period fully backs monetary and domestic currency bond liabilities with international reserves. This assumption plays a key role in generating a clearly defined supply of Central Bank bonds and allows for the possibility of inducing private sector portfolio shifts through the simultaneous use of money market and foreign exchange market interventions in the Inflation Targeting with Managed Float regime. In the latter regime, the Central Bank simultaneously uses an interest rate feedback rule and a feedback rule for the use of international reserves in foreign exchange market interventions. The latter feedback rule reflects a policy of "leaning against the wind" by purchasing foreign exchange when the currency tends to appreciate (see McCallum (1994))."

This model was not implemented numerically because for this I preferred to build a different and larger model. This implied adding some features (such as a banking system, manufactured as well as primary exports, etc.), and changing others (such as adopting the more usual Calvo (1983) approach to price setting instead of a price adjustment cost as in Rotemberg (1982), obtaining the UIP condition directly from bank profit maximization instead of invoking arbitrageurs, adding CB reserve requirements, and adding investment and other features of the Christiano, Eichenbaum and Evans (2001) model). The result was Escudé (2007), which says that "*The need for better microfounded models that can contribute to policy analysis is also experienced by developing country Central Banks, Argentina being no exception. On top of the many difficulties encountered in developed countries in building, calibrating and/or estimating these models, those who seek to construct models that can be relevant in the developing country context find various additional difficulties. One of these stems from the fact that the models built for industrialized countries typically assume a freely floating exchange rate and hence can avoid modeling exchange rate policy. Most developing countries do not have a pure exchange rate float and their Central Banks regularly intervene in the foreign exchange market with varying degrees of intensity and frequency. While the opposite "corner" of a pure interest rate float with a monetary policy based on determining a path for the nominal exchange rate is not difficult to model, one of the challenges faced by developing country modelers is to incorporate intervention in the foreign exchange market as an additional tool available for a Central Bank that also intervenes in the "money" market (typically by determining an operational target for the short run interest rate). This is one of the main objectives of this paper, which on this topic builds on previous analysis by the author (see Escudé (2006))...*

...As is typical in recent DSGE models, ARGEM has various nominal and real rigidities that help to achieve realistic dynamics: habit in consumption, adjustment

costs in investment, costs for abnormal intensity in the utilization of physical capital, transactions costs, risk premia by foreign lenders, Calvo-Yun-Rotemberg wage and price setting with full indexation to the previous period's inflation for non-optimizers, gradual pass-through of import costs (including the exchange rate) to domestic prices as well as gradual pass-through of domestic costs to foreign currency pricing for exporters of manufactures. Some of these rigidities generate a role for (nominal or real) exchange rate stabilization... To the traditional Central Bank interest rate instrument that responds to exchange rate developments, we add a more direct foreign exchange intervention through the sale and purchase of international reserves. This has various possible justifications. On the one hand, it is an empirical fact that this instrument is used by many developing country central banks and also many central banks in industrialized economies (see Bofinger and Wollmershäuser (2001)). On the other hand, it seems intuitively plausible that two instruments should allow the central bank to better achieve its objectives, for example, obtaining a lower loss for a given intertemporal quadratic loss function. In the model we present, the interest rate instrument impacts directly on the banking system since the central bank's interest rate instrument is the rate that defines banks' deposit and lending margins and hence rates. While the deposit rate affects households' saving/expenditure decision as well as the amount of cash they wish to hold (since they save in bank deposits and the deposit interest rate is their opportunity cost for holding cash), the lending rate directly affects domestic sector firms' marginal costs, since these firms finance a part of their variable costs through bank loans. The inclusion of a banking sector also enriches the monetary policy transmission mechanism through other channels. In particular, it allows for the introduction of a regulatory prudential requirement that directly affects banks' deposit margin. And since banks also invest in central bank bonds, it allows for a consistent modeling of the sterilization of foreign exchange market intervention. Furthermore, the role of the banking system is enhanced by the fact that the model's uncovered interest parity condition derives from banks' profit maximization and their obtaining funding abroad under a risk premium. However, the central bank's foreign exchange market intervention also affects the real sector by directly affecting fluctuations in the real exchange rate that impact on households' consumption and investment decisions. This smoothing complements the smoothing that takes place owing to import firms' incomplete pass-through to import prices. Indeed, the central bank's foreign exchange intervention has the potential to modify the smoothing that such pricing practices of importing firms achieves in order to better attain its objectives, whatever they may be. The two separate instruments hence impact the economy through basically different mechanisms (that are of course interrelated) and have their direct impact on different places: the interest rate instrument impacts more directly on the banking system and on intertemporal allocations, and the foreign exchange market intervention impacts more directly on the trade sectors and intratemporal allocations..." The parameters of this model were calibrated and the model was implemented numerically in MATLAB using Klein's (2000) algorithm.

Some time later, because ARGEM was rather large and I wanted to use Dynare's Bayesian estimation tools and also wanted to study the optimality of monetary and exchange rate policies, I decided to make some simplifications (such as eliminating investment and reserve requirements). After an initial calibration of parameters and the implementation of the new model (which I called ARGEMmy) in Dynare,

I put the model in the linear-quadratic optimal control framework and evaluated whether it was usually optimal to use both policy rules instead of just one. The resulting model is Escudé (2009), which says that "*The purpose of this paper is to advance in the construction and calibration/estimation of an intermediate DSGE model with two policy rules for Argentina and explore to what extent two policy rules can be better than one. The BCRA's research department currently uses a very small and non-micro founded model with two policy rules which I designed a few years ago (MEP: Modelo Económico Pequeño (see Elosegui et al 2007)) as the backbone for a system of macro and monetary projections. During 2006-07 I constructed the much larger DSGE model ARGEM, mainly for research purposes. It seemed that there was need for an intermediate sized DSGE model that could be of help in bridging the gap between the two. ARGEMmy is the result of this new effort. Hopefully, it will help in bringing the DSGE modeling strategy closer to the policy environment. The new model has much of the fundamental structure of ARGEM: it includes banks as well as the ability to model a managed float, a pure float, or a pure peg. It also has some features that may be seen as an advance on ARGEM. In particular, instead of including a feedback rule on international reserves (aside from the typical feedback rule on the short run interest rate), as in the current version of ARGEM, I replace it with a feedback rule on the rate of nominal depreciation. This seems closer to the way Central Banks that intervene in the foreign exchange market actually conceptualize their intervention, although, as I show in Escudé (2007), one can usually go from one feedback rule to the other without fundamentally changing the functioning of the intervention policy...For didactical purposes, I construct the model from first principles and include a detailed calibration of all the parameters. This calibration was used to construct a MATLAB m.file that interacts with Dynare in simulations or estimations. In this paper I present preliminary results on the Bayesian estimation of a subset of the parameters in ARGEMmy using data from the post-Convertibility period.*

My perception of an absence of significance impact led me more recently to build the present much simpler model that would be easier to communicate and where the specific aspects of my policy framework could be more visible. This was suggested to me by Lars Svensson at the conference on 'Quantitative Approaches to Monetary Policy in Open Economies' held in the Federal Reserve Bank of Atlanta, May 15-16, 2009. The new member of the ARGEM family of models is much simpler but retains much of what I think is essential. It eliminates banks and hence it is households that have a foreign debt that is considered risky by foreign investors and it is their utility maximization that yields the risk-adjusted UIP equation. Summing up, the basic approach used in the present paper has quite a long history and, as detailed in the References, these papers have been presented in a diverse set of forums.

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