Trade Balance and the Exchange Rate in Argentina: An analytical and empirical exercise

John Weeks
Professor Emeritus, SOAS
University of London

ABSTACT

This paper investigates whether Argentina suffers from an overvalued peso. No clear conclusion emerges from empirical calculation of various measures of the real exchange rate, with the exception of the purchasing power measure, which is the least relevant for policy. Similarly, calculations produce no clear conclusion as to whether the trade balance has deteriorated over the last two years. It deteriorated during the worst of the global recession, because international demand fell.

In the standard open economy model, two major parameters determine the impact of a depreciation or devaluation in the short run, the marginal propensity to import and the sum of the elasticities of exports and imports with respect to the nominal change rate. Reasonable estimates of these parameters suggest that the short term impact would be quite low in Argentina. Aggressive exchange rate devaluation may or may not improve Argentina's trade balance and its holdings of external reserves. If this were the case in the present context of depressed international demand, devaluation would be *de facto* price cutting, and likely to provoke competitive exchange rate management.

It is possible that devaluation is appropriate for Argentina at the present moment. If so, the motivation should not be a short term improvement in the trade balance or reserve holdings.

Introduction

A major issue in macroeconomic policy discussion in Argentina is the whether the government should implement or allow a devaluation or depreciation of the peso. In this context, it is worth recalling that controversy has characterized analysis of the appropriate and effective management of exchange rates in Latin America since the end of World War II. The issue is considerably complicated because of the role of the exchange rate in short and medium term adjustment, its impact at the macro, sectoral and company levels, as well as identifying the appropriate measure for a specified impact.

The purpose of this paper is to explore the exchange ate issues in the context of general inferences drawn from my previous analytical work (Weeks 2013). The macroeconomic framework I use treats economies as quantity constrained due to idle

resources. In a quantity constrained system relative prices are not parametric outcomes that function as "signals" for buyers and sellers. Relative prices are derivative from the level of demand. This general inference, obvious for international prices, also applies to the nominal and real exchange rates (Weeks 2012).

I use this framework to inspect the hypothesis that the level of exchange rates in Argentina is inappropriate and should be adjusted. To begin I ask with the obvious question, over recent years has the *peso* been overvalued?[1] For conceptual and measurement reasons, it proves difficult to reach a clear answer to this question. None-the-less, I forge on to the next section in which I consider the relationship between exchange rates and external balances in Argentina. The previous conceptual and measurement issues persist, aggravated by the theoretical tensions between one and multi-product analysis.

Overvaluation of the peso?

In a famous New York joke two women are on a bus and one asks the other, "how is your husband?" The woman replies, "compared to what?" The same response seems appropriate in response to the question, is the exchange rate of Argentina overvalued? Compared to what?[2]

If the analysis locates itself with a Walrasian world, the over or under evaluation of an exchange rate is in comparison to the exchange rate in general equilibrium (full employment and instantaneously adjusting prices under perfect competition). In such an analytical framework the exchange rate is "distorted" if it does not coincide with its Walrasian outcome. If, however, the economy is not in general equilibrium but at a point of quantity constrained relative stability, the equilibrium exchange rate is unknown and

[1] For example, on its website the Institute for International Economics in Washington makes a quite definitive judgment:

> As the current account surplus (of Argentina) vanishes due to rapid real peso appreciation and the capital account remains under pressures, the economy's reliance on high agricultural commodity prices has increased.
> [http://www.iif.com/emr/la/argentina/]

[2] An explanation of analytically-based empirical measurement is found in Harberger (2004).

unknowable. If, further, one does not accept the analytical validity of Walrasian outcomes, the "equilibrium exchange rate" and a "distorted exchange rate" are irrelevant.

If we quite sensibly abandon the entire Walrasian approach, over/under valuation becomes an empirical issue. To pursue the empirics a theoretical, or at least analytical, basis is required for calculation. The most common macroeconomic framework for treating exchange rates is the Mundell-Fleming model.[3] This, like almost all macroeconomic models is singularly unsuited for the task of inspecting exchange rates, because it is a one-product system. In this model the one composite commodity is by definition tradable, and its price multiplied by a ratio of foreign to national currency units measures its cost in international exchange.

This simplistic model provides an empirical measure if one interprets the observed GDP price index as the price of a composite economy. The "real exchange rate" is obtained by multiplying a country's nominal exchange rate by some external cost of living index and dividing by the GDP deflator. It is unclear what this calculation measures, though some interpret it to indicate changes in purchasing power across countries. Whatever it might indicate, this calculation provides no guide to international competitiveness, because it erroneously treats all output as tradable. Even were all output tradable, a logical and practical impossibility, the output weights of the foreign price index should bear some similarity to those of the GDP price index.

Disaggregation of the economy into tradable commodities and non-tradable ones represents a step forward, and their ratio can be interpreted as a "real exchange rate" in that it indicates the trend in the return to producing the two types of commodities. While suggestive of the relative domestic return to tradables and non-tradables, this calculation provides little guide to external competitiveness, the measurement of which is the motivation of many commentators. Further disaggregation, of tradables into exportables and importables, moves closer to a measure of competitiveness. It also enables the analysis to move beyond the crude trade-off between "import substitution" and "export promotion" (see Liang 1992).

[3] Agenor and Montiel (1996, 45ff) offer a discussion of the exchange rate in the Mundell-Fleming model, though they do not appropriately distinguish between real and nominal, a point I explain below. For the original presentation, see Fleming (1962) and Mundell (1963).

The one commodity model provides no useful guide to any important question about external trade. The disaggregated measures suffer from their own serious flaws. The most obvious of these flaws is what might be named the base year problem. Except in extreme cases, without a measure of the equilibrium exchange rate it is difficult to interpret the empirical evidence. For example, if a measure of the real exchange rate rises, does this indicate movement away from the desirable level (however identified), or movement towards it?

It might be argued that each situation can be assessed in a practical way. For example, if some measure of the exchange rate indicates appreciation and external indicators simultaneously move contrary to the desired outcome, then for policy purposes the exchange rate is dysfunctionally over valued. An appreciating purchasing power parity rate and a declining trade balance would be an example. While this may seem sensible, it is not analytically sound. It assumes what is seeks to prove, that causality runs from the exchange rate to the trade balance. If Argentina's exports are sensitive to world demand (i.e., Argentina is not a "price taker"), which seems to be the case (see next section), then neither the nominal nor the "real" exchange rate is determined by "supply and demand" in the neoclassical sense. Further, partial equilibrium stories, such as "a deteriorating current account should depreciate the currency", are not valid for a price that links several markets.

As a final analytic flaw, in a multi-commodity economy many "real exchange rates" send many "signals" to producers and buyers. There is no reason *a priori* to presume that the simultaneous adjusting of these is consistent.[4] An obvious possibility is that the nominal exchange rate associated with a sustainable balance of payments may not bring the equivalence of internal and border prices of tradables.

Be these objections as they may, various calculations of "real exchange rates" are used with great frequency, with policy inferences drawn from them. I follow this practice to assess whether the Argentine peso shows a tendency to overvaluation in recent years. The following five measures are calculated: purchasing power parity, trade weighted, export competitiveness, import competitiveness, and the ratio of tradables to non-

[4] This issue is considered with different approaches in Shaikh (1999) and Taylor (2000).

tradables.[5] In each case an increase in the measure is a depreciation. The empirical details for each are given in the notes to Figure 1 and the Data Annex.

The shift from a currency board regime to a managed exchange rate regime in 2001-2002, each of the measures shows stability over time with the exception of the export based index of the real exchange rate. This is shown for quarterly data in Figure 1. The legend reports the simple regression trend value for 2003.2 to 2011.4.[6] If we accept these arbitrary end years, the clearest result is the measure of purchasing power parity, which shows a statistically significant negative quarterly trend of minus 1.4. Should this be accepted as an appropriate measure of appreciation, it is not clear why a government would be concerned by the domestic rate inflation rate exceeding that of some measure of world prices. In and of itself, this measure has no obvious implication for the major concerns of exchange rate policy.[7]

Considerably more useful for policy purposes is the trade weighted index, which is the weighted average of implicit export (X) and import (Z) exchange rates. This measure is divided by the similarly weighted average of the domestic agricultural deflator and the manufacturing deflator. The first I interpret as an index of domestic exportable prices and the latter as an index of prices of importables. The US producer price index serves as the measure of external tradable prices. The measure shows no significant trend and nor does the exportable exchange rate (implicit export exchange rate times the ratio of the IMF grain index to domestic agricultural sector deflator).

The equivalent exchange rate for imports shows a statistically significant trend, which can be interpreted as indicating that prices of domestic import substitutes rose

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[5] Some of these measures are treated in Nicolini Llosa (2010). See especially discussion and diagram, pages 206-208.

[6] My calculations for the PPP exchange rate show a similar pattern to that presented by Damill, Frenkel and Maurizio (2011, 43, through June 2010), who wrote,

> Between early 2003 and December 2006 the multilateral real exchange rate fluctuated around a stable trend, while the real parity with the US dollar experienced a sizeable appreciation, particularly during 2005-2006. Considering that between 2003 and 2006 the trend of the nominal exchange rate that resulted from the exchange rate policy was a 1.6% annual increase, and that local inflation surpassed the inflation in trade partner countries, the stability of the multilateral parity was a result of the appreciation trend of the currencies basket of those trade partners.

[7] Frenkel and Taylor list these as resource allocation, competitiveness, expectations, external balance and domestic inflation (Frenkel and Taylor 2006, 2-3). With the possible exception of expectations, concern about each of these would be better addressed by a different indicator.

compared to similar imports. Also with a significant negative trend is the tradable and non-tradable measure, albeit quite small (minus 0.3 percent per quarter, or minus 1.2 percent annually).

Figure 1 and interpreting it suffer from the arbitrary terminal date problem, as shown in Figure 2. In this chart each year on the horizontal axis is a successive initial comparative date. The values corresponding to that year are those of each exchange rate measure at the end of 2011. For example, for the initial date of the first quarter of 2000, three of the five measures had appreciated at the end of 2011 (tradables/non-tradables, purchasing power parity, and the trade weighted implicit rates), one was unchanged (import rate) and one had appreciated (export rate). As the initial comparator date approaches the terminal date, both the order and direction of movement of the five measures change. The strongest appreciation inference would be drawn from the initial date 2003.1. When 2011.4 is compared to that date, every measure shows appreciation, two by over forty percent. In contrast, the inference grows weaker as the initial date advances. By the last initial date there is with no appreciation in one case (tradables and non-tradables), less than ten percent for two measures (trade weighted and exportables), and slightly over ten percent for two (purchasing power parity and importables).

Figures 1 and 2 suggest that the most credible appreciation stories would be for the measure of the real exchange rate by purchasing power parity and importables. Because the policy relevance of the former is open to question, the supportable policy relevant statement would be limited to inferring a slowly appreciating importables over the last few years. Statistics presented in the next section indicate that import demand is sensitive to this exchange rate, implying that its appreciation contributed to a reduction in the trade balance and current account.

On the basis of this interpretation of the statistics it is not clear that the appropriate policy response would be a nominal devaluation. Because the relative price problem is with importables, not exportables, changes in the nominal exchange rate are a rather blunt instrument whose undesired effects, such as the inflationary impact, might outweigh the gain to importables. As pointed out above, changing the nominal exchange rate may be not only blunt but based on an invalid analysis of causality.

Figure 3 shows quarterly values for current account of the balance of payments as a share of GDP and the PPP measure of the exchange rate. A causal glance might suggest that "appreciation of the real exchange rate resulted in a deterioration of the current account". This inference would be invalid for several reasons. First, a scatter diagram of first differences shows no relationship, suggesting that all Figure 3 indicates is two variables with a similar trend. Second and more important, this is a relative price story that presumes that the current account is not quantity constrained. A quantity constrained explanation might state, "the deterioration of the Argentine current account in recent years results from falling export demand due to the global recession". If the latter were correct, devaluation may or may not improve the trade balance. If it did it would reflect price cutting ("beggar-thy-neighbor"), not allocative efficiency.

The message from this skeptical discussion of exchange rates is *not*, "don't devalue", or, "the exchange rate never need change". Rather, the message has three parts: 1) over and under-valuation judgments should derive from an appropriate measure, 2) clarity is required as to the specific purpose of the exchange rate adjustment and the time period over which it would be achieved, 3) causality should be carefully identified and relevant parameters estimated, and 4) undesired side effects should be identified. There are also negative messages, foremost among which is that unless one believes that real economies have only one product, do not expect exchange rate adjustment to contribute to macro stability in the short run.

Exchange Rate and External Balances

Is there an External Balance Problem?

The previous section addressed the question, is the Argentine peso over-valued, and reached the conclusion that for most policy purposes the answer is negative. Not withstanding this conclusion, pragmatic concerns about the current account and trade accounts might call for exchange rate adjustment. Thus, the first question is whether the current and trade accounts have deteriorated to the extent to cause concern.

Figure 4 shows the current account balance, disaggregated into its three major components, the trade, services and short term income flow balances. As for measures of

real exchange rates, the initial year problem presents itself. To facilitate an assessment of the external account, Table 1 provides the annual averages and Table 2 trend values with various initial quarters. For initial quarters 2004-2008 (the first quarter in each case), the current and trade balances show statistically significant trends, though quite small (quarterly trends of -0.1 and -0.2 imply annual changes of -0.4 and -0.8). Both indicators show considerably larger trends for the first quarter of 2009 as the initial period. Because 2009 was the year of severest downturn during the Global Financial Crisis (at least up to now), the 2009-2012 trend is more consistent with falling world export demand than a relative price explanation. The falling external demand hypothesis is strengthened by the absence of any trend during the last eight quarters, 2010.1-2011.4.

Contrary to what seems the common view, one does not find at sudden or even statistically significant decline in Argentina's external balances, though at the end of 2011 they were lower than they were at the beginning of the century. The pattern we observe is consistent with movement toward sustainable levels after the crisis generated extreme values during 2002-2003, combined with falling external demand for commodities.

This conclusion does not imply that the external account presents no problems that need addressing by policymakers. Figure 5 reports the foreign exchange reserves of the Central Bank, in billions of US dollars and months of imports. While the level of total reserves varied relatively little from early 2008 to mid-2012, the monthly import measure at the end of 2011 fell to its lowest for the eight years in the table. Now or in the near future policy makers might decide that the mid-2012 level of reserves is insufficient, requiring intervention. If intervention is judged necessary, it is unlikely that the nominal exchange rate is the appropriate instrument. With a global demand constraint, nominal devaluation is equivalent to price cutting, to redistribute demand towards Argentina from producers of the same and similar commodities. To the extent this price cutting succeeds, it is reasonable to expect governments of other countries to do the same.

I reach the conclusion that to the extent that external balances have declined, this is the result of global demand not the nominal or real exchange rates. A continuous fall in reserves measured in months of imports may signal the need for short term policy intervention. Exchange rates would not be effective vehicle for this short term intervention.

One Product Analysis

A number of objections could be made to my analysis. Among these would be a challenge that my presumption that the trade balance is insensible in the short run to exchange rates is assertion. I may be correct that the trade balance shows a short run insensitive, but the response, albeit weak, may be sufficient to justify use of the exchange rate instrument.

The theoretical basis for the link between the exchange rate and the trade balance is invariably presented within a one product model. This is for the obvious reason that a multi-product framework does not allow consideration of changes in output. Analysis that holds output constant is not very useful. With a simple version of the one product framework closely akin to the Mundell-Fleming model, I investigate the exchange and trade balance interaction.

I begin by defining the following terms: X is exports, Z imports, TB the trade balance, Y national income, E the nominal exchange rate and E* the real exchange rate. The export, import and trade balance equations are :

$$X = X^* + \alpha_1 E^*$$

$$Z = - \alpha_2 E^* + \alpha_3 Y$$

$$[X - Z] = [X^* + \alpha_1 E^*] - [\alpha_3 Y - \alpha_2 E^*]$$

$$TB = X^* - \alpha_3 Y + [\alpha_1 + \alpha_2] E^*$$

The alphas are partial derivatives and X* is the autonomous element in export demand. The total derivative of the trade balance is:

$$d[TB] = d\{X^* - \alpha_3 Y + [\alpha_1 + \alpha_2] E^*\}$$

$$d[TB] = - \alpha_3 dY + [\alpha_1 + \alpha_2] dE^*$$

By definition the change in the real exchange rate is the change in the nominal rate minus the rate of inflation. In the absence of other sources of price pressure, inflation equals the pass-through rate of changes in the nominal exchange rate.

$$dE^* = dE - dP,\ dP = \alpha_3 E,\ dE^* = (1 - \alpha_3) dE$$

Obtaining an expression of the impact of the nominal exchange rate on the trade balance becomes a matter of simple algebra.

$$d[TB]/dE = - \alpha_3[dY/dE] + (1 - \alpha_3)(\alpha_1 + \alpha_2)$$

$$[dY/dE] = \mu(1 - \alpha_3)(\alpha_1 + \alpha_2), \mu \text{ is the multiplier.}$$

$$d[TB]/dE = - \alpha_3\mu(1 - \alpha_3)(\alpha_1 + \alpha_2) + (1 - \alpha_3)(\alpha_1 + \alpha_2)$$

$$= (1 - \alpha_3\mu)(1 - \alpha_3)(\alpha_1 + \alpha_2)$$

Let $Z = \beta X$, implying $TB = (1 - \beta)X$, $\beta < 1$, trade surplus. Recalling that the real exchange rate is $E(1 - \alpha_3)$, multiply α_1 and α_2 by unity in the form of

$$[X(1 - \beta)/E(1 - \alpha_3)]/[E(1 - \alpha_3)/ X(1 - \beta)],$$

I obtain the elasticity of the trade balance with respect to the nominal exchange rate:

$$\varepsilon_{TB,e} = (1 - \alpha_3\mu)(1 - \alpha_3)(\varepsilon_1 + \varepsilon_2/\beta)$$

Finally, I simply by defining the term in the last parenthesis to be the sum of the trade elasticities, ε^T .

$$\varepsilon_{TB,e} = (1 - \alpha_3\mu)(1 - \alpha_3)\varepsilon^T$$

The equation is the formal statement that the response of the trade balance to the nominal exchange rate results from the specific values of internal parameters (marginal tax rate, marginal propensity to consume out of disposable income and marginal propensity to import, all in the multiplier), and externally related parameters (import and export elasticities). The first parenthesis is the exchange rate induced import effect *via* aggregate demand generated through the devaluation provoked increase in exports. The second is the pass-through effect that renders the change in the real exchange rate less than the change in the nominal. The final term indicates the overall response of trade to the real exchange rate. In general, the elasticity of the trade balance with respect to changes in the nominal exchange rate is negatively related to the propensity to import (effect of the pass through effect and output induced imports), positively related to the trade elasticities, and negatively related to domestic parameters in the multiplier.

Available statistics allow calculation of the elasticity. Ordinary least squares regressions on quarterly trade and GDP statistics suggest that the sum of the trade elasticities is about .60, the marginal propensity to import .30, while the multiplier 1.42.[8] The estimate of the export elasticity with respect to the real exchange rate, .023, is non-significant. These statistics seem reasonable estimates, and others are invited to improve on them. From a trade surplus with exports twelve percent more than imports for 2011, the implied elasticity is .27; i.e., a nominal devaluation of ten percent would improve the trade balance by 2.7 percent, while inducing pass through inflation of three percent. It should be noted that the two effects are strictly related. To activate a fall in imports, the devaluation must completely pass into the domestic economy.

At the end of 2011 the trade balance was 3.07 percent of GDP. The statistics imply that a ten percent nominal devaluation would have increased it to 3.15 percent, while increasing the annual rate of change of the GDP deflator from about fifteen percent to eighteen percent (or more if one thinks the fifteen percent was an underestimate). The associated increase in reserves would be US$ 230 million (the actual value at the end of 2011 was US$ 8,630 million).

On the basis of the standard open economy framework, I conclude that there is no compelling evidence that the Argentine current account or trade balance deteriorated

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[8] Using quarterly data on constant price exports and imports, the following regressions were calculated using the first log difference of each variable. For export specification, x is the first log difference exports, e* of the real implicit export exchange rate and d the output of the advanced OECD countries. The hypothesis of a statistically significant world demand on Argentine exports is not rejected. T-statistics are given below the coefficient if significant at least at the .05 probability. The hypothesis of serial correlation is rejected in both equations.

$x = \alpha_0 + \alpha_1 e^* + \alpha_2 d$

$x = -.001 + .023 e^* + .41 d$

nsgn nsgn (.05)

$adjR^2 = .11$, DF = 36

The specification imports is as follows:

$z = \beta_0 + \beta_1 e^* + \beta_2 y$

$z = .004 - .58 e^* + .30 y$

nsgn (.01) (.05)

$adjR^2 = .55$, DF = 36

The multiplier can be calculated with the additional information that household consumption is sixty percent of GDP (World Bank, *World Development Indicators*).

substantially over the last several years. However, relevant measures of foreign exchange reserves suggest a decline that requires a policy response. The low short run sensitivity of the trade balance to the nominal exchange rate suggest that this instrument would not be very effective in addressing the relative decline in reserves.

Multi-product Analysis

Within the one product macro framework the ability to consider policy options is extremely limited due to absence of any possibility to consider relative prices. Even the exchange rate is a *faux* price, because in the economy under analysis imports and exports are identical. Further analytical progress requires a division of domestic output into at least tradables and non-tradables.

An article by Liang in 1992 provides a convenient and analytically insightful method of treating relative prices (Liang 1992). The basic diagram is shown in Figure 6, in which output is divided among exportable, importable and non-traded products and services. The vertical axis measures the ratio of importable prices to the prices of non-traded commodities and services, and the horizontal axis is the analogous ratio for exportable prices. The line Z = Zn is the level of imports in the absence of policy measures to affected relative prices, with X = Xn the same level of exports. Liang designates these as the "free trade" levels, terminology I avoid because of theoretical ambiguities. All price ratios to the left of Z = Zn foster domestic substitutes for imports ("import substitution"). All price ratios to the right of X = Xn imply fostering exports ("export promotion").

The lines Xn and Zn divide the quadrant into four parts. The area that includes the origin is "anti-trade" in that policy interventions depress both relative prices below non-intervention levels, implying that both import substitutes and exports are discouraged. Moving clockwise, in the area to the left of both the Xn and Zn lines, the relative profitability of import substitutes is raised and the relative profitability of exporting is depressed. This is the area of "import substitution" in the conventional (if inaccurate) sense. Opposite this area is "export promotion", with relative prices discouraging import substitutes and encouraging exports. Finally, there is the area left of line Zn and right of line Xn, which combines pro-export incentives with positive

incentives for importables, which is the central point of Liang's article ("Beyond import substitution and export promotion…"). The diagram demonstrates that policy makers can purse an industrial policy that simultaneously fosters the production of import substitutes and promotes exports.

In the context of the Liang diagram, what appears to have been the balance in trade policy in Argentina in recent years? Figure 7 shows the Liang diagram for Argentina using quarterly data, 2005-2011. Because the ratios are of indices their absolute value has no meaning. However, from the scatter diagram it is clear that the price ratios have favored export promotion over import substitution.

While not definitive, the Liang multi-product analysis supports previous conclusions, that there is no obvious evidence that policy or non-policy influences have discouraged exports. Whether further intervention is required to promote exports involves a policy judgment beyond the scope of this paper.

Ideology, Analysis and Policy

Over the last thirty years the neoclassicals successfully re-specified the central bank rate as the major instrument of short term macroeconomic management. This economic propaganda revised the policy prescriptions of a generation of post-war economists whose approach to interest rates was strongly influenced by Keynes in Britain and other less-than-full-employment theorists such as Raul Prebisch in Argentina. The ideological transformation of interest rates from a medium and long term instrument to the primary focus of central bank policy coincided with other policy revisions, including the role of the nominal exchange rate.

These policy revisions resulted from a reversion to the Walrasian full employment ideology of pre-WWII writers, most famously Pigou. Very much a part of this relative price fundamentalism is the assertion that nominal exchange rates are effective in equilibrating the external account in the short run. More generally, the full employment price constrained ideology assigns all economic maladies to the misbehavior of governments.

The logic of the price constrained ideology is inexorable. The global and national economies automatically tend to price stability at full employment and a sustainable

balance in trade and capital flows. Therefore, inflation, unemployment and problems of external imbalance are the result of unsound government policies. Almost without exception the major policy mistake is excessive public expenditure. Whatever the mistake by public policy markets, ending it brings the economy back into balance. The corollary to the government mistake argument is that failure to reverse policy does more than make matters worse, it leads to disaster. The most commonly invoked disaster is the allegation that if it continues, moderate inflation leads to hyperinflation, a dubious assertion closely akin to suggesting that armed conflict always results in nuclear war.

By any rational assessment, economies are quantity constrained due to idle resources, not relative price constrained at full employment, at either the global or national levels. It follows that the most likely suspect for a deterioration in the current account is global demand, not domestic relative prices or public expenditure. This deterioration may require policy action by the government or the central bank. Such action will not in general involve reversing a mistake, because the pressing problem was not caused by domestic policy. The policy response would be purposeful action in response to altered circumstances not of the government's creation.

Final Comments

Choice of the instrument to ameliorate a pressing macroeconomic problem is both practical and analytical. In the real world of an economy that is quantity constrained, using relative price instruments to address short term problems represents the triumph of ideology over experience. For example, nominal exchange rate adjustment may be necessary in medium term, which allows time for relative prices to adjust and private producers to plan and implement the changes that price adjustments induce. Using a general instrument, the nominal exchange rate, to respond to a specific short term problem, the decline of reserves due to falling world demand, is unlikely to bring success.

The allegation that the Argentine external account suffers from an overvalued peso is an inference drawn explicitly or implicitly from a Walrasian GE framework. No clear conclusion emerges from empirical calculation of various measures of the real exchange rate, with the exception of the purchasing power measure that is the least

relevant for policy. Similarly, calculations produce no clear conclusion as to whether the trade balance has deteriorated over the last two years. It deteriorated during the worst of the global recession, for the obvious reason that international demand fell.

In the standard open economy model, two major parameters determine the impact of a depreciation or devaluation in the short run, the marginal propensity to import and the sum of the elasticities of exports and imports with respect to the nominal change rate. Reasonable estimates of these parameters for Argentina (.30 and .58, respectively), suggest that the impact would be quite low. It may or may not be that aggressive exchange rate devaluation would improve Argentina's trade balance and its holdings of external reserves. If this were the case in the present context of depressed international demand, devaluation would be *de facto* price cutting, and likely to provoke competitive exchange rate management by other countries.

It may be that devaluation is appropriate for Argentina at the present moment. If so, the motivation should not be a short term improvement in the trade balance or reserve holdings.

Data Annex

Quarterly national accounts and balance of payments statistics were taken from CEPAL and checked against the same data provided by the Central Bank of Argentina. Current and constant price series provide for the calculation of the price indices by sector. Exports and imports in current pesos and current dollars allow calculation of implicit exchange rates for exports and imports. These differ for the obvious reason that the export trading partners are not the same as the import partners. The OECD consumer price index refers to high income countries only and is from the OECD data base. The external tradables index is the US producer price index. The IMF grain commodities index is from the background tables for the *World Economic Outlook*. Foreign exchange reserves are from the Banco Central de la Republica Argentina, where they are reported in pesos. I converted into dollars using the implicit export exchange rate.

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Table 1: Annual External Balances, 2000-2011

Year	Current	Trade	Services	Income
2000	-3.8	1.0	-1.8	-3.2
2001	-1.7	3.2	-1.7	-3.4
2002	9.7	18.6	-1.5	-8.0
2003	7.1	14.7	-1.1	-7.0
2004	2.3	9.8	-1.0	-6.9
2005	3.1	8.1	-0.6	-4.7
2006	4.1	7.4	-0.3	-3.3
2007	3.1	5.8	-0.2	-2.6
2008	2.4	5.4	-0.4	-2.7
2009	4.1	7.0	-0.5	-3.4
2010	0.9	4.5	-0.4	-3.2
2011	0.1	3.5	-0.6	-2.8

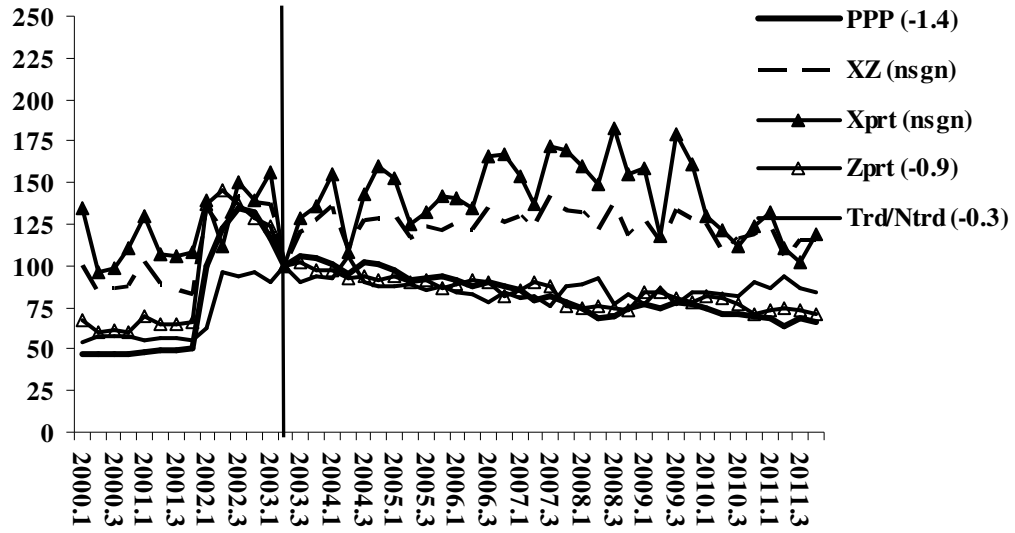
Note: Simple average of the quarters.
Source: Banco Central de Republica Argentina website, http://www.bcra.gov.ar/.

Table 2: External balances:
Trend values to 2011.4 from selected initial dates

Initial quarter	Current	Trade
2000.1	nsgn	nsgn
2004.1	-0.1	-0.2
2005.1	-0.1	-0.2
2006.1	-0.2	-0.1
2007.1	-0.2	-0.1
2008.1	-0.2	-0.2
2009.1	-0.5	-0.4
2010.1	nsgn	nsgn

Note: Simple logarithmic regression trends.

Figure 1: Argentina: Five measures of the "Real Exchange Rate", 2000.1 -2011.4



PPPXr [the Purchasing power parity exchange rate]
= [nominal exchange rate]*[OECD Consumer price index]
[Argentina's GDP deflator]

XZ Xrt [trade-weighted exchange rate]
= [average, implicit export & import rates, trade-weighted]*[external tradables index]
[GDP tradables deflator of Argentina]
External tradables index is the trade weighted average of IMF grain commodities index (exportables) and the US producer price index (importables)

XptXr [exportable exchange rate]
= [implicit export exchange rate]*[IMF grain commodities index]
[GDP deflator for agriculture, Argentina]

ZprtXr [importable exchange rate]
= [implicit import exchange rate]*[US producer price index]
[GDP deflator for manufacturing, Argentina]

Trd/Nntrd [ratio of domestic tradables to non-tradables}
= [deflators for agriculture & manufacturing, output weighted]
[deflators for construction & services, output weighted]

Figure 2: Ratio of value in 2011.4 compared to first quarter value for years
On horizontal axis, five measures of the real exchange rate

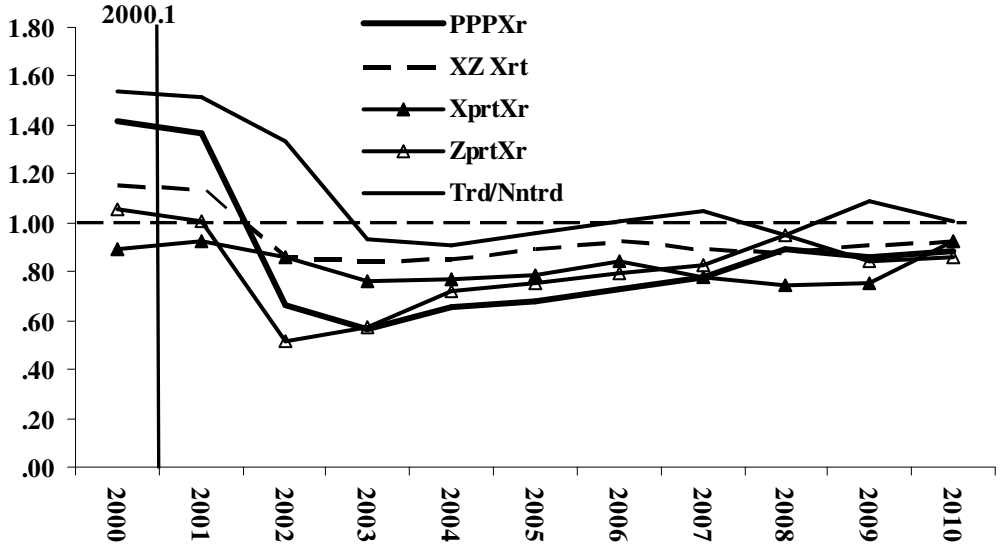


Figure 3: Current account balance (share of GDP) and the PPP Exchange Rate, 2000.1-2011.4 (share of GDP)

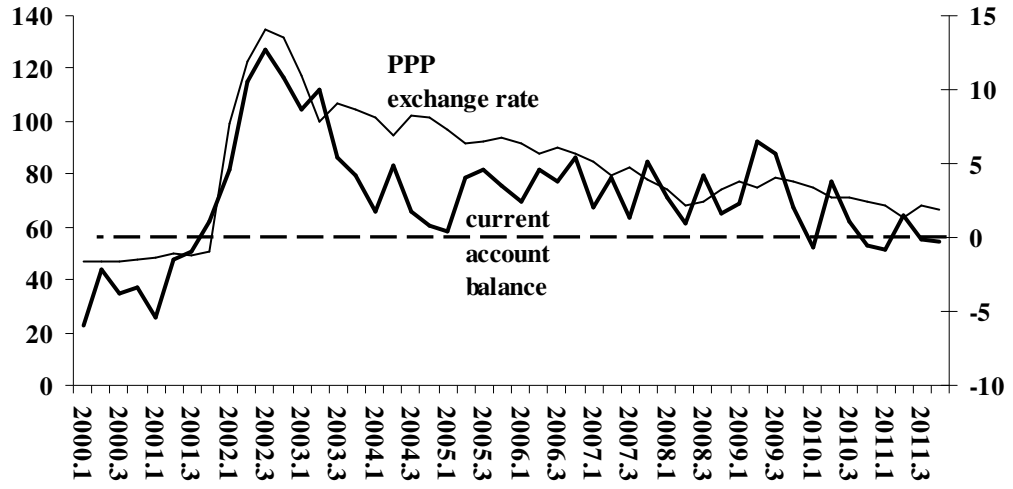


Figure 4: External balances as a percentage of GDP, quarterly 2000.1-2011.4

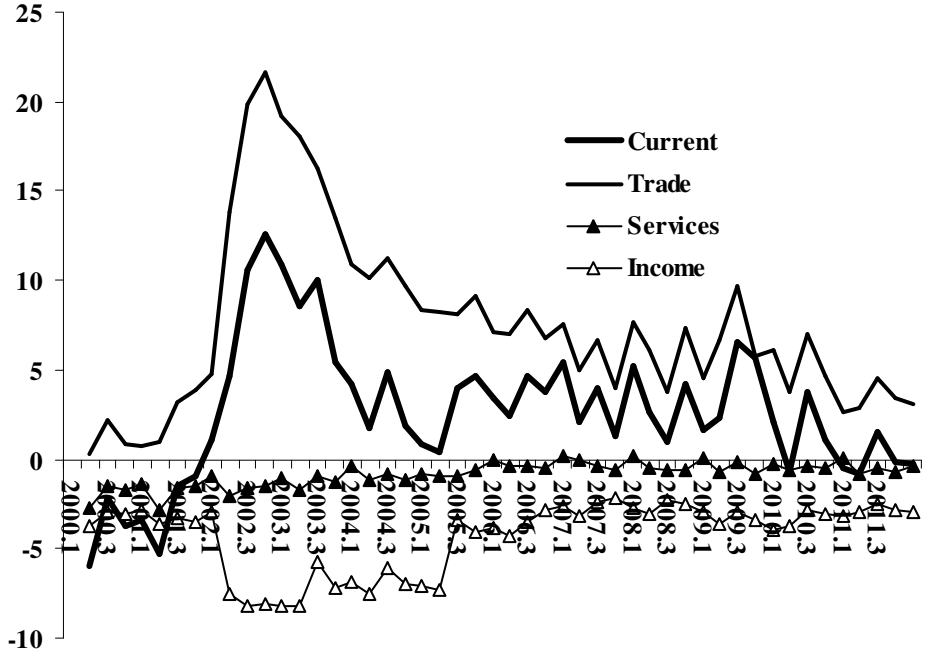
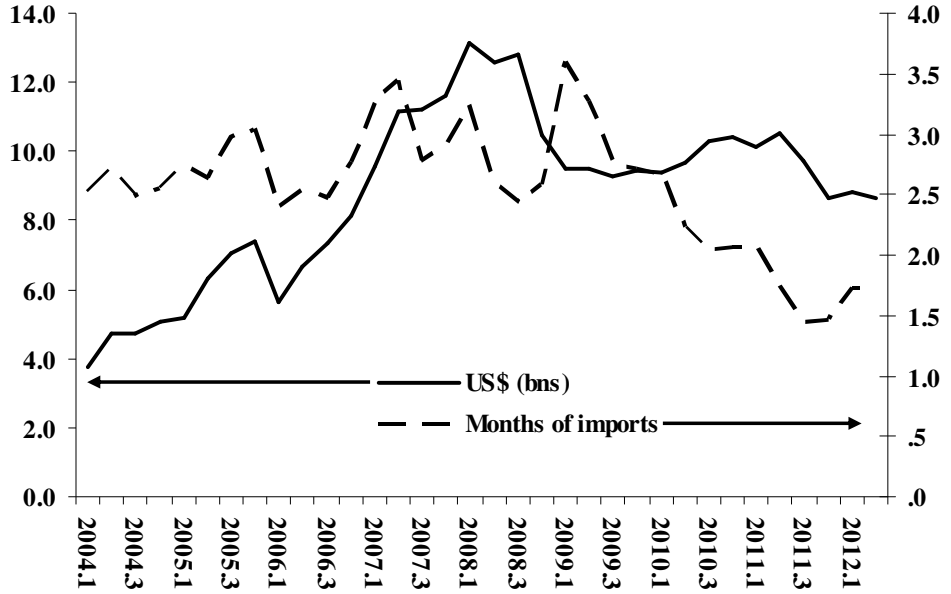


Figure 5: Foreign exchange reserves in US dollars and months of imports, 2004.-2012.2



Notes: Argentine pesos are converted to US dollars using the implicit import exchange rate. Months of imports is the quarterly value multiplied by three.
Source: Central Bank of Argentina website.

Figure 6: First Difference in the trade balance (same quarter to quarter), 2005-2011

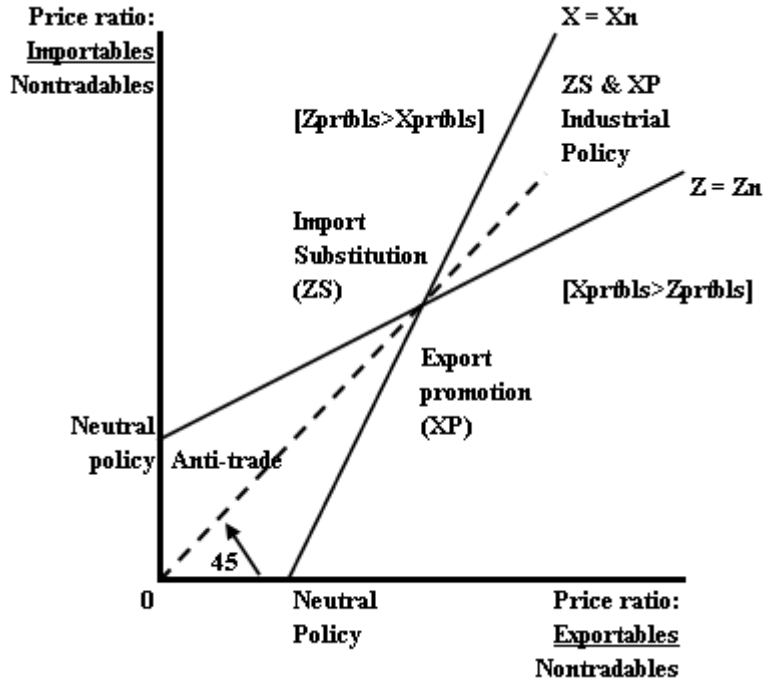
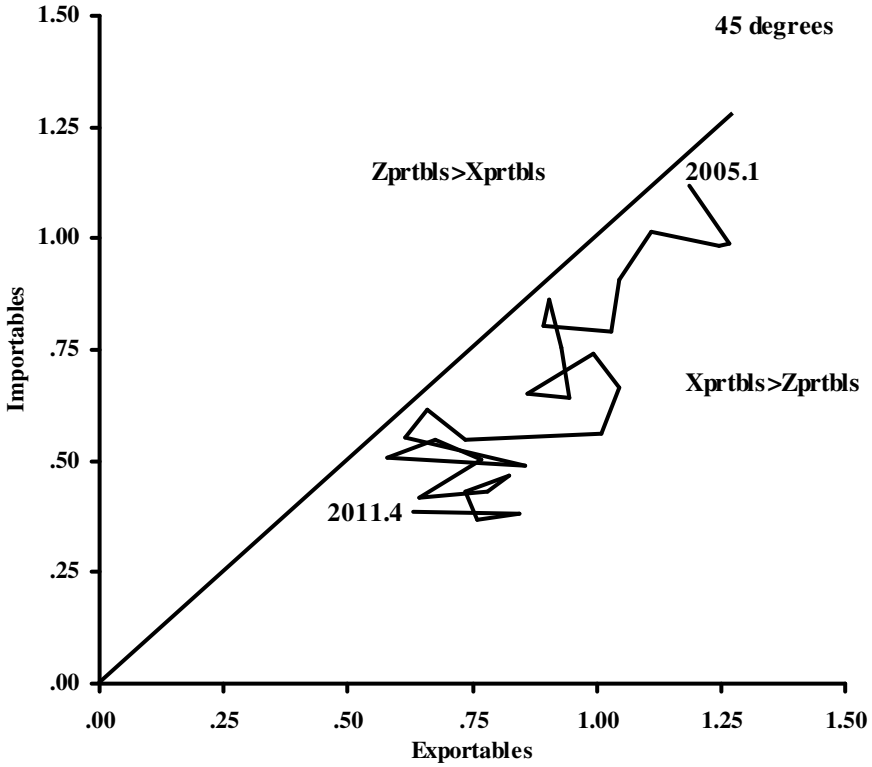


Figure 7: The Liang Diagram for Argentina, 2005.1-2011.4



Note: As in Figure 6, the vertical axis is the ratio of importable prices to non-tradables, and the horizontal axis is the ratio of exportable prices to non-tradables. Exportable prices are the agricultural sector deflator and importables the manufacturing sector deflator. Non-tradables are the out-weighted deflator for construction and services.