

The Exchange Rate and Inflation in Argentina: A Classical Critique of Orthodox and Heterodox Policy Prescriptions

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Abstract In this paper we present an alternative framework to neoclassical theory of international trade and exchange rate determination. Our model, inspired in the classical tradition, provides support for the assertion that an exchange rate policy aiming to improve national competitiveness and to bring about a sustained trade surplus is a viable option. In fact, the success of this strategy does not depend on the effectiveness of monetary sterilization —as many argentinean heterodox authors claim— but on the ability to overcome the boundaries imposed by the evolution of the domestic wage rate and the potential emergence of competitive devaluations. In the particular case of Argentina, the introduction of export taxes on land-intensive commodities, in which the economy has absolute advantages, brings an additional policy tool that can make both the exchange rate target and the workers claims consistent.

Keywords Exchange rate target · Quantity theory · Money supply endogeneity · Normal prices · Capital controversies

Introduction

The year 2002 was a turning point in Argentina's modern economic history. The domestic Central Bank abandoned the fixed parity between the national currency and

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the US dollar that characterized the “Convertibility Regime” and replaced it with a system of “dirty flotation”. Over the 5-year period extended from 2003 through 2007, real GDP growth was about 8.8% on annual basis, a rate further above the historical country’s average. In addition, the external current account changed its position from deficit to surplus (see Table 1).

In the fiscal side, following the currency devaluation, the National Government introduced a novelty in the tax structure: export tariffs on tradable primary commodities. Based on such a change and on the growing tax collection promoted by the boosted economic activity, the Government managed to turn the external surplus into a positive fiscal balance.

Behind the current debate on the determinants of the country’s successful economic recovery, there is almost absolute agreement that the accelerated pace of GDP growth must find one of its pillars in the introduction of a competitive and stable exchange rate regime.

In this regard, the arena of discussion among experts has thus been centered on the prospective viability of this process in the long run. In other words, which are the intrinsic limits that could constraint the current monetary policy in its objective of promoting sustained economic growth? According to us, a deep answer to this question necessarily requires to study the intrinsic fundamentals and nature of the exchange rate.

In this particular context, two views, although not entirely contradictory to each other, have ruled the spectrum of the former debate. On the one hand, the majority of authors from the neoclassical side maintain that there is a natural exchange rate value towards which the market value tends to gravitate, determined by the well known purchasing power parity (PPP) rule. On the other hand, we can identify some authors who sustain that the former trajectory of the exchange rate around a natural single value point could be replaced by a broader band that endows the monetary authority with some degrees of freedom in its objective of manipulating the exchange rate. This last opinion has been defended by heterodox authors, among which stands out the work of Roberto Frenkel. However, and in spite of their main differences, both theoretical positions defend the fact that the exchange rate is not a variable that could be determined by the unilateral will of the economic policy; on the contrary, all of them maintain that there are forces within the economic system that affect and condition the effective behavior of the exchange rate in the long run.

Table 1 Main macroeconomic variables for Argentina (1993–2007)

	Avg. 1993–2000 (%)	Avg. 2001–2002 (%)	Avg. 2003–2007 (%)
Annual real GDP growth	2.3	−7.7	8.8
Inflation ^a	1.0	12.4	9.4
Current account (as % of GDP)	−3.6	3.6	3.6
Fiscal primary Balance ^b (as % of GDP)	−0.2	−1.6	3.3
Export tax receipts (as % of tax collection)	0.1	5.0	10.7

Source: authors’ calculations using data from the Ministry of Economy and Production (Argentina)

^a CPI annual change

^b General Government

If we leave aside this superficial discrepancy in form —whether the exchange rate tends to oscillate towards a unique value or we can identify a whole spectrum around which this variable is allowed to move— and we penetrate in the very theoretical content of the debate, coincidences among both apparently opposite positions seem to continue. Beyond its lack of correspondence with empirical evidence, the former approaches also share, in the first place, the “need” to recur to a supposable existence of full employment as part of their causal explanation of the facts. Secondly, both sides sustain in one way or another that money is exogenous to the economic system. In other words, leaving aside tastes and technology, according to these theoretical positions, factor endowments (i.e. labor and capital) univocally determine the final position towards which the economy will tend to move in the long run. These two characteristics just mentioned —full employment and exogenous money— can be resumed without loss of generality by affirming that the positions under study recur in some part of their theoretical apparatus to the use of the renowned “Quantity Equation”.

Our view of the economic mechanisms which lie behind the behavior of the exchange rate is entirely different. Although one can find a subtle intersection among our position and theirs in that our explanation also rests on the existence of intrinsic forces that tend to affect the actual behavior of the exchange rate, it is entirely different in the very same content of the causal explanation of the economic facts. In particular, beyond that we share with the local heterodox view that there are limits within which the exchange rate is free to oscillate, we fully deny that these limits depend on or, similarly, are constrained by either the existence of intrinsic forces that tend to push the economy towards the full employment of resources or the exogenous nature of money.

With this purpose, the current paper is structured as follows: in section one, we will expose the first of the theoretical postures described above, the one that defends it is the PPP the fundamental law which stands behind the exchange rate dynamics. In the following section we critically develop the alternative explanation of the exchange rate movements, an approach that finds its main proponent in Roberto Frenkel (2004, 2007). Thereafter, we expose a critique to the Quantity Theory of Money (QTM) based on two central concerns: the inexistence of an intrinsic tendency towards the full employment of resources and the endogenous nature of money. In section four we present our own explanation of the facts and its main differences with the former theoretical approaches presented before. The essay finishes with some concluding remarks.

Purchasing Power Parity

In this section we will develop both the concept of purchasing power parity (from now on, PPP) and the intrinsic mechanisms on which its validity rests; in particular, we will emphasize those ones that guarantee the stability of the system. Let us remember first that, according to the PPP, the equilibrium exchange rate between two countries must exactly be that precise value which allows a currency to have the same purchasing power in terms of a certain basket of goods in both nations. But, what happens in disequilibrium? In other words, which are the mechanisms that intrinsically guarantee

that, once the equilibrium defined by PPP is not currently verified, the exchange rate could return to this point of rest? In order to answer to these questions, we analyze the way in which this concept is developed by the Mercantilist School of Thought — particularly by David Hume— and its following “improvement” by Gustav Cassel, one of the major exponents of the Marginalist School.

The Purchasing Power Parity and Hume’s “Price-Monetary Flux” Mechanism

The PPP emerges as a generalization of the law of one price —postulated first by Montanari (1680) and then developed by Jevons (1871)— for international commerce. According to this law, it is not possible for homogenous classes of merchandises to show substantial differences in their prices in the long run. This phenomenonic notion, which expresses no more than an arbitrage condition, is the very one that has been formalized under the form of PPP to explain the main determinants of trade among countries.

There is a generalized consensus that Hume was the first author who formulated this law explicitly. In his essay “Of the balance of trade”, an intent to put under suspect the by then common practices of the European States in the seventeenth and eighteenth centuries —.i.e. their objective of sustaining continuous trade surpluses with the rest of the world in order to accumulate gold reserves—, he presents the currently well-known “price-monetary flux”. The English author tried to show that the goal pursued by the European States had logical impossibilities by using the Quantity Theory of Money.

Suppose, that all the money of Great Britain were multiplied fivefold in a night, must not the contrary effect follow? Must not all labor and commodities rise to such an exorbitant height, that no neighboring nations could afford to buy from us; while their commodities, on the other hand, became comparatively. so cheap, that, in spite of all the laws which could be formed, they would be run in upon us, and our money flow out; till we fall to a level with foreigners, and lose that great superiority of riches, which had laid us under such disadvantages?” (Hume 1987, Part II, Essay V)

The mechanism just described seems easy to understand although it supposes some causal mediation that must be analyzed in further detail. The argument aims to show that if in a certain country the amount of gold money would be incremented (diminished) by a trade surplus (deficit), the several prices of regular merchandises would be increased (diminished) as well —and even in the same proportion—, making profitable to import (to export) those goods. Accordingly, differences in trade balances among countries can not be but only transitory, because gold will stop moving from one country to another when the initial surplus or deficit is null. At first sight then, the process described above is not other than the law of supply and demand applied to international transactions.

In addition, let us note that the mechanism described previously assumes the validity of the law of one price even in the case of international trade. If a good in a particular nation has a price measured in gold that is higher than the one prevailing in another country, this product will stop being produced domestically and its demand will be satisfied via imports. In this regard, the former adjustment process

implies that the equilibrium exchange rate must be that to allow the equalization of prices of analogous kinds of commodities in two nations when they are expressed in a common unit of account. As ‘X’ quantity of gold makes it possible to buy the same amount of merchandise ‘A’ in several countries, the effective exchange rate must inevitably allow this requisite to be fulfilled. This is the condition the PPP expresses! The value of one currency in terms of another must be such that the same set of goods has identical value independently of the standard in which it is measured. Formally, we have:

$$E^*P^* = P \quad (1.1)$$

where E , P^* and P stand for the exchange rate defined as price of the foreign currency in terms of the domestic one, the local price of a basket of goods and the foreign price of the same commodities. As an example, if in Argentina a certain set of products costs 4 pesos (P) and in the United States the price of the same basket is 2 dollars (P^*), then the effective value of E must allow that with 4 Argentine pesos a person can get identical merchandises than those which in the United States he can buy with 2 dollars. Hence, for every dollar one must be able to obtain 2 pesos and the exchange rate will tend to oscillate close to a value equal to two pesos per dollar.

In conclusion, we can appreciate that the arbitrage condition defined by the PPP rule is not only supposed to be valid at the beginning of the process but also manifests itself in the sign of trade imbalances. In this regard, country’s A trade surplus with country B will be an expression of the fact that the inhabitants of B will be arbitrating, that is, they will be buying in those markets where the merchandises in question could be acquired at a lower price. Therefore, the QTM is “simply” the mechanism by which, once in disequilibrium, the system finds its way to return to it.

Let us come back to Hume’s mechanism and try to analyze it in some detail in order to deepen in the implicit assumptions on which this process rests; (1) First, it is assumed that every trade surplus implies a proportional increase in the quantity of money in circulation; (2) Second, every increment in the quantity of money is translated into local prices. As we have already mentioned, all these assumptions could be summarized under the Cambridge Equation, expressed in Eq. 1.2:

$$M = kP\bar{Y} \quad (1.2)$$

The above expression shows a causal relationship that goes from the left to the right side of the equation: given the real product ($Y = \bar{Y}$) and the velocity under which money circulates, k , every increase in the quantity of money, M , implies a parallel increment in the level of absolute prices, P , in the very same proportion.

Thus, we could observe that a correct functioning of the price-flux mechanism supposes (1) that money in circulation could be exogenously increased in an unlimited quantity; (2) that the working force can not be persistently unemployed, — i.e. real product must remain in its potential level, at least in the long run. As a consequence, every intent to “artificially” increase production must necessarily face a further increment in production costs (because labor supply is inelastic) and then in prices. If assumptions (1.1) and (1.2) are fulfilled, the mechanisms we have recently described must be valid, a simply corollary of these postulates.

In another level of analysis, however, a general theory must be capable of giving a fully explanation of the whole body of economic facts, thus, it must be also in condition of justifying the mentioned tendency to the full employment of resources in general, and of labor in particular. As we shall see next, the simple laws of supply and demand for all merchandises, labor included, operate behind those mechanisms in such a way that every excess in demand translates into prices through successive increments in the wage rate. In his essay, “On Money”, Hume shows how this phenomenon functions in actual economies.

When any quantity of money is imported into a nation, it is not at first dispersed into many hands; but is confined to the coffers of a few persons, who immediately seek to employ it to advantage. Here are a set of manufacturers or merchants, we shall suppose, who have received returns of gold and silver for goods which they sent to CADIZ. They are thereby enabled to employ more workmen than formerly, who never dream of demanding higher wages, but are glad of employment from such good paymasters. If workmen become scarce, the manufacturer gives higher wages, but at first requires an increase of labour; and this is willingly submitted to by the artisan, who can now eat and drink better, to compensate his additional toil and fatigue. He carries his money to market, where he, finds every thing at the same price as formerly, but returns with greater quantity and of better kinds, for the use of his family. The farmer and gardener, finding, that all their commodities are taken off, apply themselves with alacrity to the raising more; and at the same time can afford to take better and more cloths from their tradesmen, whose price is the same as formerly, and their industry only whetted by so much new gain. It is easy to trace the money in its progress through the whole commonwealth; where we shall find, that it must first quicken the diligence of every individual, before it increase the price of labour” (Hume 1987, Part II, Essay III).

In sum, given the arbitrage condition implied by PPP, every rise in the quantity of money in the hands of private agents will spill over the market of goods, and, due to the rigid supply of labor in the long run, this excess of demand will affect, sooner or later, the prices of all commodities. As we shall see, these results are independent of the type of money that circulates in the economy (either metallic or fiduciary).

The PPP Rule in the Neoclassical View

The Marginal Productivity School, born in the end of the nineteenth century, retook and “refined” Hume’s old idea to explain the exchange rate determinants and the patterns of international trade. In particular, it gave a more rigorous description of the intrinsic mechanisms in which the long term adjustment process of the exchange rate towards its PPP¹ level rests. In this respect, the explanation of the exchange rate

¹ K. Rogoff: “While few empirical literate economists take PPP as a short-term proposition, most instinctively believe in some variant of purchasing power parity as an anchor for long-run real rates” (Rogoff 1996: 647).

dynamics should be consistent with the more general aspects of the theory, in particular, with its conception of the nature of prices. Cassel, the first marginalist author who exposed the PPP rule, defended these ideas in an essay written in 1927.

Economic theory is in its essence a theory of price. Its main function is to explain the whole process by which prices are fixed at their actual heights. It is, therefore, natural that the theory should from the very outset be based on the conception of price” (p. 511).

Moreover, as we have already seen, although the PPP expresses a mere arbitrage condition, its stability —i.e. the process which warrants that, once an exogenous force pushes away the effective exchange rate from its equilibrium position, it will return to it— needs as a prerequisite that the system shows a tendency to the full employment of resources; condition which, in parallel with the exogeneity of money, could be expressed under the Quantity Equation. This set of ideas is exposed by Cassel (1932):

If we consider two countries, A and B, with independent paper currencies, the money of A can have value in B only on the ground that it represents buying power, or more generally paying power, in A. The price in B of the money of A will, therefore, be broadly proportional to the buying power of the money of A and will consequently stay in inverse proportion to the general level of prices in A. Further, the price in B will, of course, tend to be proportional to the general level of prices in B. Thus the rate of exchange between the two countries will be determined by the quotient between the general levels of prices in the two countries.

Now, according to the Quantity theory of money the general level of prices varies, other things being equal, in direct proportion to the quantity of the circulating medium in a country. If this be true, the rate of exchange between the two countries must vary as the quotient between the quantities of their respective circulating media” (Cassel 1932, p. 62).

Once again, the whole validity of the argument consists in proving the mentioned tendency to the full employment of resources. Let us see this process with some level of detail. The Neoclassical tradition explains relative prices and income distribution in the same analytical stage. Although a complete explanation of this process exceeds the aim of the paper, we think it is necessary to expose some mechanisms which sustain the marginalist precepts —in particular, the factor substitution mechanism—. According to this school of thought, given factor endowments, tastes and technology, relative long run prices are characterized by a uniform rate of return on supply prices and in this situation, each agent of production (the landlord, the worker and the capitalist), gets a retribution according to the relative scarcity of the factor he owns. Thus, because of the principle of substitution, both in production and consumption (see Garegnani 1990), it is possible to construct factor demand curves which negatively relate the quantity demanded of a factor with its rental price. In other words, consider an economy in a state of rest. Given a certain quantity of capital in value, although capable of change in form, a demographic explosion (i.e. an increase in the stock of labor available in the

economy) should, keeping the current techniques of production in use as constant, bring an excess supply of labor. In consequence, the now increased working force, relatively abundant at the current salary (w_0) should press the wage rate down until the labor market clears again².

However, the essential point we want to stress is that behind the whole process towards the new equilibrium lies the possibility of replacing capital by labor (relatively cheaper) by changing the methods of production in use³. From another angle, the full employment of the labor force is just a corollary (highly potent) of this very principle of factor substitution, and not just a mere postulate as sometimes appears in the literature. Moreover, the attractiveness of the factor substitution mechanism is that through its operation the equilibrium turns out to be stable, and hence, neoclassical theory is able to give a plausible explanation of relative prices and distribution in general. As a corollary, the theory is able to explain the tendency to the full employment of resources, one of the pillars in which the process of convergence towards PPP rests.

Still, beyond giving a weak explanation of full employment, the original mechanism as it was conceived by Hume had other fallacies which make marginal authors feel uncomfortable. In particular, why ought to keep the idea that every excess in the quantity of money should only affect the market of commodities? According to the marginalist conception, this additional wealth should also go to the financial market as well⁴.

Let us then see how the original mechanism has been “refined” by neoclassical authors. Suppose that the government decides to increase the quantity of money in circulation by selling bonds to the Central Bank and then to augment the nominal wage rate (let us also assume, without loss of generality, that the money stock in the form of salaries is divided homogeneously among all agents). From now on, the private sector will have excessive money holdings in relation to other goods and assets. Hence, it will try to distribute this additional amount of wealth among them. As a consequence, when this excess supply of money goes to the rest of the markets we have the following effects:

Due to the full employment of resources, the increased demand for goods will be translated into prices, through the Quantity Theory mechanism. In this first step, Eq. 1.1 will stop holding, because the domestic price level remains above the

² We also have to mention that behind this market process lies a particular behavioral hypothesis regarding the labor force, i.e. when workers are out of job, they are willing to accept a reduced salary in order for them to be employed. This hypothesis has been uncritically accepted by the literature.

³ That is the key to understand why it is central to the whole marginal approach of value and distribution to conceive capital as a value magnitude which is susceptible of change in form. In effect, in order to incorporate the increased labor force to the productive process it must be possible to change the form of the cooperating machines that work with it, because the former kind of machines were optimally used only when they cooperated with the previous quantity of labor (for this respect, see Hicks 1932 pp. 29–30).

⁴ This questioning is related to the particular monetary conception of this school of thought. As money is considered as only one of the very commodities in the market, qualitatively equal to them, every increment in wealth in the form of money, *ceteris paribus*, must be homogeneously distributed in the rest of the merchandises that circulate in the market. We will see below that another conception of money could bring totally different results in this respect.

international price ($P > EP^*$). However, given the possibility of importing those merchandises whose prices have risen (we assume that all goods are tradable internationally), external purchases will be increased, pressing the exchange rate up — in case this variable was fully flexible— and thus restoring the exchange rate to its PPP level.

This tendency to exchange rate depreciation will also operate in the financial market, because the increased demand for bonds will press the interest rate down and hence the capital outflows will tend to depreciate the exchange rate.

Similar effects will prevail in the foreign exchange market: the higher demand for external assets will press the demand for international currencies and hence a depreciation of the exchange rate.

As a result, the increment in the quantity of money puts in action several mechanisms which guarantee the fulfillment of the PPP rule due to the positive effect that the excess demand for goods and assets have in both the exchange rate and the local price level.

These results are hardly modified under a fixed exchange rate regime⁵. In this case, every increase in the quantity of money over the amount the private sector wishes to hold will be erased, in the first place by running a trade deficit (.i.e. loss of reserves due to the increase in the value of imports). In the second place, the increment in the amount of money will tend to press the interest rate down, stimulating capital outflows. This process will continue until the original increment in the monetary base has been exactly compensated by an analogous decrement in the level of international reserves, reestablishing the initial level of money in circulation.

Finally, let us see what happens when a rise in international prices of commodities, P^* , (which by definition the local country is able to produce as well) also occurs. If the exchange rate is flexible, the increase in P^* will cause a transitory trade surplus, which will make the exchange rate to go down. This process will continue until the equilibrium is reestablished. On the other hand, under a fixed exchange rate regime, the increment in P^* will first tend to increase money holdings of the public because of the original trade surplus. In a second stage, the excess of money in circulation will activate the process described above, causing an analogous increment in the prices of the local merchandises (remember the hypothesis of full employment) up to the point in which the equality $E=EP^*$ is restored and thereby, the trade balanced. Hence, the validity of the PPP mechanism fully justifies Hume's claim: it is impossible for a country to sustain a long-run trade surplus with the rest of the world. Due to the full employment of resources in general, and that of the labor force in particular, and also thanks to the QTM (exogenous money), trade surpluses as well as deficits are by their nature only transitory.

Let us finally note the following. The increment in P^* causes in the first place that $P < EP^*$. However, it is the arbitrage condition implied by PPP the very cause of the

⁵ We have to stress that the fact that the exchange rate is being fixed by the monetary authority in no way modifies the exogenous nature of neoclassical money. In the sense, under this regime the adjustment process towards equilibrium also needs an endogenous change in the rate of interest when the quantity of money is exogenously modified.

trade surplus, which is finally erased due to the functioning of the QTM. In other words, the validity of the PPP rule is just expressed by the positive or negative sign of the trade balance and the Quantity equation is the mechanism which guarantees the return of the exchange rate to its initial position. Thus, as an arbitrage condition, it is conceivable in principle that PPP is valid independently of the Quantity theory, that is, outside the neoclassical theoretical apparatus. The Cambridge equation only guarantees the restatement of equality (1.1) in concordance with a long-run tendency to the equilibrium in the current account.

Summing up, we can establish that (1) PPP is a simple arbitrage condition in the market of commodities, if every kind of product is susceptible of being trade internationally, (2) In order for the PPP to be a centre of gravitation of the effective exchange rate, neoclassical theory needs both an exogenous conception of money and a tendency to the full employment of resources in the long run. (3) Finally, those very mechanisms which give stability to the process also allow us to arrive at an additional conclusion: the PPP guarantees that any trade surplus (or deficit) has only transitory nature.

Economic policy prescriptions are then clear: it is not possible in the long run to employ the exchange rate as a catalyst for economic growth, because its positive effects tend to vanish in the long run, while remaining its negative impact on the general price level. This result, which states the impossibility of simultaneously managing the exchange rate and the price level in a perfect capital mobility framework, is known as the “Monetary Trilemma” and will be the law towards which local heterodox authors will trigger their cannons.

The Domestic Heterodox View on the Exchange Rate Dynamics

As seen in the previous section, in contrast to the orthodox view, which understands the exchange rate path to be governed by ‘fundamentals’ that define a long-term “attractor”, the local Heterodoxy, represented in this case by Roberto Frenkel, considers that economic policy is able to manage the exchange rate in consonance with other domestic policy goals such as price stability. However, as we shall see, exchange rate policy does not remain free from boundaries.

In this sense, the arguments that emerge from the core of neoclassical theory regarding the impossibility of administrating the exchange rate are mainly based on the restrictions imposed by the Monetary Trilemma. In the words of Frenkel:

The relevant orthodox objections are based on the impossible trinity argument. It says that it is impossible for a country to simultaneously maintain free capital flows, active monetary policy and the ability to control the exchange rate. One of these features is necessarily impossible” (Frenkel 2004, p. 24).

The mechanism behind orthodox prescriptions is the following one: fixing exchange rates requires Central Bank (CB) interventions in the Foreign Exchange (FX) market in order to absorb the excess demand for or to compensate for the excess supply of domestic currency. In the case of Argentina, a country that has exhibited a sustained current account surplus for the last 5 years, the exchange rate

support has a parallel accumulation of foreign reserves⁶. Similarly, CB interventions lead to a monetary expansion and thus, a rise in the general price level —assuming the validity of the QTM—. As we have already shown, the neoclassic argument demands the necessary condition of full employment of productive resources (both labor and capital). So, any attempt to fix the exchange rate above its equilibrium level forces the Central Bank to resign from the control of monetary aggregates and thus, of inflation.

Nevertheless, according to Frenkel, the previous argument has several limitations. Central Banks do not necessary lose control of money base as a consequence of interventions in the FX market because they keep other instruments of “monetary sterilization”. In fact, the CB has the option of issuing bonds in the local debt market in order to balance the excess money supply, avoiding the inflationary effects that disequilibrium could generate. In consequence, an inquiry into the boundaries of exchange rate management calls for going further than the Mainstream and analyzing the potential limits of monetary sterilization.

The above orthodox arguments do not involve logical necessity. They refer to practical implementation possibilities and these possibilities depend on the magnitudes of the quantities involved. For instance, central bank exchange interventions are a source of money creation, but central banks have other instruments to control money supply. The central bank’s ability to control depends on the size of the intervention vis-à-vis the practical limits of sterilization and other compensatory instruments” (Frenkel 2004, p. 24).

With respect to these constraints, Frenkel focuses on their effects on the monetary authority balance sheet or “quasifiscal” balance. The process of accumulation of foreign exchange reserves usually generates a rise in liabilities that may result in an explosive path of the CB debt, but this outcome depends on the comparison of the return on assets (the foreign exchange reserves) vis a vis the financial cost of bonds (i.e. the domestic interest rate) (Frenkel 2007).

Moreover, it is particularly relevant to identify the impact of an increase in the domestic interest rate on international capital flows. Under the standard theoretical framework, any change in the yield that domestic and foreign assets returns should activate —in the absence of capital controls— adjustments in the composition of investors’ portfolios, in order to take advantage of available arbitrage gains. Consequently, capital inflows would cause an exchange rate appreciation, dampening the probability of successful sterilization actions. However, according to Frenkel, the outcome of this process depends on the magnitude of the quantities involved; the chance to arbitrage between domestic and foreign assets finds a subjective limit in the uncertainty which results from the fact that, on the one hand, investors possess heterogeneous expectations on the prospective evolution of the exchange rate, and, on the other, “even in presence of an unique expectations, there exists a risk of

⁶ The numeric sign of the FX market imbalance, this is, the existence of a surplus or deficit position, is not trivial for the Heterodoxy in Economics. A policy of exchange rate targeting is not viable in a context of external deficit but it is when the balance of payments is positive, an asymmetry acknowledged by Frenkel (2007).

divergence between the expected value and its effective one” (Frenkel and Rapetti 2007, p. 155).

In sum, local heterodoxy claims that sterilization allows monetary policy to have a role in the determination of the effective relative price between national and foreign currencies. The only limit that this intervention faces is the consistency between these actions and the quasi-fiscal balance.

However, the previous notion fails to overcome the horizon imposed by the Quantity Theory, as it never discusses the validity of the full employment principle as the long-term position reached by the economic system or the exogenous nature of money supply. Furthermore, in a world where money is endogenous, the proper limit marked by Frenkel is not conclusive, because the Central Bank’s growing indebtedness does not presuppose a trade-off with the interest rate. Finally, the existence of heterogeneous subjective expectations is an ‘ad-hoc’ argument used to explain the limited substitution between local and foreign assets, a property which means that any positive change in the domestic interest rate does not necessarily translate into capital account movements that pressure an exchange rate appreciation.

As we shall see in the next section, the theories analyzed until now are misleading, due to the inconsistency of the Quantity Theory of Money. Neither of its two basic tenets, the full employment principle and the exogeneity of money, seems to be internally consistent.

The Quantity Theory of Money: An Internal Critique

In the previous section we showed that the current theoretical approaches that govern the arena of discussion about the nature of the exchange rate rest in one way or another in the “well-functioning” of the Quantitative Equation, that is, the full employment of resources in the long run plus exogenous money. Without these two pillars, the consistency of the former has no logical foundations. In this section then, we aim to show why the whole structure over which the quantitative apparatus has been edified is simply incorrect.

The Full Employment Fallacy

As we have already shown, the essential principle over which the neoclassical approach can state the tendency to full employment is the factor substitution mechanism. According to it, changes in relative factor prices would endogenously induce analogous changes in the methods of production adopted (the direct mechanism of substitution) or, alternatively, in the goods demanded by consumers (the indirect mechanism). If at least one of those mechanisms would be put at work, factor demands would be likely to be inversely related to their respective rental price in the long run. However, we have also pointed out that for those mechanisms to be plausible, capital must necessarily be conceived in value terms. As Clark stated:

We may think of capital as a sum of productive wealth, invested in material things which are perpetually shifting-which come and go continually-although the fund abides. Capital thus lives, as it were, by transmigration, taking itself

out one set of bodies and putting itself into another, again and again” (Clark 1899, p.119–120).

First, as a value magnitude, capital was thought capable of achieving that precise physical form compatible with a uniform rate of return on supply prices. Second, because only as a value magnitude capital would be flexible enough to allow the well functioning of the factor substitution mechanisms. The reason for this is simple to understand: when changing methods of production, that is, the capital–labor ratio, the physical form of the cooperating capital must also change; it is then implausible to think that the different methods of production would involve the use of identical physical means of production. As Robertson wisely stated:

if ten men are to be set to dig a hole instead of nine, they will be furnished with ten cheaper spades instead of nine more expensive ones” (Robertson 1930, p 47).

On the same footing, Bliss, a well-respected contemporary neoclassical author expressed that:

Labor intensive production methods will normally call for different capital inputs and not merely less of the same capital inputs relative to labor” (Bliss 1975, p. 102).

The view of capital as a value magnitude was almost universally accepted within the neoclassical approach until the third decade of the twentieth century. By then, however, both supply and demand side problems arose with that conception. Regarding the first kind of issues, in order to measure the amount of capital available in the economy it is necessary to know first the distribution of income (i.e. the rate of interest), one of the very variables that were supposed to be explained taking capital as an exogenous magnitude. Hence, the theory could be fairly accused of “circular reasoning”. However, the theory managed to deal with that difficulty, assuming for instance that in a stationary state the amount of capital would be endogenously determined by the zero net savings condition.

Nevertheless, soon after Sraffa’s Production of commodities by means of commodities appeared, the mechanisms of factor substitution were seriously questioned and, with them, the pillars of marginalist theory. In fact, as it is well known, during the 1960s and 1970s Sraffa, Garegnani and Pasinetti among others have shown that, due to the need to measure the aggregate amount of capital in value terms, factor demand curves are likely to present “perverse” behaviors, that is, it is not necessarily true that the factor substitution mechanisms would work in the precise direction predicted by neoclassical theory. Let’s see this feature with some degree of detail.

According to Sraffa (1960) Garegnani (1970) and others, it is perfectly possible that labor and capital demands are positively related, at least in some part of the curves, to the wage and the interest rate respectively. As it is shown in Fig. 1, in this case, every excess of demand for labor above its level of full employment ($w > w^*$), would induce wage rate increments until workers get the whole share of the social product. Opposite results would be obtained in case an excess supply of labor takes place. Accepting the neoclassical explanation of distribution would then force us to

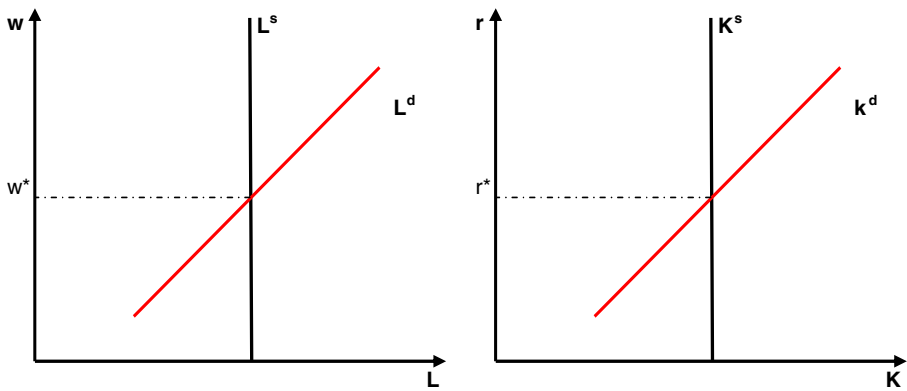


Fig. 1 Factor demand curves exhibiting “perverse behavior”

admit the possibility of a kind of instability that was never empirically observed in modern economies.

However, it is even more important to note that when we accept that an increment in a certain factor rental price is likely to produce a consequent increase in its quantity demanded, the whole mechanism which traditionally assured a plausible explanation for the stability of the process towards the full employment of resources vanishes. With it, the whole neoclassical explanation of the level of economic activity, which was traditionally thought to be independent of aggregate demand in the long run, lacks all of its theoretical content.

Exogenous Money?

Similarly, the conception of money as an element of extra-economic or exogenous nature has been a constant in most neoclassic works, and even Keynes in his *General Theory* (1936), despite breaking with many of mainstream theoretical fundamentals, keeps a continuity point in his definition of money supply as vertical and arbitrarily determined by the monetary authority⁷.

Nevertheless, this point of view fails to recognize the specificities of money in capitalist economies. Far from being introduced from outside the system, money supply is largely generated from the credit requirements of firms in order to keep up with their cycle of production. So, money quantity is an endogenous variable related to the necessity of productive funds (Marx 1973).

It is worth noticing that the standard economic theory does accept the notion of “passive money”, and indeed some authors have included this concept in their analytical frameworks. Under specific conditions such as the implementation of a

⁷ Many authors also consider that there is an argument in favor of money endogeneity in different sections of Keynes’s seminal book (see for example Wray 2006)

fixed exchange rate regime, the quantity of money is determined inside the system. In fact, the Central Bank loses its control over money supply as a result of the endogenous nature of foreign exchange reserves. In this case, it is usually said that monetary policy is ineffective: an expansion of domestic credit, for instance, leads to a current account deficit and to a reduction in international reserves that returns the quantity of money to its initial level. However, this notion of passive money is not the endogeneity of which we speak. The process of endogenous determination of monetary aggregates is not “lead” by supply, but by demand (Lavoie 2000). If, for example, agents believe they have more liquidity than desired in order to fulfill their transactional and speculative motives for demanding money, they will use it to repay their liabilities (“the reflux mechanism”). The endogenous nature of money in fixed exchange rate regimes described above differs, because as we have just seen, the establishment of money quantity inside that system requires endogenous movements of interest rates. Thus, our critique goes further than just recognizing that money supply is partially endogenous as a consequence of the presence of a banking multiplier—determined by portfolio decisions of private sector (Tobin 1963)—that prevent the CB from controlling credit expansion. It also overcomes Poole’s (1970) conceptualization, that affirms that CBs are either able to fix interest rates or money quantity, exhibiting the faculty to choose between alternative policy instruments (prices or quantities of money market). If the CB decides to fix the first of these options, he would automatically lose its control over monetary aggregates, whose level would be unilaterally set by demand. This type of internal mechanism can be considered as “politic”, because it implies that the monetary authority deliberated abandons its capacity to control the money stock in the economy (Cottrell 1994).

In sum, the logical invalidity of the two mechanisms that support the Quantity Theory of Money challenges both the determination of an equilibrium exchange rate based on the Purchasing Power Parity rule and the effective relevance of those limits that the domestic heterodoxy finds in the evolution of the exchange rate. Therefore, we must develop an internally consistent theory of the fundamentals—and restrictions—of the exchange rate in open economies with similar characteristics than Argentina. This will be our goal in the following section.

Potentials and Intrinsic Limits of the Exchange Rate Policy

In this section we introduce a model which tries to describe the normal functioning of an open economy in regards both the foreign trade and capital flows. As we have already analyzed the problems of those theories that have dominated the spectrum of discussion, now we intend to characterize the process of determination of relative prices and the exchange rate in order to explore the relation between the level of normal wages and the inflation rate. The model developed responds to the ‘Classical-Sraffian’ paradigm of prices, specifically, a framework where one of the two distributive variables (the real wage or the profit rate) has to be set “outside the system” (i.e. defined as exogenous to price determination). In addition, in this “new world”, the causal relation of Say’s Law is reversed: the nature of money as the “general equivalent” in the sphere of exchange will imply that the “effective” demand for goods is the variable that generates its own supply.

The Model

Let's analyze the process of determination of prices within a Classical-Sraffian framework. In such a scheme, both the size and composition of output⁸, one of the distributive variables (the real wage or the rate of profit) and the techniques in use are assumed to be given when long run relative prices⁹ are determined (Garegnani 1984, 1990; Eatwell 1977).

Consider an economy opened both to trade an international capital flows and without non-financial government (this assumption will be relaxed later). There are two types of tradable commodities: the first one is a consumption good (corn, "c"); the second one, an industrial basic¹⁰ input (iron, "i"). We assume that, initially, the domestic country is more productive than the rest of the world in the corn sector (i.e. it has absolute advantages in this branch of production) due to the fertility of land, and absolute disadvantages in the manufacturing of iron¹¹.

Transactions are paid in paper money ("m"). Let P_j be the number of units of money necessary to produce one unit of the j th commodity (i.e., its nominal price). Then, $P_m = 1$.

The system of long run relative prices stands as follows:

$$\begin{cases} P_c = a_{ic}P_i(1+r) + Wl_c \\ P_i = a_{ii}P_i(1+r) + Wl_i \\ r = i \end{cases} \quad (4.1)$$

where P_c and P_i are for the price of corn and iron respectively; $a_{ij}(j=c, i)$ is the quantity of iron necessary to produce one unit of each output; $l_j(j=c, i)$ is the amount of labour needed to elaborate one unit of each output; W and r represent the nominal wage rate and the rate of profit respectively and i is the monetary interest rate.

The first two equations of 4.1 establish that the long run price of each commodity must be equal to their respective cost of production, assuming that wages are paid at the end of the productive cycle and that the capital good is entirely circulating. The condition of free entry allows for a uniform rate of return on supply prices (URRSP). In addition, the last expression shows the arbitrage mechanism through which, in equilibrium, the rate of profit earned by the capitalist class must exactly compensate the interest rate, assuming the premium for risk to be zero.

In a closed-economy framework, Eq. 4.1 define the system of relative prices effectively faced by consumers. However, when the actual complexities of

⁸ In contrast to the neoclassical general equilibrium approach, which solves the whole spectrum of "economic" variables simultaneously, the classical approach studies prices and quantities in two separate stages of analysis.

⁹ According to the classical approach, long run relative prices or natural prices are those values associated with a uniform rate of return on supply prices of capital goods (URRSP).

¹⁰ A basic input is a commodity that enters in the production of every commodity in the system (Sraffa 1960).

¹¹ The existence of absolute advantages in the production of those goods where natural resources are not involved, such as iron, is related to the existence of technological issues (i.e. different available techniques between countries) or institutional-political issues which might affect the level of the wage rate.

international transactions are brought to the analysis, we must take into account the conditions of production in the rest of the world. Eq. 4.2 show precisely this functioning.

$$\begin{cases} P_c^d = EP_c^{*d} (> P_c^s) \\ P_i^d = EP_i^{*d} (< P_i^s) \end{cases} \quad (4.2)$$

where E is the nominal exchange rate, defined as the price of the foreign currency (p_m^*) in terms of the domestic one (that is, $E = \frac{p_m^*}{p_m}$) and P_j^{*d} ($j = c, i$) represent the demand price of corn and iron in the rest of the world, those prices effectively paid by consumers to buy each commodity. The former equalities are simply derived from an arbitrage condition which expresses that local and international commodities are perfect substitutes; hence, when faced with the same commodity, consumers will demand only the cheapest one, no matter its country origin. As a result, the price of each good effectively paid by consumers must be the same when expressed in terms of the same currency, thus reflecting the validity of the law of one price.

Nevertheless, the former equalities, by their own, tell us nothing about the conditions of local and foreign production. Those are represented by the parenthesis associated with each equality, which show the initial configuration of absolute advantages. For a better understanding of its consequences we need to introduce the distinction between local demand and supply prices P_j^s ($j = c, i$) of each commodity. While the former simply represents the arbitrage condition already mentioned, the latter expresses the long term restraint under which a certain commodity will be brought to the market only if producers manage to cover their costs. (i.e. the ruling market price must be at least equal to the supply one). As a result, assuming a continuum of producers, the demand price of each commodity must be equal to its supply price for the less productive country.

For instance, the first parenthesis of 4.2 shows that the demand price of corn in the local country is higher than its respective supply price, and implicitly says that, in the rest of the world, supply and demand prices must be equal in a long term equilibrium. Analogously, the second parenthesis establishes that the supply and demand prices of iron must coincide in the rest of the world. In fact, as the local supply price is higher than the corresponding demand price, hence implying that the domestic country does not bring to the market a commodity internally produced, there must be some country in the rest of the world where the condition of equality between supply and demand prices is verified.

Once productive capabilities and the configuration of production are both determined, we can explain the emergence of differential rents in each industrial branch. This is shown by Eq. 4.3

$$\begin{cases} P_c^d - P_c^s = R_c \\ P_i^{*d} - P_i^{*s} = 0 \end{cases} \quad (4.3)$$

The first equation shows that the difference between the demand and supply prices in the local production of corn is equal to the value of differential rent per unit

of product (R_c). An analogous situation occurs in the rest of the world with the production of iron; however, as the domestic country is not initially involved in its production, the rest of the world as a whole does not perceive any rents in this specific sector¹².

$$\left(1 + \bar{i}^*\right) = (1 + i) \frac{E}{E^e} \quad (4.4)$$

Finally, the Eq. 4.4 establishes the usual arbitrage condition among investment opportunities in a context of capital mobility across international regions. In such a framework, equilibrium requires the equalization of the profit rates among countries. This is the well-known uncovered interest parity (UIP), which states that one unit of domestic currency directed to local projects gives the same yield ($1+i$) than an equal amount expressed in foreign currency and then used to acquire external assets ($\frac{E^e}{E}(1+i^*)$). E^e is the expected nominal exchange rate for the time the investment matures.

The entire system is defined by the following set of equations:

$$\left\{ \begin{array}{l} P_c^s = a_{ic}P_i^d(1+r) + \bar{W}l_c \\ P_i^s = a_{ii}P_i^d(1+r) + \bar{W}l_i \\ r = \bar{i} \\ P_c^d = EP_c^{*d} (> P_c^s) \\ P_i^d = EP_i^{*d} (< P_i^s) \\ P_c^d - P_c^s = R_c \\ \left(1 + \bar{i}^*\right) = (1 + \bar{i}) \frac{E}{E^e} \end{array} \right.$$

There are 7 equations in 9 unknowns: P_c^s , P_i^s , W , r , i , P_c^d , P_i^d , E , R_c . Then, it is necessary to fix two variables in order to find a definite solution. This choice is not arbitrary but is governed by both political and institutional factors. Following Pivetti (1991) we have decided to set the domestic interest rate (i) and the nominal wage rate (W) from outside the system. Regarding the former, we consider that the domestic Central Bank has the ability to establish the level of the local interest rate, leaving the aggregate monetary supply to be demand-determined¹³. Respecting the latter, the nominal wage rate could be thought to be ruled by factors beyond the scope of strict economic analysis (e.g. the class struggle). Once the prices are determined, the real wage rate is endogenously given.

¹² We can note the difference with the marginalist tradition; according to that school of thought, differential rents are derived from hypothetical technological issues, without considering any demand aspect. As a consequence, to measure the amount of rent we only have to focus on supply conditions. In contrast, from a classical perspective, differential rents appear only as an empirical observable fact, changing its magnitude precisely with effective demand (see Bhadarwaj 1989).

¹³ The fact that i is exogenous to the system shows us that the rate of profit is the variable which accommodates to the level of the interest rate and not the other way around (Agis and Feldman 2008). Moreover, the fact that the Central Bank has the ability to exert its direct control over the interest rate necessarily implies that money supply must be endogenous (i.e. it adapts passively to demand).

Taking the values of i and \bar{W} as given, the domestic price system (4.1) solves monetary supply prices (P_c^s and P_i^s), the set of Eq. 4.2 allows us to determine demand prices (P_c^d and P_i^d), conditions (4.3) define the rate of differential rent in the production of corn (R_c) and, finally, from the UIP condition in (4.4) we are able to find the equilibrium exchange rate.

The Distribution of Social Surplus in an Open Economy

In the previous subsection we analyzed the set of relative prices and the distribution of income between social classes which would emerge from a classical approach in an open economy framework. Given the nominal wage rate and the monetary rate of interest, we saw that the real wage rate is endogenously determined. In this subsection we propose to analyze both the main determinants of the real wage rate and its relation with the other variables of the economic system.

To begin with, let us define the real wage rate (w) as the ratio between the (given) nominal wage rate and the demand price of corn (EP_c^{*d}), assuming that the working class includes only this particular commodity in its consumption set.

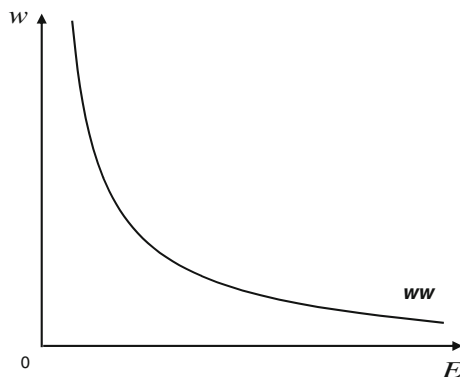
$$w = \frac{\bar{W}}{EP_c^{*d}} \tag{4.5}$$

From the expression (4.5) we can observe that the real wage rate is a decreasing function of the nominal exchange rate. By the same footing, Eq. (4.4) shows that the domestic interest rate is also negatively related to the nominal exchange rate. Hence, both the real wage and the rate of profit move in the opposite direction than the exchange rate. The ‘ww’ Curve in Fig. 2 shows this feature.

The Role of Monetary Policy

So far, we have analyzed the price system making abstraction of its relation with the sphere of quantities. What could we say about the exchange rate and its connection with the trade balance and the rate of economic growth? In order to answer this

Fig. 2 The relationship between the real wage and the nominal exchange rate



question, we will start analyzing the influence of the exchange rate on the external current account. As we saw in Fig. 1, the monetary authority can exert its control on the exchange rate by modifying the level of the domestic rate of interest.

Moreover, the second equation of (4.2) showed that by increasing the exchange rate, it is possible to shorten the gap between the domestic supply and demand prices of iron. Once the initial inequality becomes equality, the original absolute disadvantage turns, thanks to the exchange rate policy, into an absolute advantage in that sector. As a consequence, the domestic country is able to export iron to the rest of the world. Given the level and composition of the global demand of commodities, the expansion of the domestic aggregate product results from a demand switch process (Shaikh 1996), which, by definition, can not be simultaneously implemented by every country in the world¹⁴. The consequences of the exchange rate policy seem easy to grasp: the local demand for labor increases and the domestic country starts to produce iron.

Equation (4.6) captures the effect of the currency depreciations on the current account (CC). As already mentioned, when the nominal exchange rate raises, the gap between domestic supply and demand prices shortens, allowing local producers to be involved the production of iron. As a consequence, domestic effective demand is expanded via an improvement in the trade balance¹⁵.

$$CC = f\left(\lambda\right), \text{ with } \lambda = \frac{P_i^d\left(\begin{smallmatrix} + \\ E \end{smallmatrix}\right)}{P_i^s\left(\begin{smallmatrix} - \\ E \end{smallmatrix}\right)} \quad (4.6)$$

Initially, λ , which could be conceived as a measure of competitiveness, is lower than one; when the exchange rate is increased through the monetary policy, the demand price increases as well and the supply price decreases (via the reduction in the interest rate) getting closer to each other. When λ takes the value of one, the domestic country can start producing iron. However, this process described above has both local and external intrinsic limits, which will be explored in the following sub-sections.

Limits of the Exchange Rate Policy.

In order to analyze the constraints faced by a monetary policy that aims at improving national competitiveness (Parrinello 2006) we must start by considering its consequences on income distribution. In effect, Eq. (4.5) shows us that when the exchange rate rises, the real wage decreases. If we accept that the real wage rate can not descend below a certain minimum threshold, then it is possible that the initial competitive gap could not be fully eliminated exclusively by raising the nominal exchange rate. In other words, the minimum wage rate imposes an upper limit to the

¹⁴ Given the assumptions lying behind our model —given global quantities—, we exclude the possibility of global income effects.

¹⁵ The first reaction is through a decrease in the imports of iron, though it is not necessary true that the country will start exporting that commodity. Thus, we can observe an import substitution process.

exchange rate. In addition, the negative relationship between the wage rate and the exchange rate assumes that the international rate of interest remains constant along the process; however, if the rest of the world decides to reduce the international rate of interest (i^*), then the initial positive effect can be offset (i.e. competitive devaluations).

Figure 3 shows these intrinsic limits. The value $E(P^s)$, represented by point A, is the minimum level of the exchange rate compatible with the local production of iron (i.e. the level which allows for the iron sector to be profitable); hence, if the minimum wage rate (\bar{w}) happens to be associated with a lower exchange rate ($E_{\bar{w}}$) such as point B shows in the graphic, the exchange rate could not be increased beyond that level. Thus, the only viable exchange rates are those which belong to the interval $[0; E_w]$.

Furthermore, the upper movements of the exchange rate could also bring inflation into the scene. Hence, it is necessary to consider the effects of the currency depreciations on the general price level (P). For this purpose, the relevant index will be defined as the weighed average of nominal local demand prices:

$$P = \alpha_1 P_c^d + \alpha_2 P_i^d \tag{4.7}$$

where a_1 and a_2 represent the share of each produced good in the domestic aggregate product. Once the devaluation has succeeded in introducing the local production of iron, the demand and supply prices begin to coincide to each other (i.e. the domestic country becomes the marginal producer of iron). Then, using the first Eq. of (4.2), the second of (4.1)¹⁶ and (4.6) in (4.7) we obtain

$$P = \alpha_1 E P_c^{*d} + \alpha_2 \left[\frac{E \bar{W} l_i}{E - a_{ii} (1 + \bar{i}^*) E^e} \right] \tag{4.8}$$

By differentiating expression (4.8) with respect to the exchange rate, we can assess the effect of the currency devaluation on the price level.

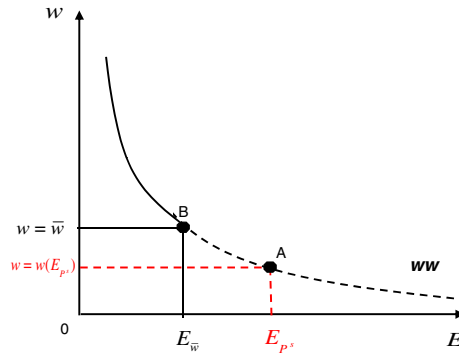
$$\frac{dP}{dE} = \alpha_1 P_c^{*d} - \frac{\alpha_2 \bar{W} l_i a_{ii} (1 + \bar{i}^*) E^e}{(E_0 - a_{ii} (1 + \bar{i}^*) E^e)^2} \tag{4.9}$$

The general result is uncertain: on the one hand, the exchange rate devaluation directly increases the demand price of corn; on the other hand, the implied reduction in the domestic interest rate induces a decrease in the rate of profit and thus, in local prices. If the general price index effectively increases, as it is likely to happen if a_1 is big enough or alternatively, the exchange rate is highly responsive to the interest rate, then we can assure that there is a positive relationship between the nominal exchange rate and the price level. In this regard, the possibility of entering into an ‘inflationary path’¹⁷ after

¹⁶ Now, we have that $P_i^d = P_i^s = a_{ii} P_i^s (1 + r) + W l_i$

¹⁷ It is necessary to distinguish between a *jump* in the general price level and an inflationary process. While the former is driven by a specific shock and finishes once the perturbation ends, the latter acquires its own dynamics and does not need any shock to persist.

Fig. 3 Constraints on the exchange rate level



the devaluation is closely associated with the reaction of social classes to the decline in their real income. Workers might try to induce a rise in nominal wages in order to compensate for the negative effects resulting from the currency devaluation¹⁸.

The Role of Export Tariffs as a Complementary Tool to Relax the Real Wage Restriction

Up to now, we have explored only one side of the systemic structural restrictions. In particular, we did not take into account the fact that the domestic country has absolute advantages in the production of corn. Then, the existence of differential agrarian rent allows for the introduction of another policy instrument that can relax the former economic constraints.

Suppose there is now a non financial public sector capable of collecting taxes. We can then modify the demand price equation of corn (4.2) by introducing an export tariff (τ) on that commodity. The price effectively paid by consumers stands as:

$$P_c^d = EP_c^{*s}(1 - \tau) \tag{4.10}$$

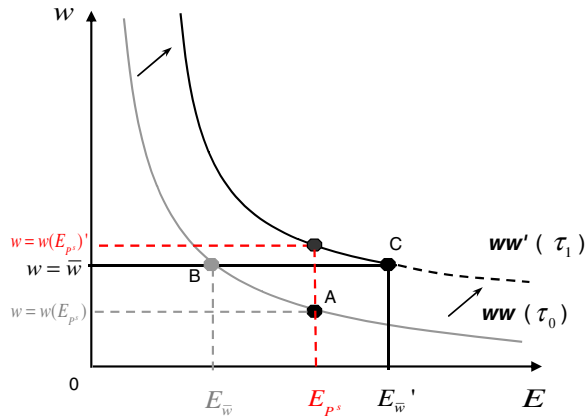
Note that the introduction of the tariff splits the rent in three parts, but its whole amount remains constant: (1) a portion that goes to the public sector; (2) a part that remains in the form of extraordinary profits; (3) finally, a portion that goes to consumers under the form a decrease in the domestic demand price of corn. Precisely, this last portion is reflected by Eq. (4.5'), which shows how the real wage is increased when the tariff is introduced by the public sector into the system:

$$w = \frac{\bar{W}}{EP_c^{*s}(1 - \tau)} \tag{4.5'}$$

Figure 4 shows this process graphically. The introduction of the corn tariff expands the 'ww' Curve to the right (point C) thus increasing the maximum exchange rate compatible with the labour force's reproduction.

¹⁸ The overall effect of inflation on income distribution might offset the initial expansionary effect on the industry of iron. In fact, the increase in nominal wages generates a consequent rise in prices up to the point where the domestic supply price equals its respective demand price. Beyond this limit the domestic production of iron is no longer competitive.

Fig. 4 The effect of export taxes



However, this trade policy finds an objective limit: the amount of rent R_c originally appropriated by the local producers in the form of extraordinary profits¹⁹. Thus, when the international price of corn diminishes (e.g. when the rest of the world becomes more productive in the corn sector), the success of the export tariff might narrow: if the government taxes not only differential rent but also normal profits, then the rate of profit of that sector will be set below the economy's average rate of profit, which might induce changes in production plans of capitalists.

With regard to the rise in the price level, export tariffs might soften the former inflationary impact caused by the currency devaluation by lowering the demand price faced by local corn producers.

$$\frac{dP}{dE} = \alpha_1(1 - \tau)P_c^{*d} - \frac{\alpha_2 \bar{W} l_i a_{ii} (1 + \bar{i}^*) E^e}{(E_0 - a_{ii} (1 + \bar{i}^*) E^e)^2} \tag{4.9'}$$

As a result, under certain circumstances, the tariffs on foreign trade make it possible to neutralize the undesirable effect of the exchange rate policy on the general price level.

Concluding Remarks

In this paper we tried to take a step forward in the analysis of the intrinsic fundamentals of the exchange rate. After exposing and criticizing, in their own terms, those theories that currently dominate the spectrum of discussion, we have explained our view on the subject.

¹⁹ Here we assume that the producers are also the renters.

Based on a Classical-Sraffian framework, according to which effective demand is the force that determines output in the long-run, we showed that an exchange rate targeting policy has several difficulties, and thus, cannot be unilaterally used to stimulate growth. Specifically, considering that competitive devaluations tend to reduce wages, the effective exchange rate has to be compatible with the minimum wage rate earned by the working class. If not, workers would claim for higher payments, leading to a rise in prices and finally, neutralizing the positive effects of devaluation.

A central message of the present study is that monetary policy should be accompanied by an integral set of economic policies in order to make both the exchange rate target and price stability compatible, and hence, to reach a path of sustained economic growth. In this line, we discussed a possible public intervention that might help to overcome the external restriction: a rise in export tariffs. In a context where the producers of land-intensive commodities enjoy rents, such as in the Argentine case, an increase in export-tax rates should not lead to a reduction in the quantities produced and exported, but to a decrease in domestic food prices and an increase in the effective wage rate.

However, once analyzed the complexities associated with the exchange rate policy, we conclude that this strategy should be only the first of many steps aiming at developing the international competitiveness of Argentina. In particular, the policy makers should concentrate their efforts on lowering the critical exchange rate compatible with the development of the infant industrial sectors by stimulating improvements on local productivity.

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