11th Conference of the Association for Heterodox Economics

EXCHANGE RATE AND SUSTAINABLE DEVELOPMENT IN ARGENTINA

Julio Eduardo Fabris[1]
Pablo Julio López[2]
José Villadeamigo[3]

Introduction

During the last five years, a debate regarding the role of the real exchange rate on growth and development took place in Argentina. In the sixties emerged in Argentina a structuralist framework explaining the recessive nature of those years' devaluations[4]. This theoretical development was apposite to the Keynesian view of the neoclassical synthesis (Mundell-Fleming model), which sustained that a growth in the exchange rate[5] encourages the growth of the economy.

From the structuralist works on, the idea that devaluation has a negative effect on the activity level became the prevailing view in some non-developed countries such as Argentina. Later, from developed countries, some studies emerged trying to explain the conditions necessaries for a contractive effect of devaluation[6] and the distributives mechanisms provoked by exchange rates variations[7]. However, the intense economic growth that took place in Argentina for the last six years (since the forced devaluation of the peso, which followed the 2001 crisis) has changed this view.

Some economists, who identify themselves with a new structuralism, have recently proposed a policy of real exchange rate 'stable and competitive' (that is to say, high) to promote employment, revising the old structuralist argument[8]. In this context, the theoretical debate about the impact of an exchange rate modification has revived, as it can be seen in some arising studies that analyze the topic from diverse approaches[9].

In Argentina, as well as in other developing countries, the exchange rate is

---

[1] *University of Buenos Aires, Argentina jfabris88@yahoo.com.ar*

[2] *University of Buenos Aires, Argentina, palopez77@gmail.com*

[3] *University of Buenos Aires, Argentina, fratino@fibertel.com.ar*

[4] Díaz Alejandro (1963), Braun and Joy (1968), Diamand (1972), Canitrot (1975) and Porto (1975), are only some examples of the structuralist view.

[5] In this article we use the definition of the exchange rate in its direct quotation: the Exchange rate is the foreign currency price in terms of the home currency. Therefore, devaluation of the home currency takes place when the exchange rate increases.

[6] See, for example, Krugman and Taylor (1978).

[7] See, for example, Bahaduri and Marglin, (1990).

[8] Frenkel and Rapetti (2007) and Frenkel (2006).

[9] See, for example, Keifman (2005), Iñigo Carrera (2008) and Nicolini and Llosa (2007).

linked to the production and export profile of the economy. Many non-developed countries tend to specialize their production and exports on primary goods, because in those sectors they have international relative efficiency advantages (due to the presence of particular natural resource or conditions). In numerous occasions, this kind of specialization lead the authorities to choose a low exchange rate level that tend to appreciate the national currency, according to the productivity of those sectors. This is the phenomenon known as the 'natural resource curse', also called 'Dutch disease' (although some authors point out that the two concepts refer to different processes).

Those kind of experiences are characterised as a 'curse' or a 'disease', because, in the existence of a sector with a very high international productivity (due to natural conditions), the exchange rate level may complicated the export of industrial goods (and sometimes even the production for the domestic market), causing a decline of the industrial sector or restraining its growth and diversification. Therefore, the election of an exchange rate level according to primary production difficult the development of other tradable goods production sectors. In this context, a relevant question comes up: what are the effects of devaluation in a non-developed economy? Or, in other terms, is the exchange rate a suitable instrument to encourage a development policy?

The porpoise of this paper is to make a review of the literature cited, in the light of the recent performance of the Argentinean economy. The aim to do so is to establish under what circumstances the 2002 devaluation provoked an expansive effect in the economy, a very different result from the historical experience of our country. Also, this article examines whether a stable and competitive exchange rate is an effective and sufficient instrument to stimulate Argentinean development, being able to resolve the social asymmetries and imbalances that characterized the past performance of the economy.

Finally, in this paper we examine in which sense the present world economic crisis affects the Argentinean economic programme that, based on a competitive exchange rate level, made possible to reach high GDP growth rates during the period 2003-2008.

In order to achieve these objectives, the article has the following structure. In the first section, we outline some aspects of the Argentinean economy during the nineties that are very important to understand the 2001-02 crisis, the devaluation and the subsequent recovery. Then, we present an historical review of the devaluation theoretical studies during the second half of the twentieth century. At that point, we will

refer to the post-war structuralist studies of the contractive effects of Latin-American devaluations. Also, we will pay special attention to the Krugman and Taylor (1977) and Bahaduri and Marglin (1990) articles, given that those studies provide us with important elements to analyse the recent Argentinean economy.

In the third section, we present a stylized model for the Argentinean case. We will base our schematic representation on the Krugman and Taylor (1978) model, with some important modifications in order to capture the essential features of the Argentinean policy applied during the 2003-2008 period. Therefore, in that section we will first describe the model developed by the authors in 1978 and them, we will introduce some adjustments in order to analyse our particular case. In the last section, we present the conclusions of the paper.

1. <u>The end of the convertibility experience: the 2001-02 crisis</u>

The 2001-02 Argentinean crisis expressed itself in a strong unbalance of the external sector. In addition, the crisis had a deep impact on the economy due to the crash of the monetary and financial sectors and the aggregate demand deterioration. As a consequence, it took place a strong productive shrinkage and a manifest unemployment increment. This situation intensified the deterioration of the labour market, which started in the nineties and was particularly strong since 1995[10]. In the statistical attachment it can be observed some of the macroeconomic indicators that characterize that crisis and the subsequent recovery.

The process that culminated in the crisis developed through out all the nineties, even though the facts that took place during the second half of the decade were the definite ones. It is not the aim of this work to explain such process, neither it is to deepen on the causes of the unbalances that exploded during 2001 and 2002. However, it is important to point out some of the economic programme characteristics that was applied in Argentina during the nineties, for they will allow as to understand better the events that occurred after the crisis.

To start with, the referred economic model was based on a fix exchange rate regime. The national peso was fixed to the American dollar according to a convertibility programme[11] that impelled, by law, the monetary authority to issue money without the

---

[10] At the end of the eighties the unemployment rate was 6,3%, in October of 1995 was 19,5% and in 1999 it was 14,5%.

[11] Also refer as a currency board system.

proper support of the foreign currency. This regime implied a strong revaluation of the Argentinean peso, since the exchange rate lagged in an international context where the dollar revaluated itself with respect to other strong currencies.

Besides the fixed exchange rate the authorities also incurred in a crescent opening of the economy in order to combat inflation. As a consequence of the exchange rate level established and the commerce openness, the entry of imported products was massive and created a chronic deficit in the trade balance and the current account. The measures that concerned the external sector were complete with the elimination of barriers on the capitals' mobility, in order to finance through this way the current account deficit and to generate a foreign currency accumulation that would allow increasing the monetary base[12].

Therefore, the aim was to induce a deflation process that would allow, in the long run, to generate an equilibrium position in which the domestic production would focus on those efficient sectors that produced on an international productivity level. With the same logic, it was sought to rationalize the State by privatizing its companies and reducing the government intervention in the economy. In consonance to the scheme, the fiscal policy was contractive. In this context, the labour market was the first to suffer the consequences.

In a few words, the convertibility plan was a fixed exchange rate regimen with a level for the currency parity that over-valued the national currency, in addition to a commercial and financial openness of the economy. Therefore, the main goal was to put an end to inflationary events that were so ordinary in the Argentinean economy (which in 1989, found a highlight point with an hyperinflation situation) and to generate a growth path built on new bases. The diagnose was that inflation was the consequence of the presence of inefficient productive sectors who were favoured by the protection policies and the State's intervention in the economy with permanent fiscal deficits.

This programme implied a significant rupture on the way Argentinean economy functioned from 1950 to 1975, which main characteristics were still present throughout the eighties[13]. During those periods, the closed economy allowed the development of an industrial productive sector focused on the domestic market, at the same time that the State kept a strong intervention in the economy.

---

[12] Consequently, the convertibility plan was a fixed exchange rate regimen with perfect capital mobility.
[13] Even though the industrial sector suffered an important contraction during the period 1976-1983, due to the economic programme of the military government.

In schematic terms, as the contemporary's structuralist studies detailed, the 1950-1975 Argentine economy could be represented by two productive sectors: I) the primary sector produced essential raw materials (food goods), that were partially sold in the domestic market and, due to the lands' high fertility, partially sold in the exterior market; II) a non integrated industrial sector that required imported inputs and machinery.

In addition, the primary goods' offer was relatively rigid, which is why, when the growing GDP phases incremented the imports' demand, the limit that existed in the possibility to increase the exportable goods volume drove to an external sector's crisis. In the presence of such situations, the authorities turn to devaluate the domestic currency with contractive effects on the economy and, due to imports reductions, generated the conditions for a new up growing phase. These were the cycles known as 'stop and go' that were accompanied by persistent inflationary rates. Immerse in that functioning scheme, the Argentinean economy alternated growing phases with crisis and recession ones until the end of the eighties.

With the economic programme applied during the nineties[14], even when it was possible to control the inflation, the expenses in real terms were too high. The exchange rate lag and the trade openness determined a generalized deindustrialization process, with increasing unemployment rates. In the beginning, the new model generated a positive effect due to the favourable international conditions and to the prices stability after several decades of high rates inflation. However, that stimulus couldn't last. Therefore, even though the GDP grew during the first years of the decade, this process got exhausted quickly.

The labour market was promptly resented; the employment destruction accelerated as well as the bankruptcy of companies because of the massive entry of imported products. Besides, the first external shock came with the Mexican crisis at the end of 1994. The massive exit of capitals provoked a monetary contraction due to the convertibility rules. This situation disturbed the trust on the programme' rules, affecting the aggregate demand. After a brief recovery from the 'tequila effect', in 1998 the economy entered a recession period that, summed up to the adverse international conditions[15], didn't allow to generate enough capitals entry in order to sustain the

---

[14] In many ways, this programme followed the recommendations of the Washington Consensus.
[15] It is important to remember that at the end of the nineties a number of financial crises (South-East Asia, Brazil, Russia) took place with deep impact on emerging economies.

programme. The consequences were three years of product decreasing, increases of the external debt, capitals exits and the loss of international reserves, until the crisis at the end of 2001 occurred indicating the end of the nineties economic model.

The crisis continued during 2002, year in which a strong devaluation of the domestic currency took place and the fall of the domestic output became more intense. However, by the last months of that year, the economy started a recovery phase, which was more noticeable during the following years. That path, with GDP growth rates near the 10% annual between 2003 and 2007 (see chart 1 of the statistical attachment), is linked to a new economic policy programme based on a high real exchange rate. That way, the 2002 devaluation far from having a contractive effect, as it was usual in Argentina during the fifties, sixties and seventies, had an extraordinary expansive effect in the middle run.

In short, the Argentinean economy reacted in a different way to the intense 2002 devaluation in comparison with similar situations in the past. Several factors influenced for this to happen.

The effects that exchange rates variations have on the economy were approached from different points of view by the economic theory. Next, we will present an overview of some papers that analysed this matter during the second half of the twentieth century. The brief exposition of some of these papers will give as some elements in order to, later on, develop an adequate model to describe some aspects of the Argentinean economic process of the past five years.

2. <u>The theoretical approaches to devaluations from an historical perspective.</u>

According to the Keynesian ideas, which prevailed during the forties and the fifties, the State have among its power a series of tools that can use in order to influence the economy's product and employment level. This vision was applied to the analysis of external accounts, trying to show the expansive effect that protectionist policies could have on the trade balance, and from there, on the income level. In a world where capital movements where still limited, the capital account didn't receive the same attention that the current account balance.

Therefore, as this school of economic thought developed, the chance to stimulate the aggregated demand was opened for policies regarding the external sector. In this sense, the evolution on the balance of payment gathered an important role for policy

makers, even though subordinated to the primal objective: to activate the domestic economy, promoting the product and the employment expansion.

In 1933 Harrod introduced the idea that implied that the exports could lead to a growth dynamic with a multiplier effect. This foreign trade multiplier established a direct relationship between the trade balance evolution and the output and employment levels: in particular, an excess on the local goods and services' demand from abroad (that is, a growth on exports over imports) would stimulate the aggregate demand, with an impact on the output level. In order to succeed, the economic policies should discourage the imports and stimulate the exports by manipulating the *relative prices* encouraging a trade surplus balance.

By following these guidelines, the Keynesianism tried to establish under which conditions devaluation would be an appropriate policy to improve de trade balance and have an expansive economic effect. That's how it was recognized the necessity to compliance the *Marshall Lerner*[16] condition, which established that if the sum of the imports demand and the exports demand elasticities was higher than one, the positive effect was guaranteed.

These ideas started to be debated towards the end of the fifties, when an incipient monetarism renewal begun. Milton Friedman started to develop the orthodox monetarist theory by recapturing the old quantitative ideas. During the same period, the IMF started working on developing an approach towards the external accounts, which would later be known as 'the monetary approach to the balance of payment'.

Contrary to the ideas built on Keynesian roots, the notion that the flows of the balance of payment were essentially a monetary phenomenon was dominant on the new approach. In this sense, the lack of equilibrium in the balance of payment[17] was expressing the lack of stability on the monetary market.

This school of thought returned to the ideas that, in monetary and foreign trade subjects, were dominant during the gold standard period. When the 'unique price law' is satisfied, the exchange rate level should be the one that make equal a good price in two different countries. That is to say, the theory of the purchasing power parity was

---

[16] The essence of this condition was present in the Marshal work *Money, Credit and Commerce* written by the beginning of 1923. During the begging of the thirties, Abba Lerner specified this critic elasticity condition. Robinson also presented the same condition in 1933. Therefore, it's ordinary to be referring to this condition as the Marshall-Lerner-Robinson condition.

[17] The equilibrium of the balance of payment is reached when the sum of the current account result and the capital account result is cero.

assumed to be satisfied and the determination of the exchange rate level was restricted to the prices' equalization.

Based on these ideas, during the middle of the 20th century, the growth of the international capital movements gave birth to the theory of the interest rates parity. In the new international configuration, the capital movements determined the exchange rate level, as it would be located in a level that would make equal the interest rates in two different countries, considering the expected exchange rate[18]. In conclusion, the capital movements could guarantee the arbitration among different national spaces in such a way that the capital returns would be equalized when expressed in the same currency.

Therefore, the determination of the exchange rate level was carried to the capital market due to the interest rate's flexibility. How was this conciliated with the purchasing power parity theory and what role was left for the trade balance? The neoclassical theory saved this apparent contradiction by establishing two moments for the determination of the exchange rate level. In a short run would operate the adjustments from the capital movements flows. In a long run, on the other hand, the theory returned to the real economy side since it was argued that the exchange rate would tend to even the trade balance. As the agents know this determination, the expected exchange rate that the individuals have in their minds when establishing the necessary yield of their assets, should be the long run equilibrium level. This way, the short run and the long run are reconciled, or, in other words, the capital flows are in harmony with the trade movements.

On the whole, the orthodox point of view denied the possibility for the authorities to alter successfully the exchange rate. This variable would be determined independent of the exchange rate policy: in a short turn its level would be established from the capital movements while in a long term, from the trade balance equilibrium.

In this context, devaluation could have transitory effects but never permanent ones. As a matter of fact, according to the monetarists, devaluating rises prices generating an increase on money demand. The money demand excess (increases the interest rate) reflects on a surplus on the balance of payment due to the capitals entrance, so that foreign currency comes into the country and raises the money supply in

---

[18] This condition is known as the uncovered interest rate parity. According to this condition, the interest rate of country 'A' must equal the interest rate of country 'B' plus the difference between the exchange rate and its expected value. Therefore the expected capitals return expressed in the same currency are equals in the two countries.

order to equal the demand and, that way, the surplus on the balance of payment banishes. The effect of devaluation on the balance of payment as well as on the output and the employment is, therefore, transitory.

Nevertheless, during the fifties and sixties, these monetarist ideas weren't yet very popular. As a matter of fact, they discuss their thoughts with the dominant Keynesian ideas contained in the neoclassical synthesis. Towards the beginning of the sixties, the neoclassical synthesis economists sought to make a theoretical model in order to study the external accounts, incorporating the foreign sector variables to the IS-LM model. That way, the formulation of the IS-LM model for an open economy (Mundell Fleming's model[19]) established that under the existence of free capital mobility, devaluation has a positive impact on the trade balance and the output level.

The main idea was that a devaluation would create an incentive on the economic activity due to the change in the relationship between domestic and external prices, which stimulate the demand towards domestic goods (increasing the exports and also the import substitution). The possibility of a price increase creating a negative effect that wouldn't be compensated by the positive effect of the increasing demand of domestic goods wasn't contemplated by this theory.

Nevertheless, contemporary, some non-developed economies were showing some empirical facts that didn't accommodate to the principles of the theoretical approach. In particular, some Latin-American countries were showing devaluation episodes followed by recession periods. This possibility was acknowledged by the economic theory, but wasn't profusely developed. Therefore, for instance, some observations were raised regarding the inadequacy of the Marshall Lerner condition when the trade balance was initially unbalanced[20].

However, during the sixties and seventies, some authors started to develop a line of work that, taking into account the reality of the Latin-American economies, tried to explain the recessive effect of devaluation. These authors were influenced by structuralism and sought to eliminate the discrepancy between the economic theories and the empirical experience.

The writers of those articles admitted that devaluation even though stimulated some productive sectors, also had redistributive effects with negative consequences on output and employment. These negative effects could, under certain conditions (that where the

---

[19] Robert Mundell and Marcus Fleming developed this model in 1962.
[20] Hirschman (1949) was one of the few authors who evaluated this possibility.

prevalent ones in Latin-American economies), prevail over the positive effects. Devaluation generates movements from wage earners towards capitalists with lower propensity to consume, which depressed the aggregated demand, the income and the employment.

Ferrer (1963) emphasised on the effect of devaluation on prices. When the prices in local currency of exports and imported inputs used by the industry rise, the increase moves towards the general level of prices, depressing the real wages. This lessens the global demand because the export sectors that would became the owners of the greater incomes also showed a propensity to consume less than wage earners. This way, not only a negative effect on the activity level would be verified but also new pressures on the prices due to the workers' searched to recover the real wage level, inducing new devaluations.

Díaz Alejandro (1963) was one of the first authors who formalized these ideas. According to the author, in the presence of a low crossed elasticity of the demand on domestic goods with respect to the prices of exportable goods, of a low offer elasticity of exportable goods and marginal propensity to save out of wages lower than the marginal propensity to save out of profits, devaluation makes the output fall and, in some extreme cases, it can also deteriorate the trade balance. The theoretical model was relevant because these features where the ones that represented in a better way semi-industrialized countries such as Argentina.

Diamand (1972) postulated that the Argentinean economy had an uneven productivity structure, in which coexisted two sectors with very different productivity levels. The agricultural sector produced goods with a high international productivity level due to the fertility of the land in some regions of the country. On the other hand, the industrial sector, produced goods with a productivity level much lower than the international one. In these conditions, if the exchange rate level was established according to the agricultural sector, this would inhibit the industrial production[21], while an exchange rate level according to the industrial sector would generate extraordinary profits for the agricultural sector, raising the local prices of basic food goods. This way, the author held the idea of the necessity to apply a particular exchange rate regime that would imply some kind of differentiation of the exchange rates focused on each sector. The exchange rate became this way an essential tool for economic policy.

---

[21] This situation is similar to what later was known as the 'Dutch disease', also called the 'natural resource curse'.

Canitrot (1975) sought to build a model that would contain the principal features of economies that, such as the Argentinean, had a primary export sector and an industrial one that demanded imported inputs and produce for the local market. The author's aim was to show the dilemma that involved developing policies to redistribute the incomes. The exchange rate resulted an important variable in the analysis because its variations would determine income transferences between profits and wages.

His conclusion was that devaluation reduces the demand of industrial goods, affecting that sector's output and the income and the employment of the economy as a whole trough a multiplier effect. This result was the consequence of an increase in the prices of exportable good in the domestic market (for which the demand is non-elastic), the increase of industrial goods' prices (due to the use of imported inputs) and the consequent fall of the real wages.

It is interesting to point out that Canitrot argued that these effects could be partially offset, and even be eliminated, thanks to the role that other sources of demand could play, such as independent investments, the industrial exports or the imports substitution. Furthermore, he contemplated the possibility of applying tariffs and taxes on imports and exports in order to dose the devaluation effects. Finally, it is important mentioning that the author considered the within country distributive conflict between wages and profits to be present when the economy is near to full employment, but it can be avoided when there is idle production capacity.

Porto (1975) based his article on the IS-LM model to concentrate in the effects of modifications in the nominal wage to exchange rate relation. According to the author, an increase on the exchange rate with respect to the money wage would provoke a within country income distribution from workers to profits earners that would depress the aggregate demand, due to the difference of the marginal propensities to consumption of both groups of income receivers. This was the usual explanation for devaluation's contractive effect, which was present in all these articles.

An innovative idea brought up by Porto, inspired on Sidrauski's work (1968), was the inclusion of the monetary market in the analyses that would play an important role in order to explain the effect of devaluation. In that way, when a decrease on the nominal wage to exchange rate ratio takes place, the cash balance effect affected in a negative way the aggregate demand. The rise of the prices that overcame the increase of the exchange rate, as long as the nominal monetary offer don't expand, would provoke

the monetary real offer to lower, producing a rise of the interest rate and depressing the investment levels.

Krugman and Taylor (1978) developed a model in order to determine under which conditions devaluation could have a contractive effect. The aim was to condense in an only model all the previous contributions done on the subject. The authors held that by redistributing the income to the sectors that showed a higher propensity to save, a devaluation could drive to an aggregate offer excess that would contract the income and the employment.

According to Krugman and Taylor this was a possible result whenever a starting point wasn't a trade balance surplus or when ad-valorem taxes exist on the exports and imports. In this last case redistribution from the private sector to the public one occurs and as the last one has a marginal propensity to save that is equal to one in a short run, the effect on the aggregate demand is negative. The importance of these conditions is that, as the authors point out, they were present in most of the under developed countries. In these countries, therefore, devaluation would probably have a contractive effect.

An important contribution to comprehend the effects of devaluation was the study made by Bhaduri and Marglin (1990). The authors postulated that when redistributive effects generate changes on the relative prices, the effect on the aggregate demand depend not only on consumption (that is affected by the real wage), but also on the investment (that depends on the profits). In this sense, they distinguish between two visions. On the one hand, the sub-consumption vision that sustains that a decrease of the real wage affects negatively the aggregate demand because of the drop of consumption. On the other hand, the exhilarationist vision that sustains that a decrease of the real wage implies an increase of the profits share on the income that pushes the investment level and the aggregate demand.

The authors created a model for an economy that wasn't in a full employment situation, being the existence of idle productive capacity an important variable in this analysis. In the case of a closed economy, they concluded that a GDP growth process could happen being pushed by consumption in detriment of capitalists (starting with a real wage improvement) or pushed by profits and investment when a deterioration of real wages takes place. However, the authors leave open the possibility of collaboration between classes, because under certain conditions, a growth process could occur with higher profits and an increase on the wage volume due to an employment growth.

In the analysis for an open economy, the devaluation's distributive effect would be ambiguous. To begin with, a price increase and an improvement of the nominal wage take place. Therefore, the modification of the share of the benefits on total incomes depends on the relation between these increments. If these movements result in a deterioration of the real wage and in an improvement of the benefits, the effect on the activity level will depend on the capitalists' characteristics. If they are energetic and the investment responds vigorously to increases of benefits' margin, then devaluating would have a positive effect. Whereas, if the capitalists don't respond with that kind of behaviour, we would be in the presence of a stagnation vision, according to which the depression on the consumption due to the real wage's deterioration will determine a reduction of the aggregate demand.

The strong devaluation of the Argentinean peso during 2002 and the subsequent growth process provoked the arising of several theoretical works that once again studied the relation between the exchange rate and the product and employment level. From a point of view known as the neo-structuralism, Frenkel and Rapetti[22] in several works revised the prior structuralist's position when they postulated that sustaining a stable and competitive exchange rate (that is to say, high) is a sufficient policy to stimulate the employment and the output level. This way, it would exist a positive link between the real exchange rate and the activity level. [23]

With Canitrot and Porto's structuralist models and the recent papers on the Argentinean case as a starting point, Keifman (2005) sought to build a model that would allowed to integrate the theoretical advances with the empirical reality. The author takes into account the employment level and the relation between the exchange rate and the wage. The seventies structuralism suggested an inversed relationship between these variables: as the real exchange rate raises, the employment level drops. On the contrary, the new structuralist's ideas showed the existence of a direct relation between the real exchange rate and the employment. Keifman sought to integrate these ideas among the same analytic scheme in order to demonstrate that they weren't incompatible at all.

The author concluded that the relationship between the real exchange rate and the employment is not always repetitive. That way, for low levels of the ratio exchange-wage, its relation with the employment level is direct, while for high levels that relation

---

[22] See, for example, Frenkel and Rapetti (2004, 2007) and Frenkel (2006).
[23] This positive relation can be verify for the period 2002-2007, but also for the previous period, when the low exchange rate provoked decreases in product and employment.

could be inversed. This would explain that in certain contexts, increases on the real exchange rate had recessive effects, while in others, its impact was positive on the output and the employment level. The author points out in an interesting way the fact that this ratio can become always direct in the case of some structural transformation, for instance, the development of an export manufacturer sector. For the author, however, the schematization that better described the Argentinean economy in 2005 was represented by a manufacturer sector that substituted imports but wouldn't export.

3. A macroeconomic model for the Argentinean case

In order to illustrate our vision regarding the Argentinean economic process, we will base the analysis on a well-known model: the one developed by Krugman and Taylor, regarding the devaluation contractive effects[24]. First, we will describe that model as it was presented by the authors. Later in this section, we will introduce some modification to that model in order to describe the Argentinean case.

The Krugman and Taylor model

The authors proposed a simple model inspired on the Keynesian and Keleckian tradition, with the following characteristics:

"(i) There are two distinct sectors, an export sector producing for the world market and a home goods sector producing for domestic demand.

(ii) Prices of exports and imports are fixed in foreign currency; home goods prices are determined by a markup on direct costs of labor and imported inputs required to sustain production (think off petroleum in an oil-shot t country).

(iii) The wage rate is fixed in domestic currency.

(iv) In the short run, substitution responses of both exports and imports, to price changes are negligible. Export volume is determined by available capacity, while imports enter with fixed coefficients into domestic production.

(v) Interest rates are kept constant by action of the monetary authority, so that we need only consider income-expenditure relationships."[25]

The equations describing the model are as follows.

$$P_H = (a_{LH}\, w + a_{MH}\, P_M)\, (1+z) \qquad (1)$$

---

[24] Krugman and Taylor (1978).
[25] Krugman and Taylor (1978), p. 447.

where P_H is the price of the domestic goods, w is the wage rate, P_M is the domestic price of import goods, a_{LH}, a_{MH} are the inputs coefficients of labours and imports respectively into home goods and z is the mark up factor.

The domestic price of imports and exports (P_M ; P_X) are determined by the exchange rate (e), world prices (P_M^* ; P_X^*) and taxes (t_M ; t_X):

$$P_X = e\,(1 - t_X)\; P_X^* \qquad (2)$$

$$P_M = e\,(1 + t_M)\; P_M^* \qquad (3)$$

Incomes are divided in wages and profits or rents. Therefore, the nominal income is represented by the two following equations.

$$Y_W = (a_{LH}\,H + a_{LX}\,X) \qquad (4)$$

$$Y_R = z\,(a_{LH}\,w + a_{MH}\,P_M)\,H + (P_X - a_{LX}\,w)\,X \qquad (5)$$

where H and X are the domestic demand home goods and exports respectively.

The model assumed that there is not direct final demand of imports, so that all imports are inputs used in home good production.

The demand side of the model, assuming separate consumption functions of wages and profits, is:

$$H = \gamma_w\,(Y_w / P_H) + \gamma_r\,(Y_r / P_H) + I(r) + G \qquad (6)$$

$$M = a_{MH}\,H \qquad (7)$$

where M and I are imports and investments in real terms, r is the interest rate assumed fixed and G is the real government consumption.

With the equations (4) – (7), and assuming the exchange rate is held fixed, Krugman and Taylor arrived to an open economy standard model. The multiplier effects on home goods domestic demand and imports are easily obtain:

$$\frac{\partial H}{\partial G} = \frac{1}{D}\ ;\ \frac{\partial M}{\partial G} = \frac{a_{MH}}{D} \qquad \text{with} \qquad D = 1 - \gamma_w\,a_{LH}\,w / P_H - \gamma_r\,z / (1 + z) > 0$$

These familiar results change when the exchange rate is no longer fixed.

Based on this model, which explicitly excludes substitution and monetary effects, Krugman and Taylor analysed the income effects of devaluation.

When devaluation takes place, even if there are no changes in the country's terms of trade, there are three main consequences. In the first place, *"unless the trade account is initially balanced, a devaluation changes the real income of the country as a whole"*[26]. The real income increases if the trade balance has an initial surplus or decreases if the trade balance has an initial deficit. Secondly, *"within the country it produces redistribution from workers to capitalists"*[27], as a consequence of two factors.

On the one hand, if wages are rigid in the short run, devaluation reduces real wages (w/P_H), due to the increase of the domestic prices of imports inputs and, therefore, the increase of home good prices. On the other hand, as long as devaluation increases export goods domestic prices, the profits receive by producers of export goods enlarge. *"If, as is widely believed, the marginal propensity to save out of profits is larger than the marginal propensity to save out of wages, this change in income shares will reduce aggregate demand and therefore imports"*[28]. On the model, the relation between the marginal propensities to save is implicit in the relation between the propensities to consumption ($\gamma_w > \gamma_r$) as pointed out by Diaz Alejandro[29].

In the third place, devaluation has fiscal effects. If government budget is initially unbalance, an income effect takes place comparable to the income effect of devaluation through the trade deficit. Thus, if the income taxes on profits are higher than on wages (progressive taxes), the government gets an increased share in incomes. Also, if there are ad-valorem taxes on exports or imports, the increases of trade goods prices will enlarge the government income.

The described effects do not take place independently form each other and it is impossible to decompose them. That is why the authors study special cases in which only one of the impacts of devaluation is operating, resulting the respective multipliers.

In order to show the devaluation effect due to a trade imbalance, equal consumption propensities are assumed ($\gamma_w = \gamma_r = \gamma$), eliminating the within-country distribution effect, and taxes and government consumption are supposed cero ($t_X = t_M = G = 0$).

---

[26] Krugman and Taylor, p. 449.
[27] Krugman and Taylor, p. 449.
[28] Krugman and Taylor (1978), p. 450.
[29] See Díaz Alejandro (1963).

Then, it can be derived the elasticity of home goods output with respect to the exchange rate:

$$\frac{dH}{de} \cdot \frac{e}{H} = K \cdot \frac{P_X X - P_M M}{P_H H} \quad \text{with} \quad K = (\gamma / D)(1 - (P_M M / P_H H)(1 + z)) > 0$$

Consequently, if trade is initially imbalanced, the impact of devaluation is contractive. Then, Krugman and Taylor conclude in this case that this result is more likely to occur, as devaluations often take place when there is a trade imbalance.

To illustrate the within country distributive effect, the trade balance is assumed to be $(P_X X - P_M M = 0)$ at the moment of devaluation and the government variables are assumed cero. As usual, the consumption propensities are assumed unlike for the different classes $(\gamma_w > \gamma_r)$. With these simplifications, the elasticity of domestic demand for home goods with respect the exchange rate is as follow:

$$\frac{dH}{de} \cdot \frac{e}{H} = \frac{\gamma_r - \gamma_w}{D} \cdot \frac{Y_w}{Y} \cdot \frac{P_M M}{Y} \cdot (1 + z)$$

where $Y = Y_w + Y_r$ is the total private income.

In the elasticity equation the contractive effect is given by the difference in the consumption propensities.

In order to show the fiscal effects, the model assume balanced the trade account $(P_X^* X - P_M^* M = 0)$ and equal consumption propensities for both classes $(\gamma_w = \gamma_r = \gamma)$. Also it's assumed the import taxes are cero $(t_M = 0)$ and the government budget balanced $(Y_w + Y_r = e P_X^* X + P_H H - e P_M^* M)$. As a result, the elasticity of domestic demand for home goods with respect to exchange rate is:

$$\frac{dH}{de} \cdot \frac{e}{H} = -t_x \cdot \frac{1}{D} \cdot \gamma \cdot (P_M M / P_H H)$$

As observed in the equation, this elasticity is proportional to export taxes and to the ratio imports to domestic demand for home goods.

Up to this point, the especial cases were analysed and the model requires moving to the general case. However the analysis of the general case implies a very complicated algebra, so the authors proposed a numerical example, assuming values for the parameters and exogenous variables of the model.

Assumed values of parameters and exogenous variables

$a_{LH} = 0.75$ $a_{MH} = 0,25$ $a_{LX} = 0,25$ $\gamma_w = 1,0$ $\gamma_r = 0,5$ $t_X = 0,5$

$t_M = 0,2$ $z = 0,4$ $w = 1$ $P_M^* = 1$ $P_X^* = 1$ $I = 20$

$G = 10$ $X = 15$ $e = 1$

Using these values, the results of the model when devaluation takes place, are described in the following chart.

Effects of a devaluation

	e=1.0	e=1,25	% change
Nominal GDP at factor costs	127,7	124,5	-2,2
GDP at constant prices	127,7	119,8	-6,2
Price of home goods	1,47	1,575	+7,1
Outputs of home goods	102,7	96,0	-6,5
Trade balance in dollars	-10,7	-9,0	+15,9
Trade balance in domestic money	-10,7	-11,2	-4,7

This model turned out to be very useful at the time it was published, because the authors managed to generalize the disperse theoretical contributions opposite to the common thought of the expansive impact of devaluation, which didn't apply to the empirical evidence of devaluations in some non-developed countries, especially in Latin America.

The model for the Argentinean case

Our purpose is to use the model described above, to demonstrate the possibility of a completely different result: we will show the expansive effect of the 2002 Argentinean devaluation. In order to do so, it's necessary to modify some of the assumptions of the model. The following modifications to the Krugman and Taylor model represent stylized facts that describe in some way the post-convertibility Argentinean economic process.

1. The substitution effect.

In the Krugman and Taylor model the substitution effect between import inputs and labour is not included because, in normal conditions, the period of time required to make the substitution is too long for a short run study. In our analysis the situation is different for two reasons. To begin with, this article pursue an analysis longer than the short run since we attempt to explain some features of the Argentinean economic process of the last five or six years. The second reason to include the substitution effect is that in 2002 the productive structure of the country had a considerable idle production capacity, consequence of the des-industrialization that took place during the nineties and the recession in which the economy was immersed when the devaluation occurred. Therefore, the productive sectors were, at some level, capable of substituting import inputs and machinery with local production and labour. The inclusion of the referred effect will be ad-hoc since the model will be schematic and only for demonstrative purposes. Therefore, this effect will be included in our model by assuming a modification in the coefficients a_{LH} and a_{MH} (inputs coefficients of labours and imports respectively into home goods).

2. Positive effect on exports of an increase of the real exchange rate.

The usual theoretical models describing the Argentinean economy assumed very low elasticity of exports goods production with respect international prices. This assumption was based on the fact that the technology incorporation in agriculture and cattle farming, the principal export sectors, was historically extremely small. However, the situation changed during the last years. Moreover, even the characteristic rigidities of an activity based on a limited resource like the land, had been relax. This was possible because the new technologies allow the productive use of flood lands, arid lands, etc. that in the past were barren. In the model, this relation between the real exchange rate and exports is represented by the following equation, where the export volume is a function of the prices relation.

$$X = \bar{X} + x\,(P_X / P_H)$$

3. The government populist policy

The economic policies applied since 2003 in Argentina can be characterize as populist, since the authorities seek for the labour unions support and look for a class conciliation government. Therefore, the government attempted to protect the labour income from the adverse effects of devaluation. To do so, the policies put in practice were the application of subsidies to some services, like transport, energy and communication, and of price control on fuel and some basic consumption products (with mixed results). In order to control prices, one of the central policies was the application of exports taxes on agricultural products: food products such as wheat, meat and soy. These taxes were also used to finance the mentioned subsidies[30].

The reason behind these policies of price controls, taxes and subsidies, was the purpose of sustaining the real wage, with other instruments besides the increases in nominal wages. The Argentinean past experiences of devaluations, proved that the increases in nominal wages tend to provoke intense inflation spirals. Therefore, the intention was to sustain the real wage by subsiding some consumption goods and controlling prices increments of basic food products. In this context, the nominal wages rose but less than in similar circumstances in the past.

The real wage decreased about twenty percent in 2002-03, to increase in the subsequent years, overcoming the initial level in 2007. However, on average, the real wage remained relatively constant. So, for our schematic representation, we will assume constant the real wage.

These subsidies and real wage protection policies can be verify, observing the different evolution of retail prices compare to wholesale prices (see chart 4 of the statistical attachment). In particular, the wholesale prices increased more than retail prices, provoking an important reduction in wage cost (money wage over wholesale price index) as shown in chart 5 of the statistical attachment.

In order to include these elements in the model, we will add a money component in the real wage equation, different from the nominal wage (*w*). This money component will represent the subsidies given to the wage earners and will guarantee the constancy of real wages. The new component of the real wage will not represent a wage cost for enterprises (because it is paid by the government) and it will be finance by exports taxes. In practice, the taxes were only for agricultural exports and there were different

---

[30] For a description of these mechanisms see Fabris, Lopez and Villadeamigo (2008).

levels of taxes according to the product. For example, the taxes for soy exports were the higher because their international price increased more than other grains prices and its production expand displacing the production of other goods. The consequence was the reduction of the offer of some basic food products. So, one of the intention of the taxes was to reduce the incentive for soy production. In our model, however, we will have just one export good and one tax level applied to it. The equations are as follow:

$$(w + s)/P_H = w_0/P_{H0} \quad \text{and} \quad s(a_{LH}H + a_{LX}X) = t_X \, e \, P_X X$$

In the first equation it can be seen that the subsidy is added to the nominal wage so the real wage with subsidy $(w + s/P_H)$ equals the initial real wage (w_0/P_{H0}). The second equation shows that the subsidy is financed by a tax on the export good (t_x).

4. *International prices of primary goods increases.*

Primary goods and manufactured agricultural products with low added value mainly compose Argentinean exports. The international prices of those and other commodities increase impressively during the first years of the century, improving the country terms of trade (see chart 6). The recovery of the GDP growth rate and the prosperity of the Argentine economy had a lot to do with that prices movement. Our model, therefore, will capture the dependence of the national economy on the international prices improvement.

We will consider the international price of the exportable good (P_X) exogenous and increasing in time.

5. *Endogenous Investments*

In the model, the investment will be a fixed rate (twenty percent) of the income level considered at constant prices. This assumption disregards the influence of the interest rate on investments, because we will not consider the monetary effects[31]. The model also disregards the relation between investments and the profit rate, in order to simplify the analysis.

$$I = i \, (Y_w + Y_r)/P_H$$

---

[31] Also, the relation between interest rate and investment is not always clear in Argentina, since investors are mostly held by own utilities and the local financial assets are not very attractive as an alternative from real investments.

6. *Modelling the fiscal variables.*

The government consumption is considered exogenous and, separately, it will be considered the income transference from the export sector to the wage labourers. This will allow as showing the initial feasibility of the economic policy, and also the latter exhaustion with the employment rate improvement and when the level of export tax needed become politically unsustainable.

Assumed values of parameters and exogenous variables

$a_{LH} = 0.6$ $a'_{LH} = 0.7$ $a_{MH} = 0.4$ $a'_{MH} = 0.3$ $a_{LX} = 0{,}25$ $\gamma_w = 1{,}0$

$\gamma_r = 0{,}5$ $t_X = 0$ $t'_X =$ to establish $t_M = 0$ $z = 0{,}4$

$w = 1$ $P^*_M = 1$ $P^*_X = 1$ $P^{*\prime}_X = 1.5$ $G = 10$ $\overline{X} = 15$

$x = 20$ $i = 0.2$ $e = 1$ $e' = 3$

The results are set in the chart below (page 23) and they show the following sequence. In the first and second columns we make an exercise similar to the one done by Krugman and Taylor but with the respective equations for the investments and exports. In this first case, the export taxes are considered cero and there is not substitution effect (that is to say, a_{LH} and a_{MH} the inputs coefficients of labours and imports respectively into home goods are assumed constant). Initially there is a trade balance deficit and the nominal exchange rate rise from one to three (this is an schematic representation of the Argentinean devaluation in 2002). The result is coherent with the one Krugman and Taylor obtained: there is a contraction of the economy, inflation, the trade balance decreases and a deterioration of the real wage.

In the third column we introduce (ad-hoc) the substitution effect, by changing the values of the inputs coefficients of labours and imports respectively into home goods: a_{LH} goes from 0,6 to 0,7 y a_{MH} goes from 0,4 to 0,2. In this case, the results are different. The import substitution provoked the output to increase, although a small trade imbalance remained. The problem in this case is that the income expansion

doesn't allow the real wage to recover the initial level, even though the total wage volume (this can't be seen in the chart) increase due to the employment growth.

In the fourth column we introduce an improvement in the terms of trade due to an increase of the export good international price while the imports price remain unchanged. In this case, the income growth rate is higher and a trade surplus is achieved, although the real wage does not improve.

In the fifth column, the subsidy policy is introduced. A tax is charged to the export good price and its magnitude is established so the collected amount is distributed in order to recover the initial level of real wage. In our schematic model the subsidies given to some consumption goods are represented, but the impact of the export taxes reducing some food-goods prices were left out.

Finally, in the sixth column we propose a deterioration of the country's terms of trade. This situation is according to the recent experience (see chart 6 in the statistical attachment) and creates the necessity of increasing the export tax magnitude, in order to sustain the positive impact of the devaluation and avoid the deterioration the real wage. The level of export tax required may be unviable politically. This scenario demonstrates that a non-favourable change in the international conditions, as is the case of the last months, alter the viability of the economic programme.

Effects of devaluation for the Argentinean case

	e=1	e=3	aLH=0,7 aMH=0,3	Px*=1,5	tx=0,35	Px*=1,2
aLH	0.6	0.6	0.7	0.7	0.7	0.7
aMH	0.4	0.4	0.3	0.3	0.3	0.3
tX	0	0	0	0	0.35	0.41
pX*	1	1	1	1.5	1.6	1.2
X	29.3	38.8	41.8	55.2	42.9	34.0
Income at constant prices	155.9	140.9	206.7	324.7	215.0	151.8
Price of home goods	1.40	2.52	2.24	2.24	2.24	2.24
Ouputs of home goods	126.6	102.1	149.9	245.0	156.5	107.2
Trade balance in dollars	-21.3	-2.0	-3.2	9.3	21.6	8.6
Real wage (index)	1.00	0.56	0.63	0.63	1.00	1.00
Individual transfer needed	0.00	0.80	0.60	0.60	0.60	0.60
Export tax needed	0.00	0.70	0.72	0.59	0.35	0.41

To sum up, while the Krugman and Taylor model showed the recessive effect of devaluation, our model shows the expansive effect of the particular devaluation of the Argentinean peso in 2002. We consider that that particular case was the result of the

combination of the singulars initial conditions, the specials international conditions and the specific economic policies applied. These three factors allow as introducing some modifications to the Krugman and Taylor model.

The significant idle production capacity present at the Argentinean economy when the devaluation took place implied a certain facility for substituting import inputs with labour and local production. The particular international conditions provoked a sustain growth of the country terms of trade (see chart 6 of the statistical attachment). The subsidies policy allowed the recovery of the wages purchasing power. All these three elements were introduced in the model (shown in the chart above) and the result is that when they operate altogether the expansive impact of the devaluation is guarantee, as was shown in the fifth column (the income grew from 140.9 to 215 while the real wage recover the initial level).

Its important noticing that the economic policy programme based on the recovery of real wage after the initial deterioration was possible because of the particular conditions of the labour market. The idea behind the policies applied was to preserve the purchasing power of wages using other instruments besides the money wages increases, like the subsidies to some consumption goods. This policy was possible because the high initial unemployment rates and the weakness of the labour-union power soften the pressures over nominal wages.

When devaluation takes place in a near full employment situation, the initial deterioration of the real wage provokes intense pressures over the nominal wage and, therefore, prices. This context prevailed in Argentina during the post-war period, when devaluations had contractive effects and tend to create inflation spirals. But the recent experience was different.

In a few words, the Argentinean economic growth path after the 2002 peso devaluation seems a result of the initial depression, on the one hand, and the particular international conditions, on the other. However, after six years of intense GDP growth, its natural that the economy idle production capacity reduced and the unemployment rate decreased considerable. Also, a reversion of the international conditions took place as a consequence of the international financial crisis.

In this context, the economic policy programme may become unviable because it requires increasing amounts of incomes transfers from the export sector to the wage earners. Therefore, the subsequent export tax needed became politically unsustainable and incompatible with a capitalist economy.

4. <u>Conclusions</u>

This paper aims make a contribution to the discussion regarding the possibility of using the exchange rate as an instrument of the economic policy. The study of the effects of an exchange rate's variations on the economy has a long tradition in economic theory. In the Latin-American context, a wide range of material arouse during the post war, trying to explain the recessive effects of devaluation in the region.

Towards the end of the seventies, Krugman and Taylor designed a model, inspired on several of those works, trying to demonstrate the conditions under which devaluation becomes contractive. We believe that that model has some interesting characteristics that allow us to apply it, introducing some alterations, to the Argentinean economic process of the period 2002-2008.

The devaluation that took place in Argentina during the year 2002 had positive effects on output and employment at a medium term, once the initial effects were overcome. The model introduced in the third section of this paper makes it possible to capture the main characteristics of that behaviour. On one side, the effect on the output and income came from the growth of exports and the import substitution. On the other hand, the economic policies applied tended to offset the redistribution effect that, in these cases, debilitates the domestic consumption due to the within-country distribution of incomes from sectors with higher propensities to consumption towards sectors with higher propensities to save.

The economic policy applied since 2003 was based on the sustenance of the real exchange rate on a competitive level, so that it could behave as an effective protection for domestic production. At the same time taxes were applied on export goods in order to finance several subsidies so as to prevent the devaluation effect on prices and, therefore, real wage.

In the past, several populist experiences took place where the authorities tried to sustain the real wage after a devaluation aiming to avoid the deterioration of the workers consumption power. However, those policies didn't accomplish to be successful on the medium term because the domestic prices would raise feeding back themselves due to the increases on the nominal wage and, eventually, deteriorating both the real exchange rate and the real wage.

The originality of the programme applied in Argentina since 2003, was the sought to maintain the workers consumption power with measures that went beyond the increases on the nominal wages. In fact, even though the nominal wage increases, the real wage was kept relatively stable using other instruments. The maintenance of a high exchange rate level was achieved due to the application of subsidies to some productive sectors, in such way that certain essential prices were kept constant or had limited increases (for instance public services tariffs, urban transport, fuels, etc.). In addition, the taxes on export goods detached the domestic food prices from the increasing international prices.

Due to this strategy, Argentina succeeded on generating a high growth path with unemployment rate decreasing and the improvement of the living conditions of an important amount of the population. In this sense, the high exchange rate experience can be considered successful. Nevertheless, the model's dynamic brings out some questions regarding its viability on a long term or its capacity as a strategy to advance towards the economic and social development of our country.

In the first place, the programme continuity implied an increasing extraction of resources of the agricultural export sectors, at levels that turned out to be incompatible with a capitalist economy. This situation became evident in the conflict between the government and the export agrarian bourgeoisie throughout the year 2008.

Second, the particular conditions that the Argentinean economy went through when the 2002 forced devaluation took place, cannot be aside when analyzing the causes of the posterior growth. That situation occurred after four years of recession, which extended itself and went deeper during most of 2002. Therefore, by the end of that year, existed in the domestic economy a wide idle productive capacity. In these conditions, an expansion of the economic activity can take place without generating an intense within-country distributive conflict (Conitrot, 1975). This was what indeed happened in Argentina, as the nominal wage increased at the same time as the industrial profits grew. Moreover, this facilitated the production increases without strong pressures on prices. However, as the installed productive capacity was increasingly being use, the chances of continuing in the same path without an intense distributive conflict reduced.

Last, for the programme applied to be successful, the international conditions were crucial. During the last past years, the permanent increase of the international prices of the Argentinean main exportable goods turned to be essential for the

production dynamism and to maintain the increasing subsidies obtained for the exports' taxes. Therefore the growing trend of the commodities international prices ending by the last months of 2008 with the global financial crisis outbreak raises the question regarding the programme continuity possibilities.

The truth is that the economic policy scheme allowed high GDP growth rates, because of the initial conditions and the singular international conditions. A main factor of the economic programme was the extraction of a fraction of the agricultural sector's profits that was assigned to maintaining the domestic consumption demand. However, the high exchange rate policy, with real wage relatively stable, wasn't enough to generate the conditions to go forward on a sustainable development path.

The reason of this is that the private investments were never enough to rebuild the productive machinery of the country. One of the special features of the Argentinean economy, and of other under developed economies, is the significant mass of resources that flight out of the country, affecting the investment rates. This way, even when the State's policy included important financial aid for private companies, these were not enough in order to offset the sector's low propensity to invest.

Under these conditions, the State's use of a part of the agricultural sector's surplus to assign it to other sectors turns out to be an interesting manoeuvre. However, facing an industrial sector with a small propensity to make long-term investments, the question should be if the resources should be assigned to productive investments that would allow a higher diversification of the economy and, therefore, move forward on a growth path compatible with the aim of reaching a higher level of development.

Within these conditions, the current international crisis puts us face to face to the question of how the economic policy programme should be modified in order to confront its own exhaustion and the global crisis in the best possible way in order to recapture a growth path.

Statistical Attachment

Chart 1
GDP evolution 1998-2007 *(annual average)*

Year	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
GDP (Percentage change)	3.9	-3.4	-0.8	-4.4	-10.4	8.9	9	9.2	8.5	8.7

Source: Prepared based of information of INDEC

Chart 2
GDP and unemployment rate

Year	GDP at constant prices *(Millions of pesos)*	Unemployment rate *(for May of each year)*
2000	276.173	15
2001	263.997	16
2002	235.236	22
2003	256.023	16
2004	279.141	15
2005	304.764	12
2006	330.565	10
2007	359.170	10
2008	384.201	8

Source: INDEC

Chart 3
Trade balance and current account *(millions of dollars)*

	Annual Exports	Annual imports	Trade balance	Current Account
2000	26.341	23.889	2.452	-8.955
2001	26.543	19.158	7.385	-3.780
2002	25.651	8.473	17.178	8.767
2003	29.939	13.134	16.805	8.140
2004	34.576	21.311	13.265	3.212
2005	40.387	27.300	13.087	5.275
2006	46.546	32.588	13.958	7.709
2007	55.780	42.525	13.255	7.103
2008	70.589	54.547	16.042	7.588

Source: Prepared based on information of INDEC

Chart 4
Wholesale prices and retail prices evolution

	Wholesale Prices evolution (percentage change of the wholesale index, IPIM)	Retail prices evolution (percentage change of the consumer price index, IPC)
2001	-2	-1
2002	77	26
2003	18	13
2004	7	4
2005	8	10
2006	10	11
2007	10	9
2008	13	9

Source: Prepared based on INDEC information.

Chart 5
Real wage, money wage and wage cost evolution *(2001 = 100)*

	Money wage	Real wage (Money wage over consumer price index)	Wage cost (Money wage over wholesale index)
2001	100	100	100
2002	103	82	58
2003	116	81	55
2004	128	86	57
2005	147	90	61
2006	174	96	65
2007	210	106	71
2008	257	120	77

Source: Prepared based on INDEC information.

Chart 6
Terms of trade *(1993 = 100)*

	Price Export Index	Price Import Index	Terms of trade Index
2001	94.7	89.9	105.3
2002	91.0	86.7	105.0
2003	99.7	87.0	114.6
2004	109.1	93.8	116.3
2005	111.1	97.4	114.1
2006	120.6	99.7	121.0
2007	134.6	107.3	125.4
2008	168.2	118.8	141.6
1st. Q	*165.4*	*111.1*	*148.9*
2nd. Q	*172.6*	*122.8*	*140.6*
3rd. Q	*176.7*	*125.9*	*140.3*
4th. Q	*155.9*	*113.9*	*136.9*

Source: INDEC

Summery Chart

Evolution of the main Argentinean macroeconomics variables, 2000-2008

	2000	2001	2002	2003	2004	2005	2006	2007	2008
GDP (millions of pesos at constant prices)	276.173	263.997	235.236	256.023	279.141	304.764	330.565	359.17	384.201
Exchange Rate (Annual Average)	1,00	1,00	3,20	2,95	2,95	2,93	3,08	3,12	3,18
Exports (in millions of dollars)	26.341	26.543	25.651	29.939	34.576	40.387	46.546	55.780	70.589
Imports (in millions of dollars)	23.889	19.158	8.473	13.134	21.311	27.300	32.588	42.525	54.547
Trade balance	2.452	7.385	17.178	16.805	13.265	13.087	13.958	13.255	16.042
Current Account	-8.955	-3.780	8.767	8.140	3.212	5.275	7.709	7.103	7.588
Wholesale price index	106	104	184	217	233	253	279	307	346
Wholesale prices percentage variation		-2	77	18	7	8	10	10	13
Retail price index – consumption price index (IPC)	100	99	124	141	147	161	179	195	212
Retail prices percentage variation		-1	26	13	4	10	11	9	9
Money wage (2000=100)		100	103	116	128	147	174	210	257
Real wage (2000=100)		100	82	81	86	90	96	106	120
Wage cost		100	58	55	57	61	65	71	77
Used of the production capacity (%)			56	65	70	73	74	74	75
Investments (millions of pesos at constant prices)	49.502	41.750	26.533	36.659	49.280	60.458	71.438	81.187	88.491
Investment (GDP %)	18	16	11	14	18	20	22	23	23
Private consumption (millions of pesos at constant prices)	192.332	181.290	155.267	167.951	183.906	200.317	215.882	235.241	250.929
Private consumption (GDP %)	70	69	66	66	66	66	65	65	65
Public consumption (millions of pesos at constant prices)	36.382	35.629	33.820	34.314	35.247	37.403	39.365	42.341	45.296
Private consumption (GDP %)	13	13	14	13	13	12	12	12	12
Average labour productivity (1990=100)	125,2	116,9	111,1	110,0	108,7	111,3	117,2	124,9	131,1
Unemployment rate (at May of each year)	15	16	22	16	15	12	10	10	8
Employment rate (at May of each year)	36	36	33	36	39	40	42	42	42

Source: Prepared based on official information (INDEC, BCRA and MECON).

Bibliography

Braun, O. and Joy, L. (1968) "A Model of Economic Stagnation--A Case Study of the Argentine Economy", *The Economic Journal*, Vol. 78, Issue 312 pp. 868-887

Baumol, W. (1967) "Macroeconomics of Unbalanced Growth: The anatomy of urban crisis", *The American Economic Review*, Vol. 57, Issue 3, pp. 415-426.

Bhaduri, A. and Marglin, S. (1990) "Unemployment and the real wage: the economic basis for contesting political ideologies", *Cambridge Journal of Economics*, Issue14, pp. 375-93.

Bresser Pereyra, L. (2008) "The Dutch disease and its neutralization: a Ricardian approach ", *Brazilian Journal of Political Economy*, vol. 28, Issue 1 (109), pp. 47-71

Canitrot, Adolfo (1975), "La experiencia populista de redistribución de ingresos", *Desarollo Económico*, vol. 15, October – December, Issue 59, Buenos Aires.

Diamand, Marcelo (1972), "La estructura productiva desequilibrada y el tipo de cambio", *Desarrollo Económico*, vol. 12, April – June, Issue 45, Buenos Aires.

Fabris, López and Villadeamigo (2008), "The current Argentine inflation. The need of an heterodox vision to analyse its implications", AHE 10th Annual Conference, http://btc-server.btc.anglia.ac.uk/aibs/PDFs/

Ferrer, Aldo (1963), "Devaluación, redistribución de ingresos y el proceso de desarticulación industrial en la Argentina", *Desarrollo Económico*, vol. 2, January – March, Issue 4, Buenos Aires.

Frenkel, R (2006) " An alternative to inflation targeting in Latin America: macroeconomic policies focused on employment", *Journal of Post Keynesian Economics*, Vol. 28, Issue 4, pp. 573-592.

Frenkel, R. and Rapetti, M. (2007) "Política Cambiaria y Monetaria despues del colapso de la convertibilidad", *Ensayos Económicos,* issue 46, Banco Central de la República Argentina.

Friedman, M. (1970). "A Theoretical Framework for Monetary Analysis", *Journal of Political Economy (JPE)*, vol. 78, issue 2.

Friedman, M. (1956). *Studies in the Quantity Theory of Money*, Friedman, M. (Editor), University of Chicago Press.

Hirschman, Albert (1949), "Devaluation and the Trade Balance", *Review of Economic and Statistics*, Vol. 31, pp. 50-53.

Iñigo Carrera, J. (2008) "Apariencia y realidad en la relación entre tipo de cambio y productividad del trabajo", work unedited.

Keifman, S. (2005) "Tipo de cambio y empleo, a treinta años de Canitrot y Porto", 40th Annual Encounter of the Political Economy Argentinean Association.

Krugman, Paul and Taylor, Lance (1978). "Contractionary effects of devaluation," Journal of International Economics, Elsevier, vol. 8(3), pages 445-456, August.

Harrod, Roy F. (1933), *International Economics,* Nisbet & Cambridge University Press.

Marshall (1923), *Money, credit and commerce,* New York, Augustus M. Kelley, 1965.

Nicolini Llosa, J. (2008) "El enfoque estructuralista del balance de pagos", 43rd Annual Encounter of the Political Economy Argentinean Association.

Palma, J. (2005) "Four sources of "de-industrialization" and a new concept of the "Dutch Disease", in Ocampo, J. (ed.) *Beyond reform. Structural dynamics and macroeconomic vulnerability*, CEPAL.

Porto, Alberto (1975), "Un modelo simple sobre el comportamiento macroeconómico argentino en el corto plazo", *Desarrollo económico*, Vol. 15, October – December, Issue 59, Buenos Aires.

Rowthorn, R. y Ramaswamy, R. (1997), "Deindustrialization: Causes and Implications", Working Paper, IMF.

Sachs, J. and Warner, A. (2001), "The course of natural resources", *European Economic Review*, Issue. 45, pp. 827-838.

Sidrauski, Miguel (1968), "Devaluación, inflación y desempleo", *Económica,* La Plata, vol. 14, Issue 1-2, January – August.

Thirwall A. P. (1997) "Reflections on the Concept of Balance-of-Payments-Constrained Growth" *Journal of Post Keynesian Economics*, Issue. 3, pp. 377-85.