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Impact of a Country-crisis on an Integrated Market
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A Study of The Argentinian crisis
and its Consequences
to the Mercosur

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Abstract

This thesis examines the impact of a country-crisis in a Free Trade Area (FTA) bloc, and how it affected its Mercosur neighbours. This thesis contains a study of economic integration provided by the creation of Mercosur in March 26th of 1991. Also, a study of relative prices will be made by analysing what happened with the integration on Mercosur after the crisis. Thus, the purpose of this thesis is to analyze price change after the creation of Mercosur, and see what happened after the Argentinian crisis by using disaggregated data on consumer prices, in order to determine variability in prices of similar goods across the Mercosur. By using the Law of One Price (LOP) analysis, it was possible to fathom that after the Mercosur creation a convergence in prices happened due to the Argentinian crisis.

Key words: Free Trade Area, Relative Prices, Economic Integration, Country-crisis Impact, Law of One Price (LOP).

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Contents

1. Introduction

1.1 Background

The Common Market of the South, (Mercado Comun del Sur – Mercosur), is a South American answer to the new world reality which points towards regionalisation in terms of consolidated economic blocs, and globalisation, expressed through an increasing internationalisation of national economies.

The very first antecedents of Latin American integration are from the sixties, when the Latin American Association of Free Trade (Associacion Latino Americana de Livre Comércio – ALALC) was created. This was later transformed into the Latin American Association of Development and Integration (Associacion Latino Americana de Desenvolvimiento e Integracion – ALADI) in 1980. Both were inspired by the precepts established by the Latin American Economy Commission (Comision Economica Para America Latina – CEPAL) that recommended expanding the regional market and elaborating a common industrialization strategy. This study was based on the model of import substitution, closed markets and the active role of the government in productive activities, and even though it met with many difficulties in terms of Latin American Integration it did advance the mutual cooperation to some extent.

According to Espiell (1991), some of the major factors hindering the integration process were the strong movements related to nationalist ideologies, the authoritarianism prevailing on most of the continent, national development strategies with no room for integration, the great diversity of national realities as far as social, economical and political institutions are concerned, and the foreign debt of practically all the Latin American countries in the eighties.

The integration managed to provide a growth in interregional trade in the sixties and seventies, but in the eighties foreign debt and the world crisis slowed this down. The industrialization and export of manufactured products, especially by the larger countries of Latin America, may largely be considered

a result produced by the import substitution policy inspired by CEPAL and backed up by ALALC/ALADI.

In 1986, an agreement called the Integration and Economic Cooperation Program (Programa de Integracion e Coperacion Economica – PICE) was signed by Brazil and Argentina, following recent tendencies within ALADI of signing bilateral agreements, and considering the need for strengthening their new democratic governments and economic development.

This new agreement (PICE) became a reality after certain controversies between the two countries were solved in the late seventies, such as the rights to use the Paraná River hydroelectric resources, the cooperation in the strategic energy sector and the change, in both countries, towards a democratic government.

The PICE agreement produced a development proposal which was not based solely on Trade, but which would also allow for cooperation, collaboration and complementation in the economy of the two countries. It was based on principles of progression, flexibility, balance and symmetry, thus allowing the productive sectors to gradually adapt to the new situation of a partial and selective opening of the market, and implementing projects compatible with the economic situation of each country.

According to Espiell, the main proposals of PICE were aimed at:

- Forming a development alternative based on an ample cooperation and economic integration program.
- Favouring an inter-industrial integration through an exchange of partly processed raw material, exceeding the limits which the recession had imposed, upon each economy.
- Strengthening the commercial relationships between the two economies.
- Creating protocols for scientific, technological and cultural collaboration.

Despite the increase in the trade between Brazil and Argentina, the program became less dynamic from 1988 onwards as a result of the macroeconomic

instability of both countries suffering from inflation, recession and strong oscillations in their respective currencies. Thus, in that same year an important step was taken in order to proceed with the bilateral integration: the signing of the integration treaty through which Mercosur would be formed within the following ten years.

The new governments (Menem in Argentina) and (Collor in Brazil) introduced a significant change in the treaty in 1990, signing the Buenos Aires Agreement which determined that Mercosur should be established by December 31, 1994. It also introduced a mechanism, which progressively reduced tariffs so as to liberalize the bilateral trade.

While, on the one hand, the anticipated integration time had been drastically reduced, the governments of the two countries allowed trade to take control of the process so that the commercial aspects became priority, and the common development alternatives became secondary concerns.

Paraguay and Uruguay finally decided to join Brazil and Argentina and signed the Asunción Treaty on March 26, 1991, which contained the same precepts as the Buenos Aires Agreement.

The Treaty defined a "transition period", i.e. the time between the moment it was signed and December 31, 1994, during which the members would implement an intra-Mercosur tariff reduction program. They would also negotiate a common external rate together with all the usual instruments of common trade policy to be applied from January 1, 1995 (the tariff reduction program reduced the rates within Mercosur to zero, and was an annex to the Treaty itself; the reduction to occur in bi-annual quotas which should be respected by all members without exception).

As established in the Treaty of Asuncion, the four member countries agreed to create an institutional structure for Mercosur by signing a protocol modifying/complementing the treaty. This protocol was signed at the end of the transition period, on December 17, 1994, in the Brazilian City of Ouro Preto, state of Minas Gerais.

The importance of this protocol is due primarily to the following aspects:

- Establishment of the legal character of Mercosur, providing it with external representation as also the ability to negotiate with third countries or other group of countries
- Creation of a framework for the institutional structure of Mercosur, defining its main executive and decision-making boards. The definitive structure would be gradually defined only in the medium term.

By approving the Common External Tariff, the Common Market Council has given a new political dimension to the integration process, permitting the end of the transition process and changing the status of the integration process to a Customs Union.

CEPAL, ALALC, ALADI and Mercosur gradually brought financial integration, even although it was not completely autonomous, of obtaining and applying resources in the integrated countries. Some steps were taken to promote integration. However, still quite a lot must be done. As an example, some barriers protecting regional industries must be removed, and the differences in industrial tariffs and financial application through Mercosur must be levelled out. A good aspect of Mercosur is the increase of companies' direct investments.

On the other hand, the banking integration had a huge advance despite the limitations imposed by existing barriers, especially in Brazil. This process has been intensified, in spite of a lot of work, which still has to be done, such as the creation of a common legislation to financial institutions. A Statement of Principles recommended in 1988 by the International Committee of Banking Regulations and Supervisory Practices - "The Basel Committee" created a treaty that established a minimum demand to banking capitalisations which was a positive factor, despite the fact that it wasn't done in a homogeneous way. Therefore, important questions must be solved and these countries governments must keep working on the progress of the integration. A lot of other matters divert attention away from the government, i.e., banking protection, non-declared money and the access to different financial market segments in these countries.

One of the financial integration aspects that had few improvements was application on the capital market. This matter can be explained by the fact that companies try to get capital resources in developed countries. These markets have shown a better attraction than internal markets. They have a better availability and less costs, while the short level of cash of Mercosur countries makes money scarce and with a higher cost. The banking cash scarcity in these countries makes them receptors of external money, making the competition by these resources to increase. An important factor that affects the financial integration negatively is the differences in financial tariffs, which are very high in Brazil in comparison to Mercosur partners.

By analysing these difficulties, and taking into consideration the complexity of the actual picture of the financial integration, it is not possible to say if Mercosur will bring gains, losses or conflicts to its partners. However, by analysing some facts, as for example trade growth and investments between countries, we may say that Mercosur is positive. It is known that in a medium or long perspective, by taking off protectionism barriers and other impediments to integration we are contributing to the creation of an environment capable to bring benefits to the economy, society and culture. A huge advantage, if we compare old protectionist bureaucratic systems.

However, Mercosur has recently been highly impacted by the The Argentinian crisis. This free trade bloc that once was an example to NAFTA is now still working but maybe not as well as before. The trade between countries probably decreased and these changes in Mercosur caused relative prices changes, as shown in Chapter 6. The Argentinian crisis had also a huge impact on the worldwide economy, due to the fact that a lot of foreign investment was in the country and a lot of multinational companies suffered by this crisis. As an example, we have the Spanish Bank Santander that had a huge loss and closed it doors in Argentina.

We may say that the situation in Latin America is very delicate. Uruguay is already paying the price for a close regional tie. Devaluation in Brazil and recession in Argentina have forced a contraction in their neighbour’s GDP. The recession has been complicated by a bank crisis directly linked with the country's erstwhile status as a safe dollar haven for wealthy Argentines. The

collapse in Argentina, on which Uruguay depended for most of its tourism, construction activity and dollar deposits seemed to be the final straw. After the worst tourist season in living memory, the country is already braced for another summer of empty beaches and depressed commercial activity. Juan Pedro Bordaberry, the tourism minister says he is looking to Brazil, Chile and the US to help make up for a predicted 50 % decline in Argentine visitors.

However, the more predictable and visible repercussions of the Argentine crisis look mild beside the crisis uncorked by the collapse of confidence in Uruguayan banks. In February, the central bank was forced to rescue the Uruguayan operation of Banco de Galicia.

Brazil still suffers the impact of the Argentinian crisis. However, in spite of its effort on signalling abroad during the devaluation of the Argentina peso that Brazil's economy was healthy by paying debt before the exercise date, the external investor is still looking to Brazil with a lot of caution.

In Paraguay, despite the Argentine crisis, the economy grew 2.5% in 2001 after three years of sluggish economic growth. The government also significantly reduced the fiscal deficit in 2001. Prudent economic policies in recent years have helped the country keep inflation in single digits and maintain a comfortable level of international reserves. The current administration has to continue with the structural reform agenda in order to improve productivity and boost economic growth.

1.2 Argentina Crisis Overview.

According to Cibils, Weisbrot and Debugnai (2002) the IMF is still insisting that "failures in fiscal policy constitute the root of the current Argentinian crisis", and recommending fiscal and monetary austerity as a means of reviving investor confidence and thereby stimulating economic recovery. But this approach has failed for more than four years, as the economy remains mired in a depression, with a loss of more than 20 percent of GDP since the last business cycle peak in 1998.

Furthermore, the crisis was not caused by fiscal profligacy. The worsening of the central government's fiscal balance from 1993 to 2002 was not a result of increased government spending (other than interest payments). Moreover, there was a decline in government revenue due to the recession, which began in the third quarter of 1998. Argentina got stuck in a debt spiral in which higher interest rates increased the debt and the country's risk premium, which led to ever-higher interest rates and debt service until its default in December of 2001. The interest rate shocks came from outside, starting with the US Federal Reserve's decision to raise short-term rates in February of 1994, and kept going on through the Mexican, Asian, Russian, and Brazilian financial crises (1995-1999).

Argentina's currency board system contributed significantly to the depression, because economic activity was directly reduced by the large capital outflows during various episodes of international financial turbulence. The motivation for that is the peso parity against the dollar that made the peso a strong currency excellent to be take out during bad periods.

It is also worth noting that the government's decision to privatise its social security system in 1994 had a major impact on the central government budget deficit. In fact, the lost revenue plus accumulated interest costs amounted to nearly the entire government budget deficit in 2001. In spite of all these things, the central government's deficit was never very large, peaking at 3.2 percent of GDP in 2001 (all attributable to interest payments). Much has been made of provincial spending, but the provincial deficits totalled 1.1 percent of GDP in 2000 and peaked at 1.9 percent in 2001. All stated that none of this deficit spending was very large in the face of such a deep depression.

This was a truly unviable system. It is difficult to imagine any fiscal policy - assuming it were even politically possible to cut enormous amounts of government spending - that could have avoided the fate of December 2001, given the overvalued currency, the size and growth of Argentina's debt (mostly denominated in foreign currency) relative to export earnings, and the free mobility of capital. Deficit spending did not cause the current crisis, and attempts to bring about an economic recovery through continued fiscal and

monetary austerity are not likely to be more successful in the near future than they have been in the past.

The situation in Argentina is one of the worst ever. Nowadays, Argentina is facing one of the worst political and economic situations in history. The GDP has declined at a record 16.3 percent annual rate in the first quarter of 2002. Unemployment stands at 21.5 percent of the labour force, and real monthly wages have declined by 18 percent over the course of the year. Official poverty and indigence rates have reached record levels: 53% of Argentinians are now living below the official poverty line, while 25% are indigent (basic needs unmet). Since October 2001, 5.2 million Argentinians have fallen below the poverty line, while seven out of ten Argentinian children are poor today.

While this is the worst economic crisis in Argentine history, there are a number of reasons to view the economy as poised for a rapid recovery, and one that can take place without external financing. Most importantly, Argentina is running a large current account and trade surplus. Primarily as a result of the devaluation, the export sector has vastly expanded as a share of the economy, and is considerably more competitive internationally (Cibils, Weisbrot and Debugnai, 2002).

1.3 Research Questions

Many examples of crisis have happened during recent decades, i.e., the Asian, the Russian, and the one focused in this paper - the Argentinian crisis.

Due to present-day globalisation, an economic crisis in a specific country may affect the economic integration of other countries. Many consequences may occur such as, for example, a decrease in traded goods, stock exchange variation, labour market, capital flows.

But, one of the questions that remains in this vast topic is: What are the economic integration consequences to all country members of a Free Trade Area when one of the partners is in crisis?

It is expected that members of a Free Trade Area should have a high economic integration, and therefore, it is worth making an analysis of this. First, to measure if these countries really have an economic integration, and second to check if a crisis in a member country may affect its partners. It is important to know what happens with a country that joins a Free Trade Area like Mercosur, European Union or APEC. This question will be answered by comparing the degree of integration before and after the initiation of Mercosur . Part of the strong motivation that leads a country into joining a Free Trade Area is the benefit that a bigger market can provide such as a maximization of scale economies, competition and cheaper goods for customers. The incremental trade flows between country-members is a significant gain for these countries. But becoming integrated may make a country more vulnerable, if a partner becomes involved in a crisis then such country will be more susceptive to also having a crisis as well.

By adopting the LOP methodology (see Chapter 3) its possible to measure if before Argentina crisis these countries had a convergence in prices and if these prices diverged after the crisis.

1.4 Problem definition

As mentioned previously, in consideration of price convergence as a tool to measure economic integration, when taking into consideration general data about Mercosur, as an example of a FTA and the Argentinian crisis (background). It is possible to define a problem question which is: How does a countries crisis affect its economic integrated FTA's partners? Hence, this thesis wants to check what happened with the economic integration between Mercosur after the Argentinian crisis.

1.5 Purpose of this thesis.

Based upon the problem discussion, the purpose of this thesis is to measure the consequences on prices when a crisis takes place in a country that belongs to a

Free Trade Area Bloc, i.e., the Argentinian crisis and its impact on the Mercosur.

1.6 Alternative Approaches and Limitations

Some limitations are presented, in order to develop some structure for the analysis. These concern Mercosur and relative price analysis.

Finding the correct approach with which to measure the effect of the Argentinian crisis on its FTA partners is not an easy task. It is possible to analyse Mercosur's crisis by checking trade between countries, for example, stock exchange analysis, labour market, capital flows and relative prices.

The trade analysis would show the volume of trade between all Mercosur's countries, Firstly, to check the integration between these countries by the volume of trade before and after the Treaty of Asunción, when Mercosur was established. And then, in order to analyse the impact of the Argentinian crisis in these countries, an investigation of how much the trade volume had decreased.

Another possible approach is to check the stock values of Argentina, Uruguay, Paraguay and Brazil, and then analyse if the stock exchange in these countries has a similar pattern after the consolidation of the Argentina crisis. In other words, to check the average rate of return in Mercosur's stock exchange partners after the "event" (Argentina crisis) happened by using an OLS estimation. The focus could be whether there is any discernible difference in the stock indexes after The Argentinian crisis.

Other aspects that could be explored are the impact of the crisis on the labour market, and what happened with capital flows.

However, the aspect chosen is that of the relative prices analysis of the countries involved. Firstly, to analyse the integration between Mercosur's countries, and secondly to analyse what happened with prices after the Argentinian crisis when import and other trade barriers were created to protect the Argentine economy. In this case a likely outcome would be: Firstly, a

convergence in prices after the Mercosur's creation. This would prove the integration between these countries as a result of the Free Trade Area. Secondly, a divergence in these prices after the Argentinian crisis due to barriers being created to protect the economy.

Another limitation is that all import tariffs have their own particularities and characteristics. At present, Mercosur is not a perfect FTA, with a lot of exceptions in external common tariffs, and the regional trade between regions. However, negotiation will begin after a restructure of Mercosur that was very much affected, both politically and economically, by the Argentinian crisis. The prevision is a total union in 2006.

The integration process deals with a lot of political and economical factors that are difficult to predict. Regional investment decisions depend on entrepreneurial decisions that propel negotiations and possible deals. It is hard to measure which foreign investment will be affected by a trade policy, and a more stable and transparent stimulation. This integration process may build distinct scenarios, when taking into consideration all of the variables that may be of influence.

We also have the limitation of data that does not contain all-important items that constitute expenditures. Consequently, even taking into account a broad range of diversified items, a higher quantity of items could drive the thesis to a more reliable result, it is important to mention how difficult it is collecting data concerning the Mercosur region.

Below limitations are summarized:

- This paper does not analyse aspects such as trade, stock exchange, labour market and capital flows
- Mercosur is not a perfect FTA.
- Content of items collected. More goods prices could drive the thesis to a more reliable calculation result.

1.7 Structure of the thesis

The thesis is organized as follows. In the next section the reader will be introduced to the theoretical and previous empirical results that are associated with the empirical research. Section 3 will give an overview of the theoretical framework. Section 4 will introduce the reader to the methodology used in the analysis. Results and analysis will be presented in Section 5, which will then be followed by the summary and concluding remarks in Section 6.

2. Free Trade Areas: General Case and the Mercosur Experience

Below are some comments regarding a country that joins a Free Trade Area, and the transference of trade between this country, its partner and other countries. After which previous empirical results regarding Mercosur and economic integration will be showen. Explanations regarding trade theory may be seen in Appendix 1, where relative prices, the supply and demand curve as well as its consequences in a hypothetically integrated world are presented.

2.1 Free Trade Areas - Theory

There are some consequences for a country that takes part in a Free Trade Area, such as the loss of custom taxes by the government of that country. This happens when a country (as an example Paraguay) stops importing from an excluded country (like Sweden), and starts buying from a member country (let's say Uruguay).

The dislocation of trade will happen because the member country, for example Paraguay, gives discriminatory preference to Uruguay products. Imported products from any of the Mercosur countries will be free of tariffs, while imported products from a country outside the Free Trade Area (FTA), such as Sweden, will be tariffed. This discrimination on tariffs may move Paraguay importation from Sweden to Uruguay, and this can be analysed on the diagrams below, where a country (Paraguay) will be affected when a FTA is adopted.

Let's imagine that the cheapest Paraguayan supplier of specific goods has always been Sweden, at a the price of 100 guaranis. Under free trade the Paraguayan equilibrium point will be the point *J* - diagram (a), with importation *HJ* from Sweden. However, if we imagine that Paraguay have been keeping the tax of 50% historically, the equilibrium will be point *K* (instead point *J*), with an internal price of 150 guaranis and an importation volume of *RK* from Sweden (under this importation the Paraguayan government collects *RKBC* of tariffs).

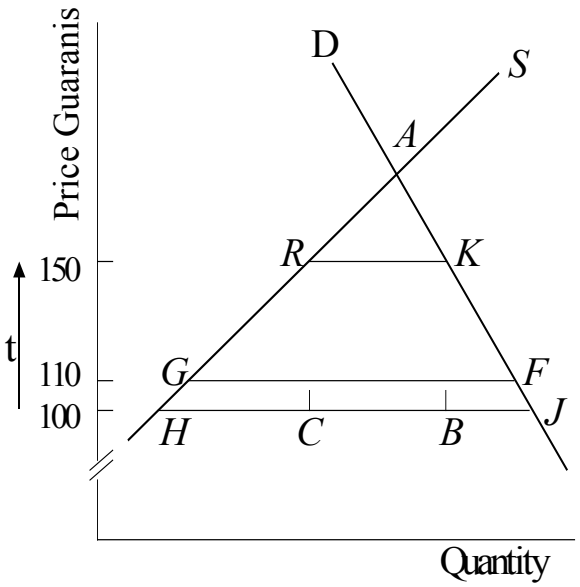
As previously stated, if Paraguay removes import tariffs for importation from all countries, the new equilibrium position will be point *J*, and not *R*, with importation of *HJ* of your cheapest source (Uruguay). Also, the Paraguayan internal price would fall by the absolute value of the tariff (*t*).

However, Paraguay does not remove the import tariff from non-Mercosur members. The result is that all importation from Sweden must pay tariffs. When arriving at the Paraguayan port, the Swedish goods have a price of 100 guaranis, smaller than the Uruguayan price (110 guaranis) the second cheapest source. This is exactly what these goods cost to the Paraguayan nation as a whole. Nevertheless the consumer will only compare prices after these goods pass through the Paraguayan Custom, when the Swedish goods have a price of 150 guaranis while the Uruguayan good with no tariffs costs 110 guaranis. To sum up: The Uruguayan goods are more expensive and costs more to the Paraguayan nation but to the consumer they are cheaper. Due to this fact, Paraguayans will buy from Uruguay by the price of 110 guaranis and the new equilibrium point will be F, and the Paraguayan participation on the Mercosur will reduce the price from 150 guaranis to 110 guaranis, and will stop buying from Sweden, giving a share of *GF* to Uruguay.

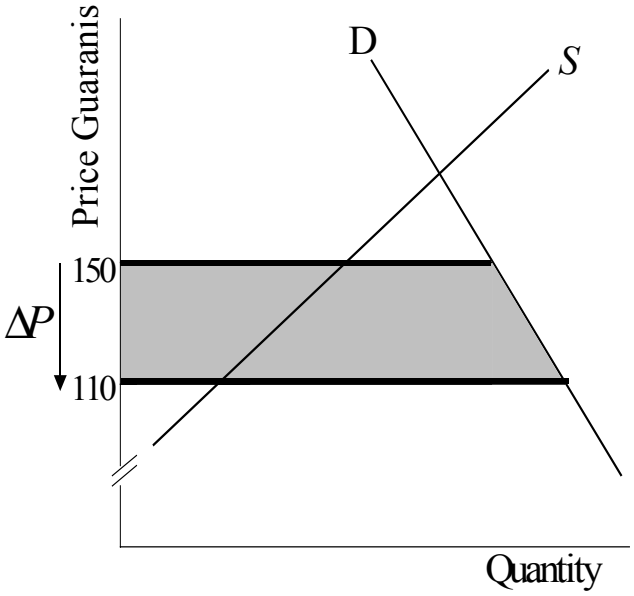
The last three diagrams (b, c and d) show us the effect of Paraguay becoming a Mercosur member to a lot of the Paraguayan producers, consumers and government. Diagram *b*, explain what the price reduction will imply on a benefit to consumers (grey area). The delimitation is the demand slope. In diagram *c*, we can see the loss of Paraguayan producers in Area *3* (left of the supply slope). Naturally, there is a loss to the Paraguayan government, since these goods get inside the country free from tariffs. The Paraguayan treasury will lose the area *RKBC* on diagram *a*, the same as Area *4*.

It is interesting to verify the overall effect over the economic efficiency (diagram *d*). Areas *1* and *2* are liquid gains which means a higher efficiency, and the trade dislocation explains this. Otherwise Area 5 is a liquid loss; it is a efficiency loss, a result of this new situation. This is actually the Paraguayan cost when buying Uruguayan goods at the price of 110 guaranis, and not buying from Sweden (the cheapest source) at the price of 100 guaranis.

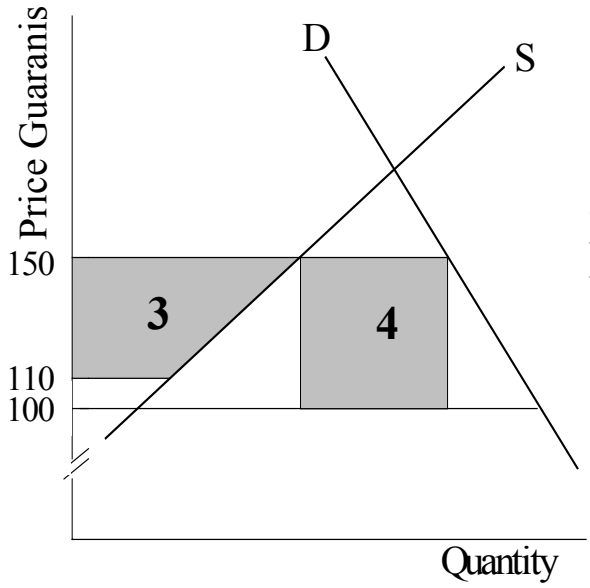
Thus, due to the fact that Paraguayans keep a discriminatory tariff, some of their importation has been changed to a more expensive source. The nation as a whole will have a loss equal to *5*. However, this country will have a benefit equal to areas *1* and *2*, and this is because the internal price is less distorted than in the previous case. In other words, with the change of the price from 150 guaranis to 110 guaranis, Paraguay will move to a position close to a free trade as a whole, with the price of 100 guaranis. Also, the cheaper the price for country-members, the bigger the gains will be (*1+2*), and the smaller will be the loss 5.



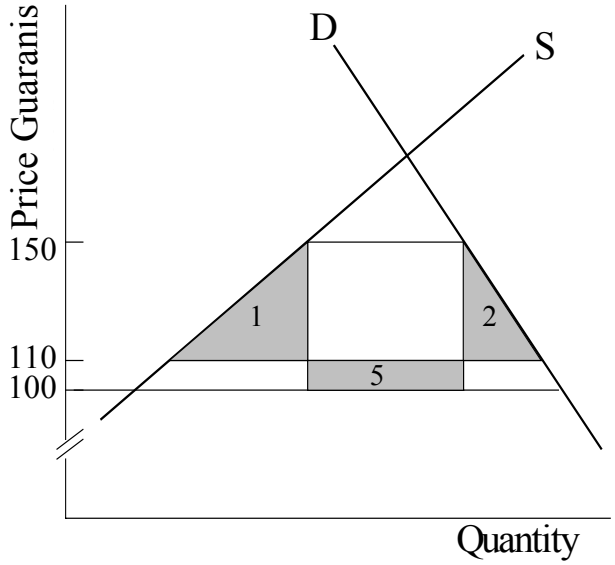
(a) If we have total free trade, the equilibrium in the Paraguayan market will be the *J* point, by the price of 100 guaranis with an importation of *HJ*, coming from the country with the smaller price (Sweden). If Paraguay imposes 50% of tariffs for all countries equally, the equilibrium will change to point *K,* costing 150 guaranis, by importing *RK* from Uruguay. However when Paraguay join the Mercosur, all country-members will not pay tariffs changing the Uruguay's position from *K* to *F* and the price from 150 guaranis to 110 guaranis. This is the price that allows Paraguay to buy the same product from Uruguay – the cheaper Mercosur producer. Below effects to economic agents are stated in b, c and d diagrams.



(b) Paraguayan consumers will benefit since the internal price will decrease by ΔP. It's a consumer surplus increase.



(c) We can see now that producers lose the area 3 and Paraguay will not collect the area 4 (tariffs).



Diagrams a, b, c and d – Consequences of the admission by a country in a Free Trade Area. Source: Wonnacott, Paul and Ronald Wonnacott (1994) *Economia,* Makron Books

The above example is important as it shows the reader that a Free Trade Area (FTA) increases the integration of country-members. Paraguay, in the example, increased their relation with Uruguay. In the same way Argentina increased the integration with Brazil, Uruguay and Paraguay when they joined Mercosur. The fact being that the volume of trade between Mercosur regions had its apogee in 1997, a volume that could have been even higher if the Asian and Russian crisis had not taken place. However, even with those crises in one decade the volume of inter-regional exportation increased 241%. This number shows us the success of Mercosur that registered a 132% inter-regional growth in exportation while the extra-regional flow of trade increased 37%.

The reverse is valid as economic integration decreased after the Argentina crisis when some barriers were again created. The higher degree of interdependence between countries is a key factor in explaining why a crisis in a country that belongs to a FTA affects it partners, and makes external investors suspicious of these countries. In this thesis the degree of integration will be explained by making a comparison of a pre-and-post Mercosur creation.

2.2 Free Trade Areas – Experience in Mercosur

An overview of previous studies regarding the Global Trade Analysis Project (GTAP) model, and the discussion about the "trade creation versus trade diversion problem in the Mercosur" will now be given. The evidence aroused from model results favours the trade creation hypothesis. It is argued that a strong pro-competitive effect that increases exports in the region will occur, due to the fall in the price of intermediate inputs. This result is found to be consistent with several studies in the literature, both with those that agree with the trade creation hypothesis and those that have identified the fall in input prices as an important mechanism for economic growth in the period.

The propagation of FTAs in the last decade is a central topic in the research agenda all over the world. As noted by Yeats (1997), the important question is whether FTA's are a stimulus to growth and investment, or just diverts trade in other directions, damaging the multilateral trade system. Actually, the "trade creation versus trade diversion" problem is pervasive in the discussions about trade blocs' creation.

The evidence about trade creation versus trade diversion controversy in the Mercosur integration process is mixed. Yeats (1997), in an analysis for the 1988-1994 period, concluded that the Mercosur implementation distorted the trade patterns expected in the basis of efficiency and comparative advantages concepts. The author noted that, besides the growth in the trade between the member countries, the share of manufactures in total exports has grown compared to the 1979-1981 period, Brazil being a major player in the process. Although, the same was observed for the food and feeding products, the manufacturing sector is found to be the dynamic sector in the process. In the conclusions, the author points out that the regional agreement affected strongly the trade pattern in a negative way, for the member countries as well as for the other countries, considering that the trade has grown in sectors where Mercosur was not competitive before.

A divergent point of view can be found in Olarreaga and Soloaga (1997). According to these authors, the rate of integration of Mercosur member countries to the world was 10 times greater in the 1991-1995 periods than in the

preceding decade, which would confirm that Mercosur was a success in terms of volume of trade. Moreover, the growth of the rate of regional integration was twice the rate of integration to the world, which could be explained by the fact that Mercosur member countries would be "natural partners" in trade (Olarreaga and Soloaga 1997).

A similar point of view is expressed by Laird (1997), who argues that the rapid growth in the intra-Mercosur trade in the 1990-1995 period cannot be attributed to trade diversion only, since the trade with countries outside the bloc have also grown, with imports originating from countries outside the regions growing faster than the intra-regional trade.

And, finally, Batholomew (1998) also shows evidence that favours the trade creation point of view. In a study about the Argentinian economy, the author shows that the share of total imports in GNP in that country were 0.6% from Mercosur and 2% from the Rest of the World in 1990, increasing respectively to 2% and 6% in 1996. This means that Argentinian imports from Mercosur, and from the Rest of the World, has increased at similar rates in the period, a result hardly consistent with the trade diversion hypothesis.

It is important to note that all these studies where conducted at empirical level, and for a time period that does not comprises the full implementation of the Mercosur agreements, that are expected to happen in 2006. Moreover, Yeats (1997) has pointed out in its study that it is possible that Mercosur integration process has both created and diverted trade, what could improve the welfare in the region, if the customs unions generate a decline in prices to producers and consumers.

The results obtained show us that the trade liberalization process, and the integration between Mercosur, would also drastically affect the export profile in these countries. The result cannot be attributed to the reduction in export taxes, since, as has previously been seen, Argentina has a neutral policy in relation to Brazil, while Brazil, although placing tariffs on the exports of some products to Argentina, did this at moderate rates. The export tariff structure in relation to the other countries outside Mercosur was not modified.

The expressive increase in exports both in Mercosur,, cannot then be attributed to changes in the tariff structure, as in the import case. This is an indirect effect, a pro-competitive effect that can be attributed to the reduction in prices of intermediate products, what generates a fall in production and export prices of both countries. It is thus a beneficial trade effect, then. And the consequence is that Mercosur creation resulted in an economic integration of all countries within this FTA.

3. Theoretical Framework

In this part of the work comments about Law of One Price (LOP) and Market Integration & Price convergence will be made and used in the empirical analysis section.

3.1 Law of One Price

According to the LOP, identical goods should be sold for the same price in two different markets when there are no transportation costs, no transaction costs, no tariffs and no differential tariffs applied in either market. To make LOP easier to understand an example will be given. Consider the following information about honey sold in Argentina and Brazilian Market.

- Price of honey in Argentina market (P_A) = $20P_A$

- Price of honey in Brazilian market (P_B) = $150P_B$

- Spot exchange rate ($E_{B/A}$) = 10 *B/A*

The Argentinian peso (denominated here as *A*) price of honey sold on the Brazilian market can be calculated by dividing the honey price in Brazilian reais (denominated here as *B*) by the spot exchange rate as shown below.

If the LOP held, then the peso price in Brazil should match the Argentina price. Since the peso price of honey is less than the peso price in Argentina, the LOP does not hold in this circumstance.

$$\frac{P_B}{E} = \frac{150}{10} = 15 < P_A = 20$$

The above case gives rise to arbitrage opportunity in these countries. An arbitrage opportunity arises when goods bought at a lower price in one place can be sold for a profit at another place. For example, if Argentinian travellers in Brazil recognise that identical honey is being sold for 25% less, they might

buy honey in Brazil and resell it in Argentina for a profit. Using basic supply and demand theory, the increase in demand for honey in Brazil would push the price of honey up, and the increase in supply of honey in the Argentina market would lower the price in Argentina. In the end, the price of honey in Brazil may rise to, say 180 reais, while the price of honey in Argentina fall to 18 pesos. At these new prices the law of one price holds.

The main problem with the LOP theory is that the condition is rarely satisfied between countries.

– Transportation cost and trade restrictions: One of the constraints in the movement of goods is transportation cost, either between the two countries producing the same commodities or between the buyer country and two producing countries. Another is the presence of tariffs. Both these factors cause deviation in prices.
– Product differentiation: This is another reason, which cause prices to fluctuate in different countries. For example, the price of apples grown in the US and India maybe different due the difference in quality.
– Perfect Information: The LOP assumes that individuals have good, even perfect information about the prices of goods in other markets. Armed with this knowledge, profit-seekers export goods to the high price markets and import goods from the low priced markets.

3.1.1 From LOP to PPP

The PPP theory in reality is the LOP applied in the aggregate, with a slight difference. The theory of LOP holds true for all identical goods sold in both markets.

First, we may define the variable CB_A to be the Cost of a Basket of goods in Argentina denominated in pesos. For simplicity we can consider the same basket of goods used in the construction of the Argentinian Consumer Price Index (CPI_A). The CPI uses a market basket of goods, purchased by an average household during a specified period. The basket is determined by surveying the

quantity of different items purchased by different households. One can then determine, on an average, how many units of bread, milk, cheese, rent, electricity, etc. are purchased by a typical household. You might imagine it is as if all products are purchased in a grocery store, with items placed in a basket before purchasing is made. CB_A then represents the peso cost of purchasing all of the items in the market basket. We shall similarly define CB_B to be the cost of a market basket of goods in Brasil denominated in reais.

Now if LOP holds for each individual item in the market basket, then it should hold for the market baskets as well. In other words,

$$\frac{P_V^{\ B}}{E_{B/A}} = P_V^{\ A} \longrightarrow \frac{CB_B}{E_{B/A}} = CB_A$$

Rewriting the right-hand side equation allows us to establish the relationship in a form commonly used to describe absolute purchasing power parity. Namely,

$$E_{PPP}^{\ B/A} = \frac{CB_B}{CB_A}$$

If this condition holds between two countries then we would say PPP is satisfied. The condition says that the PPP exchange rate (reais per pesos) will equal the ratio of the costs of the two market baskets of goods denominated in local currency units. Note that the reciprocal relationship is also valid.

$$\frac{E_{PPP}^{\ A/B}}{CB_B} = CB_A$$

The cost of a market basket of goods is used in the construction of the country's consumer price index, PPP is often written as a relationship between the exchange rate and the country's price indices.

3.2 Market Integration and Price Convergence

The issue of price convergence in commodity markets both at national and international levels has been studied rather extensively in the literature either under the notion of the law of one price or under the notion of market integration. Moreover, reflecting on the market liberalization expansion and structural adjustment efforts undertaken by a number of developing countries in recent years, the degree to which markets are integrated has been used quite often as a yardstick in assessing the success of policy reforms.

Many authors have cautioned, however, that price convergence does not necessarily imply the efficient allocation of resources unless the setting in which trade takes place is competitive. For example, consider the extreme case of two duopolies that agree to charge the same price in two segmented markets. While convergence in prices (whenever price changes occur) would take place instantaneously, the oligopolistic setting of the market may not necessarily allocate resources in the most efficient manner. In such cases, the law of one price holds by definition without necessarily implying that resources are allocated efficiently.

In recent years, the analysis of market and regional integration has lead regional economists and economic historians to examine price convergence. Various definitions exist for market integration, but Roehner (1995) has reduced these to two alternative conceptions: In the first one, a region (or a market) is integrated if "enough" arbitragers are present in the markets, and if they are acting "efficiently" in a sense that supposes a number of conditions such as, for instance, the requirement of perfect information. In this conception, a market either is integrated or it is not; there is no room for a measure to reflect a certain degree of integration. In the second concept, the degree of market integration is identified with the level of inter-market price differentials (or some equivalent variable). If these differentials are large (in relative terms), then the market is poorly integrated. If, on the other hand, they are small, then the market would be well integrated. The first concept has its origin in financial markets, and one must examine whether this concept of an efficient market can

be transposed to commodity markets. If so, one should be able to give an operational meaning to the notion of perfect information. A clear operational criterion of an efficient market would consist of observing that price differentials do not exceed transactions and transport costs. While information on transactions costs is easily available in financial markets, this is not necessarily true for transportation costs in commodity markets.

In contrast to financial markets where only a few parameters are required, a commodity contract involves many parameters such as quality of the product (within a given grade) and specifications regarding hoarding, transportation, loading and discharging, etc. Almost none of these parameters are usually made public.

It is significant to state that by the LOP, if a country sells more cheaply than another, in a world without barriers, these prices will naturally converge into an identical price. When a FTA is created barriers like tariff reductions and scale economies in transportation, hoarding, communications, loading and discharging are achieved. In a real world, when a FTA is created, the price will not be converged into an identical value but a certain level of convergence is expected to be observed.

4. Methodology

In this section a discussion about the collection of data and methods used to perform the study will be done.

Recent empirical work in international economics has focused on the segmentation of markets. It has become increasingly clear that country markets are far from a perfect integration.

Naturally, we have costs that may influence differences in prices such as transportation, communication and storage. In this study these costs will be reduced during the integration process resulting in another factor to explain a higher integration during the Mercosur.

Previous studies used disaggregated data on consumer prices to explain the variability in prices in different countries and across U.S. cities. However, the idea of using these prices to find-out what happened with the price convergence among countries that belong to a FTA after a country-member crisis seems new. Previous studies like Parsley and Wei (1996) use prices rather than price indexes, and examine deviations from the ("absolute") law of one price (LOP). Economists use two versions of LOP: absolute LOP and relative LOP. Absolute LOP refers to the equalization of price levels across countries. Put formally, the exchange rate between Brazil and Argentina $E_{B/A}$ is equal to the price level in Brazil P_B divided by the price level in Argentina $P_{A.}$ Relative LOP refers to rates of changes of price levels, i.e., inflation rates. This proposition states that the rate of appreciation of a currency is equal to the difference in inflation rates between the foreign and the home country. For example, if Brazil has an inflation rate of 1% and Argentina has an inflation rate of 3%, the Argentinian Peso will depreciate against the Brazilian real by 2% per year. This proposition holds well empirically especially when the inflation differences are large.

In Empirical Results and Analysis, this thesis will replicate Engel and Rogers' (1999) international study with data from across Mercosur. Using data at the national level, Engel compared the prices of similar goods across countries to the relative price of different goods within a country, and found the former to,

generally speaking, be much more variable. This thesis asks whether the same is true across Mercosur in three different periods before the Mercosur, during the Mercosur and during the Argentinian crisis. Engel contends that nominal price stickiness might be one explanation for his results. In each country, prices are sticky in the consumers, currencies, but the nominal exchange rate is not sticky, so as it varies the common currency prices of the goods vary. However, previous studies such as Engel and Roger (1996) for data on prices for U.S. cities, where there was no nominal exchange rate variability found that sticky prices couldn't be the explanation for his finding.

There can be little doubt about the importance of FTAs to the integration of markets. Previous works, argued that the deviations from the law of one price are a prime suspect in the failure of absolute purchasing power parity (PPP). As seen in the theoretical framework there are four explanations for PPP not holding: (1) Barriers to trade such as tariffs and transportation costs; (2) Different consumption preferences across countries; (3) Presence of non-traded goods in consumer price indexes (CPIs); and (4) Prices that are sticky in terms of the currency in which the good is consumed, note that explanations (1) and (4) depend on deviations from the law of one price across countries, while explanations (2) and (3) imply significant relative price movements within a country.

Engel (1993) examined the relative contributions of these two general explanations for the failure of PPP. To understand this approach in its simplest form, consider two goods, *i* and *j,* and two locations, *A* and *B*. Engel compares $V\left(P_i^A - P_j^A\right)$ to $V\left(P_i^A - P_i^B\right)$, where $V\left(P_i^A - P_j^A\right)$ is the volatility of the price of good *i* relative to another good *j* within the same location, *A,* and $V\left(P_i^A - P_i^B\right)$ measures the volatility of the (common-currency) price of the same good, *i,* in location *A* relative to location *B*. The second and third explanations of PPP failures would contend that $V\left(P_i^A - P_j^A\right)$ should exceed $V\left(P_i^A - P_i^B\right)$, while the first and fourth explanations predict the reverse.

In 1993, Engel studies computed volatility as the variance of the first-differences (or, alternatively, 3rd, 6th, or 12th-differences) of the logs of monthly prices. He uses data for the G7 countries of four price indexes (the overall CPI and CPIs for food, shelter and services) and for consumer prices of 33 narrowly defined categories of goods between the U.S. and Canada. With only a few exceptions, he finds $V\left(P_i^A - P_i^B\right) > V\left(P_i^A - P_j^A\right)$. Failures of the law of one price appear to be much more pronounced than the intra-country relative price changes that motivate some theories of real exchange rate movements.

In this thesis Engel and Rogers' analysis will be replicated on the disaggregated consumer prices for Mercosur countries. Define $\Delta p_{j,t}^{k}$ to be the first-difference of the log of the price of *good j* at location *k* at time *t.* For every *good, j* = 1,2, ...,22, and every location, *k* = 1,2,3 and 4 we calculate the ratio r_{kj}*:*

$$r_{kj} = \frac{\frac{1}{21}\sum_{n=1, n\neq j}^{22} sd\left(\Delta p_{jt}^{k} - \Delta p_{nt}^{k}\right)}{\frac{1}{4}\sum_{m=1, m\neq k}^{4} sd\left(\Delta p_{jt}^{k} - \Delta p_{jt}^{m}\right)}$$

(Equation 1)

Where *sd* is the standard deviation.

The numerator of r_{kj} in the equation above represents the average of the standard deviations of the first difference of the price of good *j* relative to the price of each different good in location *k.* So, the numerator measures the volatility of relative price of different goods in the same location. The denominator of r_{kj} in the equation is the average standard deviation of the first difference of the price of good *j in* location *k* relative to the price of the same good in different locations. So, the denominator measures the volatility of deviations from the law of one price. A large value of r_{jk} means that violations of the law of one price are large by Engel's measure.

4.1 How the thesis was conducted.

After Mercosur creation an increase in trade happened. Observed indications of price reductions are consistent with tax reductions that occurred, with the exception of natural resources that had a tax elevation. The price reduction on export prices is also a result of cheaper importation of resources to produce goods domestically.

The methodology will be applied in three stages of the Mercosur, the pre Mercosur period, the peak of Mercosur, and Mercosur after The Argentinian crisis.

1) Pre Mercosur Stage

As stated before in this stage before the FTA was established, the degree of integration was smaller. In the application of the data, we should get a higher divergence in prices between these countries.

This study will be done during one year before Mercosur's foundation from the period between March 1990 and February 1991.

2) Mercosur's Peak

The second application of the data to calculate the relative prices between Mercosur countries will be done during the peak of this Free Trade Area. The main idea is to find during this period a good degree of convergence in prices between countries.

Therefore, the second period of the thesis will be done using 1997's data of prices from the period between January 1997 and December 1997.

3) Argentina Crisis Stage.

The intention of this thesis is to explain what happened after the Argentinian crisis, what happened to all countries that belong to Mercosur. After the the Argentinian crisis the Mercosur almost collapsed, with a huge decrease in trade, and an increase in tariffs for imported goods between the FTA countries.

This stage study will be done using data from the period between November 2001 and October 2002.

5. Empirical results and Analysis

In this part of the paper, an explanation of all calculations will be done. While explaining each important step of calculations, from the data that was collected to the final result that explains price convergence/divergence.

5.1 Application of the relative price method.

The data used are monthly prices for the four partners of the Mercosur (Uruguay, Paraguay, Argentina and Brazil) countries, starting in March 1990 and ending in October 2002. For each country we have prices for 22 different goods. This data has a broad range of items, from construction to food, from gasoline to cleaning material, from agro products to electronics.

The data collected came from the main statistic offices in each country, as follows:

- Brazil – FIPE – Fundação Instituto de Pesquisas Econômicas
- Argentina – INDEC – Instituto Nacional de Estatísticas y Censos
- Uruguay – INE – Instituto Nacional de Estatística
- Paraguay – DGEEC – Direccion General de Estatística, Encuestas y Censos

The data covers a little bit more than 12 years with no missing data in the time series. However, the data used is only for three years dispersed in the 12 years time series (see Section 4.2.1).

After collecting historical prices and all prices transformed to the same unit (e.g. grams, liters, etc) and amount, they were all converted in United States dollars, by multiplying the price in time *t* by the dollar quotation in time *t*. In Appendix 2 a table containing the result of these calculations (for 1056 prices) for the Pre Mercosur stage, or when the Mercosur was not yet created is shown. One table for the Mercosur's Peak stage and for the Argentina crisis stage was done in the same way. All items chosen to perform calculations are for tradable goods. With non-tradable goods, such as houses, some services were not

chosen because they have local characteristics and are not tradable between countries.After that step the log of each price was calculated.

To find all r_{kj}s the equation 1, above presented on the methodology section of this thesis, was used. By doing so, everything was ready to calculate the log first difference of price of good *j* at location *k* at time *t*. For all goods and location the ratio r_{kj} was calculated. For each stage was calculated all r_{kj}s and after that the standard deviation of all r_{kj}s.

Below, there is an itemized explanation for r_{kj}s calculation is done:

1. Table with prices (local currency).
2. Transform those prices in USD (currency rate at time t).
3. Calculate the LOG for each price.
4. Make the first difference between each month.
5. Calculations for the numerator:
    - Difference between one product *j* in relation to all 21 other products in one country.
    - Standard deviation of all results (21) divided by 21.
6. Calculations for the denominator:
    - Difference between the same products in all different countries.
    - Standard deviation of all results divided by the number of countries.
7. Divide Numerator by the denominator and than you have the r_{kj} - Ratio Each Country Relative Price Variability to Cross Country LOP Deviation.

Table 1 reports the average of the r_{jk} ratios (below) across locations for each goods item in different periods traded by the Mercosur. If these ratios were to conform to Engel's (1999) findings, they should generally be very small (what explain a high integration) – at least during the Mercosur best year (most integrated year). On each stage (pre Mercosur, Mercosur's peak and after Argentina crisis) the same work had to be done to calculate the 'Ratio of One Specific Country Relative Price Variability to Cross-Country LOP deviation' (average ratio by good), this calculation has to be done for each country in each stage. So, four tables for each stage were done. Below an example of what was calculated regarding the ratio for Argentina – Stage 1 is presented (Table 1).

Table 1 - Ratio of Argentina Relative Price Variability to Cross Country LOP Deviation - (Pre Mercosur Stage)

Time	Apr/ Mar	May/ Apr	Jun/ May	Jul/ Jun	Aug/ Jul	Sep/ Aug	Oct/ Sep	Nov/ Oct	Dec/ Nov	Jan/ Dec	Feb/ Jan	***Average***
Good												
Wine	5,26	5,33	3,18	4,82	7,75	8,45	15,9	8,34	3,68	2,61	5,47	***6,44***
Cheese	3,13	10,26	4,76	12,1	4,37	2,00	8,41	10,75	0,84	4,10	2,42	***5,75***
S.Flower Oil	3,89	0,45	0,31	0,79	2,23	1,28	2,64	1,71	0,98	5,96	8,43	***2,61***
Egg	2,06	1,01	1,00	5,44	17,4	18,4	8,22	3,45	0,88	6,46	3,47	***6,17***
Honey	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	2,54	4,54	7,13	***1,29***
Meat	5,82	4,85	1,62	10,3	5,98	1,60	1,97	14,79	3,47	3,49	6,19	***5,46***
Energy	4,12	13,12	10,7	16,9	9,24	3,30	17,9	8,07	19,48	22,62	27,59	***13,93***
Telephone	1,51	5,80	1,78	8,40	4,12	3,03	4,13	2,60	4,17	8,75	6,31	***4,60***
Gasoline	2,09	3,53	2,66	15,0	5,08	2,13	7,01	8,06	1,16	3,23	2,34	***4,76***
Bulb 100w	2,56	3,86	2,28	5,70	7,00	8,88	14,1	5,83	2,58	1,96	7,18	***5,63***
Fridge	0,00	0,00	0,61	1,30	3,06	3,17	0,07	1,06	1,03	2,35	1,37	***1,27***
Hotel	0,00	0,00	14,7	8,71	0,81	1,73	3,44	2,82	1,72	3,15	6,22	***3,94***
Chicken	6,92	4,50	2,30	4,86	2,55	1,00	7,03	16,18	3,22	3,97	5,43	***5,27***
Orange	1,76	15,45	14,6	19,2	8,02	6,26	14,6	6,08	3,47	5,39	4,55	***9,05***
Tooth Paste	5,15	4,37	3,13	11,1	5,59	2,50	5,36	8,20	1,95	4,67	5,24	***5,21***
Shampoo	5,54	11,82	8,30	8,61	7,46	7,96	16,7	8,07	3,14	3,86	4,70	***7,84***
Chocolate	4,84	4,73	2,58	9,73	4,87	2,95	7,28	9,62	1,93	4,05	5,83	***5,31***
Soap	4,39	13,18	6,35	0,69	3,94	9,19	10,9	7,59	3,90	4,12	4,50	***6,25***
Fabric	2,69	4,41	8,99	58,7	43,3	28,2	3,51	14,05	4,25	2,38	0,96	***15,60***
Paper	0,00	0,00	3,89	2,54	1,15	0,99	1,72	1,46	2,92	2,88	4,11	***1,97***
T. Paper	5,54	11,20	9,06	11,6	8,20	9,50	12,7	4,75	2,29	5,71	3,88	***7,68***
Coffee	2,92	3,68	2,11	14,7	7,46	4,58	7,32	8,78	1,08	3,68	4,61	***5,55***

All r_{kj}s average are now used to calculate a Ratio of Inter-Country Relative Price Variability to Cross Country LOP deviation, the Table 1 results (average) are now used in Table 2 (at the column named "Argentina") where it is possible to see that which is the ratio of the first difference of the price of good *j* relative to the price of each different good in location *k.* This is presented as the 'Ratio of Inter-Country Relative Price Variability to Cross-Country L.O.P. deviation'

(Tables 2, 3 and 4). One table per stage will be calculated and these tables are shown bellow. The statistics reported in these tables are for the monthly differences in logs of price for the three different time series (years). The smaller the law-of-one-price deviations, the smaller should be the denominators of the r_{jk} ratios.

Table 2 - Ratio of Inter-Country Relative Price Variability to Cross Country LOP Deviation (Average Ratio, by Good)

Pre Mercosur (March 1990 - February 1991)

Country	Brazil	Argentina	Paraguay	Uruguay	***Std. dev. of 1st diff.***
Good					
Wine	5,43	6,44	4,39	10,94	*6,80*
Cheese	2,95	5,75	4,18	5,79	*4,67*
Sun Flower Oil	2,37	2,61	2,00	4,18	*2,79*
Egg	5,50	6,17	0,25	0,00	*2,98*
Honey	2,11	1,29	2,75	1,02	*1,79*
Meat	5,28	5,46	4,32	7,46	*5,63*
Energy	17,42	13,93	10,10	21,28	*15,68*
Telephone	5,09	4,60	3,86	8,45	*5,50*
Gasoline	3,34	4,76	3,49	6,80	*4,60*
Bulb 100w	5,16	5,63	3,58	10,14	*6,13*
Fridge	5,73	1,27	1,01	2,57	*2,65*
Hotel	3,94	3,94	2,86	12,60	*5,84*
Chicken	4,78	5,27	4,49	13,14	*6,92*
Orange	6,57	9,05	6,16	8,76	*7,63*
Tooth Paste	4,23	5,21	3,91	11,30	*6,16*
Shampoo	6,56	7,84	5,39	12,04	*7,96*
Chocolate	3,97	5,31	3,95	10,86	*6,02*
Soap	6,34	6,25	4,55	10,25	*6,85*
Fabric	20,32	15,60	13,82	38,28	*22,00*
Paper	2,51	1,97	1,78	4,52	*2,69*
T. Paper	6,53	7,68	5,25	12,68	*8,04*
Coffee	3,63	5,55	3,86	6,19	*4,81*
				22 goods average	***6.55***

Table 3 - Ratio of Inter-Country Relative Price Variability to Cross Country LOP Deviation (Average Ratio, by Good)

Mercosur's Peak (January 1997 - December 1997)

Country	Brazil	Argentina	Paraguay	Uruguay	***Std. dev. of 1st diff.***
Good					
Wine	0,82	1,32	1,14	1,14	*1,11*
Cheese	2,02	3,32	2,64	1,82	*2,45*
Sun Flower Oil	0,59	1,00	0,84	0,81	*0,81*
Egg	0,88	1,11	1,26	1,00	*1,06*
Honey	0,94	0,85	1,05	1,02	*0,97*
Meat	0,82	1,07	0,93	1,11	*0,98*
Energy	1,63	2,16	1,50	2,12	*1,85*
Telephone	1,04	1,80	1,45	1,24	*1,38*
Gasoline	1,03	1,21	1,06	1,42	*1,18*
Bulb 100w	0,75	1,22	1,01	1,66	*1,16*
Fridge	1,45	2,28	1,48	3,43	*2,16*
Hotel	7,81	8,87	6,61	12,40	*8,92*
Chicken	1,75	1,73	1,62	2,24	*1,84*
Orange	1,54	3,23	2,02	1,77	*2,14*
Tooth Paste	0,76	1,27	1,02	1,17	*1,06*
Shampoo	0,61	1,07	0,94	0,68	*0,83*
Chocolate	1,01	1,30	1,14	1,40	*1,21*
Soap	1,03	1,29	1,11	1,38	*1,20*
Fabric	1,27	2,25	1,56	2,47	*1,89*
Paper	5,03	4,19	4,94	6,51	*5,17*
T. Paper	0,83	1,57	1,10	1,34	*1,21*
Coffee	1,98	2,82	2,59	2,25	*2,41*
				22 goods average	***1.95***

Table 4 - Ratio of Inter-Country Relative Price Variability to Cross Country LOP Deviation (Average Ratio, by Good)

Argentina Crisis (November 2001 - October 2002)

Country	Brazil	Argentina	Paraguay	Uruguay	***Std. dev. of 1st diff.***
Good					
Wine	9,48	10,87	6,98	13,22	*10,14*
Cheese	4,75	6,51	4,85	5,29	*5,35*
Sun Flower Oil	1,25	1,38	0,80	1,49	*9,29*
Egg	0,07	0,21	0,12	0,23	*0,16*
Honey	1,31	1,12	0,74	1,42	*1,15*
Meat	4,77	6,85	4,91	5,15	*5,42*
Energy	4,08	4,30	2,90	6,20	*4,37*
Telephone	13,10	13,91	8,57	17,58	*13,29*
Gasoline	4,88	6,19	4,89	5,39	*5,34*
Bulb 100w	8,26	9,41	5,41	15,04	*9,53*
Fridge	5,04	5,90	3,94	8,63	*5,88*
Hotel	15,68	13,50	8,15	28,05	*16,35*
Chicken	6,61	7,05	4,98	8,57	*6,80*
Orange	16,85	10,66	6,91	19,55	*13,49*
Tooth Paste	9,61	10,94	6,94	12,35	*9,96*
Shampoo	6,25	7,78	5,66	8,27	*6,99*
Chocolate	9,40	12,01	7,53	12,67	*10,40*
Soap	6,41	7,58	5,67	8,20	*6,97*
Fabric	7,89	9,31	5,30	12,58	*8,77*
Paper	5,11	5,88	3,71	10,65	*6,34*
T. Paper	9,49	9,21	7,55	12,03	*9,57*
Coffee	8,60	8,94	5,43	11,05	*8,51*
				22 goods average	***7.54***

A number closer to 1 means a more integrated situation or fewer deviations on relative prices. In this thesis, for the pre Mercosur stage, we considering a 22 goods items and four countries average of the first difference a standard

deviation of 6.55, for the Mercosur's peak 1.95 and for the Argentina crisis stage 7.54. However, we may observe that the result closest to one happened during the Mercosur's peak. Before Mercosur, and after the Argentinian crisis, we had a similar results, 6.55 and 7.54.

6.55 was a high value because Mercosur had not yet been created, the data used in this stage was from one year before the foundation of Mercosur (from Mar 1990 to Feb 1991).

During Mercosur peak some effects of the integration had already happened, there are few doubts that the integration that processed in Latin America brought benefits to all involved countries. The compromise of this system is essential to visualize trade gains. However these gains are not necessarily gains for all economic agents, there are losers in this process especially during the adjustment period that made some productive domestic sectors reduce their activities, and other sectors to increase. The idea of analysing this stage is to apply the relative price method after the adjustment period, when prices have more probability to be converged. This integration obtained during the period from January 1997 till December 1997 gives us the smallest value obtained in this analysis (1.95).

After the Argentinian crisis there was a disintegration of all Mercosur's partner's economy. In our study the result obtained 7.54 is bigger than the 6.53 obtained for the pre Mercosur stage.

6. Summary and Concluding Remarks.

Our study about integrations and relative prices drove us to the following conclusions that can be divided in two parts.

First, this work made some calculations in order to examine integration between countries. We may say that the Mercosur creation made all countries participants to achieve a much better degree of integration. As shown in Tables 2, 3 and 4, the Ratio of Inter-Country Relative Price Variability to Cross Country LOP Deviation was 6.55 falling down to 1.95 during the Mercosur's Peak.

The main explanation for that are better conditions in transport, negotiation and reduction of tariffs. And another reasonable explanation may be that all sticky price goods during the Argentina Peak, had a similar variation because all countries had a similar relative quotation against the American dollar.

Secondly, by proving that during the Mercosur integration occurred, a further analysis could be done, to check whether the impact of Argentina crisis affected Mercosur. And, as expected the Ratio of Inter-Country Relative Price Variability to Cross Country LOP Deviation Again increased to 7.54, proving that Argentina crisis was intense. Some pertinent articles from a very important newspaper in Brazil state some other facts that go into the disintegration process. Below, some sentences from these articles:

"Brazil and Argentina are responsible for 90% of the volume of trade between countries of Mercosur. After The Argentinian crisis some polemic questions must be solved, like the non accomplishment of the automotive deal." (Interview with the Brazilian Ambassador - José Botafogo Gonçalves).

"Brasil, Uruguay, Paraguay and Argentina are facing a joint crisis. These countries plan to re-establish basic principles of the Mercosur's integration. Ministers from all Mercosur's countries agree that the economic crisis affect with intensity financial & commercial flows and other production factors."

“For the Brazilian sub secretary of Integration, Economy and External trade, the ambassador, Clodoaldo Hugueney, the External Common Tax, a tax used for imported goods among Mercosur is not being used equally among all partners and should be changed. For him, Mercosur is living at a very difficult time, with a trade reduction of 70% between Brazil, and Argentina the two more important partners of Mercosur”.

“There are between 20 antidumping barriers against Brasil in the Mercosur said Sérgio Amaral the Brazilian Minister of development, Industry and External Trade”

These articles contribute to this study because we may conclude that the degree of integration has declined, which means that prices diverged and the LOP increased, proving the impact of the Argentina crisis in the Mercosur which caused a lot of consequences to Mercosur’s partners, the free trade area of South America. Another reasonable explanation to this result is again sticky price goods that impacted much more after Argentina peso devaluation, and other currencies of the FTA floated a lot. Also, after this crisis an increase of import tariffs took place.

The Ratio of Inter-Country Relative Price Variability to Cross Country LOP Deviation of 7.54 in relative prices show us that Mercosur (a FTA) bloc is not making it integration role. The impact of Argentina crisis on it FTA bloc was intense, and our result indicates that nowadays the integration of Argentina with Brazil, Paraguay and Uruguay is almost the same as before Mercosur’s creation.

When carrying out this study it’s not enough to look at prices alone or price indexes. It is important to use relative price to calculate prices convergence, and therefore observe economic integration. Engel and Roger method proved to be a good approach for this thesis’ empirical Section.

A further step in the Argentina crisis analysis would be the economical consequences that the lack of economic integration resulted by the price divergence may bring. And, also how the economical recuperation of these countries after the crisis reflects on price convergence.

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Appendix 1.

Relative prices and Supply

Regarding to Wonnacott and Wonnacott (1994) the possibility production frontier shows us different combinations of goods that the economy may produce. Therefore, to determine what the economy will really produces, it is important to analyse prices. We need to know exactly the price of different items in the economy, in other words, the price of one good relative to another one.

In one competitive economy, supply decisions are determined in such a way that individuals maximize their gains. Imagining a simplified economy, the work is the only production factor, and as an example we can imagine wine and cheese will be determined by the movement of workers to the industry that pays better.

Let P_Q e P_v be prices of cheese and wine, respectively. Its necessary a_{LQ} hours of work to produce one kilogram of cheese (with no profit), the wages per hour in our cheese filed will be equal the value of what a worker produces in one hour, P_Q/a_{LQ}.

Once a_{LV} hours of work are necessary to produce one litter of wine, the wage hour relation will be equal to P_V/a_{LV}. Wages of the cheese sector are higher if $P_Q/P_V>a_{LQ}/a_{LV;}$ and wine industry wages will be higher if $P_Q/P_V<a_{LQ}/a_{LV}$. However, all workers will want to work in the higher wages industry. So than the economy will be specialized in the cheese production if $P_Q/P_V>a_{LQ}/a_{LV}$; and will be specialized in wine production if $P_Q/P_V<a_{LQ}/a_{LV}$. Only when P_Q/P_v it is equal to a_{LQ}/a_{LV} both goods will be produced.

What is the meaning of the number a_{LQ}/a_{LV}? It is the opportunity cost of cheese relative to wine. By this we may conclude that the economy will be specialized in cheese production if the cheese relative price is higher than your opportunity

cost; and will be specialized in wine production if the relative price of the cheese is smaller than it's opportunity cost.

In the absence of international trade this country will be able to produce both goods for itself. However, the condition to produce both goods will only be if the relative price is exactly equal to the opportunity cost.

Once the opportunity cost is equal to the relation between the necessity of working units to produce wine and cheese, we may summarize the determination of prices in the absence of international trade by a simple theory of working value: In the absence of international trade, goods' relative prices are equal to its relative working units necessity.

Trade in a world of one factor

It is easy to describe effects of trade between two countries when each country has only one production factor. However, the implication of this analysis may be surprising, even for those who do not reflect concerninginternational trade. Many of these implications may be conflicting in a general sense. Even this simple trade model may present important orientations that we may apply in the real world topics, like the one that constitute the fair international competition and exchange rates.

Before we talk about this topic, we may establish the model. Let's imagine two countries, and let us determine one as local and the other one as foreign. Each of these countries has a production factor (work) and may produce two goods, wine and cheese. Like before we may determine the local working force as L and the necessity of local working units to produce wine and cheese as a^*_{LQ} and a^*_{LV}, respectively, and so on.

Generally, the necessity of working unit may follow any pattern. As an example we may say that the domestic economy could be less productive than the foreigner in wine and more productive in cheese or the other way around. Let's make an arbitrary supposition:

$$a_{LQ}/a_{LV} < a^*_{LQ}/a^*_{LV}$$

or in another way:

$$a^*_{LQ}/a^*_{LV} < a_{LQ}/a_{LV}$$

In other words, we are stating that the proportion of units of work necessaries to produce one Kilogram of cheese, in relation to working units needed to produce one liter of wine, is smaller in the domestic economy than in the foreign. In general we may say that the relative productivity of cheese in the local country is higher than the wine one.

However, the proportion of work required units it is equal to the cheese opportunity cost related to wine; also we must remember that we defined the comparative advantage precisely, in opportunity cost terms. Therefore, the supposition about relative productivity in equations, $a_{LQ}/a_{LV} < a^*_{LQ}/a^*_{LV}$ *and* $a^*_{LQ}/a^*_{LV} < a_{LQ}/a_{LV}$ is the same thing as saying that the local economy has an comparative advantage in cheese production.

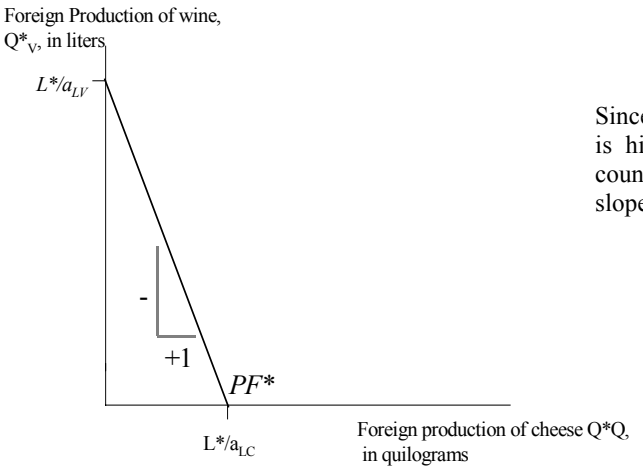
Something must be considered at this point: the condition that the local economy has comparative advantages concerns all four working units' necessities, and not only two. This could be understood when determining who will produce cheese. All that must be done is to compare the units of work necessities for the cheese production, a_{LQ} and a^*_{LQ}. If $a_{LQ} < a^*_{LQ}$, the work in the local country is more efficient than in the foreign country in terms of cheese production. When a country may produce one good unit with less work than another country, we may say that the first country has absolute advantage in the production of this product. In our example, the local country has absolute advantage in the production of cheese.

What we will now see is that we can't determine the trade only by absolute advantage. One of the most common mistakes in international trade is to misunderstand comparative advantages and absolute advantages.

Given working force and units of work necessaries on both countries, we may obtain the possibility frontier in the production of each country. In the graph below, we have *PF* as the possibility frontier of production in the domestic

economy. The production possibility frontier is shown as *PF** in the graph below. Since the inclination of the production possibility frontier is equal to the cheese opportunity cost in terms of wine the country frontier is more sloped than the local nation.

Foreigner production possibility frontier



Since the necessity of the foreign units of work is higher in relative terms than in the local country, your possibility frontier is much more sloped.

If we don't have trade, relative prices of wine and cheese in each country would be determined by relative necessities of units of work. Therefore, in the domestic economy the relative price of cheese would be a_{LQ}/a_{LV}; and in the foreigner a^*_{LQ}/a^*_{LV}.

Once the international trade possibilities are available, prices will not be determined only by domestic rules. If a relative price of cheese is higher in the foreigner economy than in the domestic one, it will be more profitable to export cheese from the domestic economy to the foreigner and to import wine from the foreigner to the domestic. It can't happen indefinitely; the domestic economy will export the sufficient amount of cheese and the foreigner will

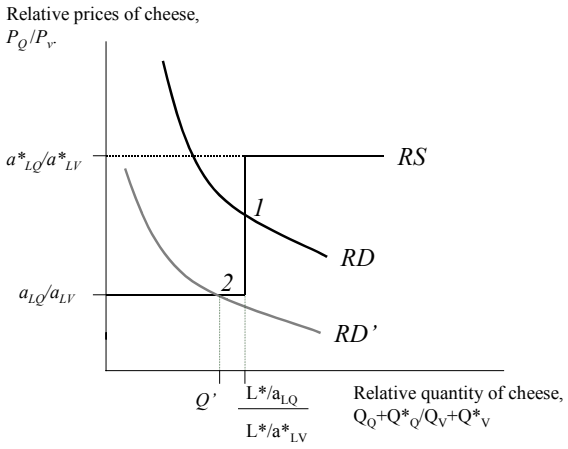
export sufficient wine in a way that relative prices will be equalized. Below we will find some explanation of what will define relative prices.

How to determine relative prices after trade.

Prices of internationally commercialised goods, like other prices, are determined by supply and demand. However, when we discuss comparative advantages, we must apply the demand and supply analysis carefully. If we analyse the trade politics, it is acceptable to analyse only supply and demand of only one economy. As one example we may say that: in the importation quotas of sugar in the United States of America it is acceptable to use partial equilibrium analysis, in other words, to study only one - the trade of sugar. If we study comparative advantages, it is necessary to consider relations between different goods trade. Once the domestic economy export cheese only if import wine, and the other way around, it is wrong to analyse wine and cheese trade separately. It is necessary to analyse the general equilibrium that take under consideration connections between both markets. A useful way to consider both markets simultaneously is to highlight not only supplied and demanded quantity of cheese and wine, but the relative supply and demand, in other words, the number of kilograms of cheese supplied or demanded divided by the number of liters of wine supplied or demanded.

Bellow, there is a presentation of the worldwide supply and demand of cheese in relation of wine as a function of the price of cheese in relation to the price of wine. *RD* is the relative demand and supply is *RS*. In worldwide general equilibrium the demand is relatively equal to the supply; therefore, the worldwide relative price will be determined by the intersection of *RD* and *RS*.

Worldwide relative Supply and demand



RD show us that the demand for cheese in relation to wine is a function the decrease of the cheese price in relation to wine, wile RS show us that the supply of cheese in relation to wine is a function (of the same relative price) that increases.

The most notorious characteristic of the graph above is the curious stile o RS: it's a "step" with connected straight sections connected by a verticals. Once we understand the derivation of RS we will almost understand the entire model.

Firstly, like in the graph, RS slope show us that there is no supply of cheese if the worldwide price falls under $a_{LQ}/a_{LV.}$ And this is because the domestic economy will be specialized in the wine production every time $P_Q/P_V<a_{LQ}/a_{LV.}$ In the other hand, the foreigner economy will be specialized in the wine production every time $P_Q/P_V<a^*_{LQ}/a^*_{LV.}$ As stated before, $a_{LQ}/a_{LV} <a^*_{LQ}/a^*_{LV}$, therefore, if cheese relative prices are under a_{LQ}/a_{LV}, there will be no world-wide cheese production.

Also, when the relative price of wine is exactly a_{LQ}/a_{LV}, we know that workers of the local country may receive the same amount if they produce cheese or wine. Therefore, the local country will like to supply any relative quantity of each good, making a horizontal section on the supply slope.

Well, if P_Q/P_V is above a_{LQ}/a_{LV} the local country will be specialized on the cheese production. Since, $P_Q/P_V<a^*_{LQ}/a^*_{LV}$ the foreign country will keep specialized in the production of wine. While the local country will be

specialized in the cheese production, he will produce L/a_{LQ} kilograms. Similarly, when the foreign country has a specialization in wine, it will produce L^*/a^*_{LV} liters. Therefore, for any cheese relative price between a_{LQ}/a_{LV} and a^*_{LQ}/a^*_{LV} the relative cheese supply will be:

$$(L/a_{LQ})/(L^*/a^*_{LV})$$

When $P_Q/P_V=a^*_{LQ}/a^*_{LV}$, we know that foreigner workers will have no preference whether to produce wine or cheese. Therefore, we have another horizontal section of the supply slope. Finally, if $P_Q/P_V<a^*_{LQ}/a^*_{LV}$ both economies will be specialized in the production of cheese. There will be no wine production and therefore we will have an infinite relative supply of cheese.

The relative demand of *RD* does not need such an exhaustive analysis. The *RD* slope "going down" reflects the substitution effect. When the relative price goes up, consumers will buy less cheese and more wine, and the relative demand of cheese will fall.

The relative equilibrium price of cheese is defined by the interception of both relative supply and demand slope. The world-wide relative demand and supply graph show a relative demand *RD* slope that crosses with RS in the point 1, where the cheese relative price is in between prices before trade between these countries. In this case, each country will be specialized in the production of the good that has a comparative advantage: the local country will produce only cheese and the foreign only wine.

But this is not the only possible production. If the relevant *RD* slope was *RD*', as an example, the relative supply and the demand would cross in one of the horizontal sections of RS. In the point 2, the world-wide relative price of cheese after trade is a_{LQ}/a_{LV} , the same as the opportunity cost of cheese in terms of wine in the local country.

The meaning of this result is that if the relative price of cheese is equal to the opportunity cost of the local country, this one doesn't need to specialize in the production of wine or cheese. In the point 2 the local country must be producing wine and cheese; we may get to this conclusion by the relative

supply of cheese (Q point in the horizontal axel) being smaller than if the local country was totally specialized. Once P_Q/P_V is below of the opportunity cost of wine in relation to wine in the foreign country, this one will be totally specialized in the wine production. However it still truth that if a country has an specialization, this one will be in the production of the good in which this country has comparative advantages.

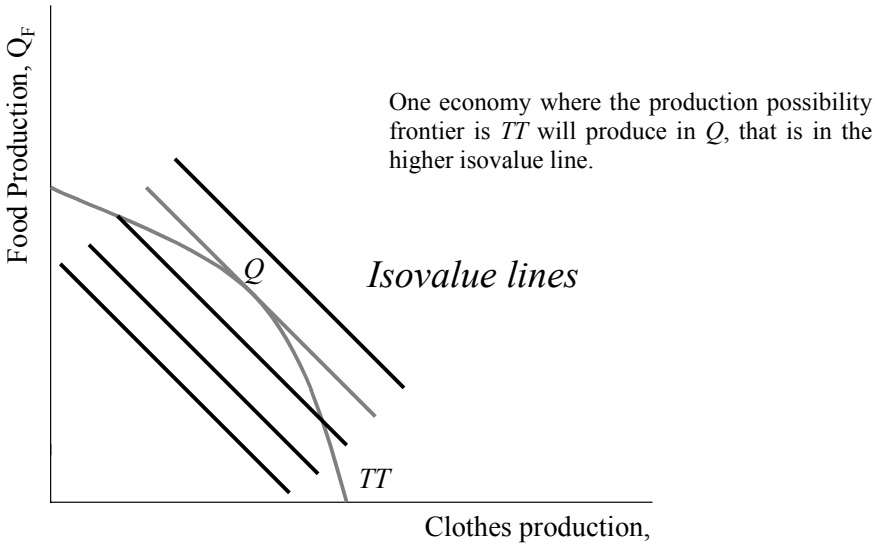
In this moment we should consider the possibility that one of both countries has no total specialization. Except in this case, the common result of the trade is that price of a commercialised good (cheese as an example) in relation to the price of another good (wine) will be a point in between their level before and after trade the trade involving both countries.

The effect of this relative prices convergence is that each country will be specialized in the production of the good that needs less units of work. One increase in the cheese relative price in the local country makes the country specialized in cheese. The fall of the cheese price will make this country be specialized in wine.

Production possibilities and relative supply

Let us again assume two different goods, food (F) and clothes (C), and that any production possibility frontier is one soft slope, like the one shown below.

Relative prices determine the economy production



The point over the possibility frontier in which the economy really produces will depend on the price of clothes in relation with food price, P_C/P_F. As the microeconomic basic proposition states, the market economy that is not distorted by a monopoly or by market fails is efficient in production, which means that given market prices the production value is maximized, $P_CQ_C+P_FQ_F$.

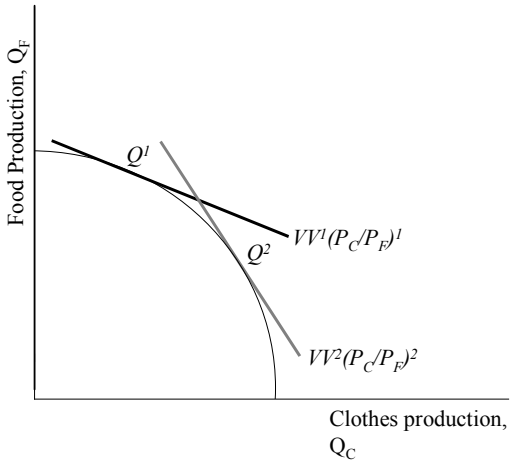
We may demonstrate the production market value by drawing the number of isovalue lines, which is to say, lines in which the production value is constant. Each one of these lines is defined by a equation $P_CQ_C+P_FQ_F=V$ or $Q_F= V/P_F-(P_C/P_F)\ Q_C$, in which V is the production value. The higher is V, more apart the isovalue line will be; so, lines that are away from the origin will mean more expensive production values.

The economy will produce the higher possible production value; this will happen if we produce in the *Q* point in which *TT* is exactly the tangent isovalue line.

Now let's imagine that P_C/P_F increases. Than the isovalue lines would be more steeped than before. In the graph below the most raised isovalue line that the economy could get before the change in P_C/P_F is shown as VV^1, the most steeped line after the price change is VV^2 and the point in which the economy

produces will move from Q^1 to Q^2. Therefore, a increase in the relative price of clothes will drive the economy to produce more clothes and less food. The relative supply of clothes will increase when the relative price of clothes increases.

How an increase in the relative price of clothes affects the relative supply

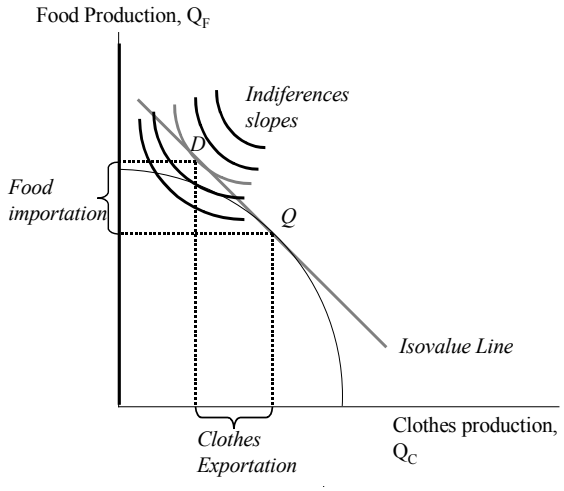


The isovalue will be more steep, when the relative price of clothes increases from $(P_C/P_F)^1$ to $(P_C/P_F)^2$ (like shown by the rotation from VV^1 to VV^2). As a result, the economy produces more clothes and less food. The equilibrium product will move from Q^1 to Q^2.

3.2.1 Relative Prices and Supply

The graph below is a representation of the relation between the production, consume and the trade in the general model.

Production, consume and the trade as a general model



The economy produces in Q, where the production possibility frontier is the higher indifference slope's tangent. Consume will be at point D where the isovalue line is the higher indifference slope's tangent. The economy produces more clothes than consumption, therefore export clothes. In the same way consume of food is higher than the production, therefore needs to import food.

As definition the value of economic consumption is equal to your production value:

$$P_C Q_C + P_F Q_F = P_C D_C + P_F D_F = V$$

Where, D_C *and* D_F are consumption of clothes and food, respectively. The above equation indicates that production and consumption must stay at the same isovalue line.

The economic option for one pint in the isovalue line depends on the consumers' preference. For our model in general, we make an easy and simplified supposition: Consumption decisions may be represented as if they were based on one representative individual's preference.

An individual preference may be graphically demonstrated as a indifference slopes series. One indifference slope is a representation of consumption of clothes C and food *F,* which maintain the individual equally in a good situation. These slopes have three proprieties:

1. They are steep down: if a individual has an offer of less than *F*, than if he wants to be in an equally good situation, he got to receive more of *C*.

2. The more on the top and to the right side an indifference slope is, the higher is the satisfaction level: An individual will prefer more of both good for less.

3. The indifference slope will be straighter as we move to the right: The more of *C* and less of *F* is the individual's consumption the more valuable a unit of *F* will be, in the *T* unit margin comparison. So, more *C* will be supplied to compensate any reduction after *F*.

In the graph above we show an indifference slope series for an economy that has these 3 properties. The economy will make an option for the point in the isovalue line that has these 3 properties. The economy will choose to consume in a point over the isovalue line. This pint will be where the isovalue line is a tangent in relation to the higher indifference slope in D. In this point the economy will export clothes (the clothes quantity is higher than the consumption of clothes) and import food.

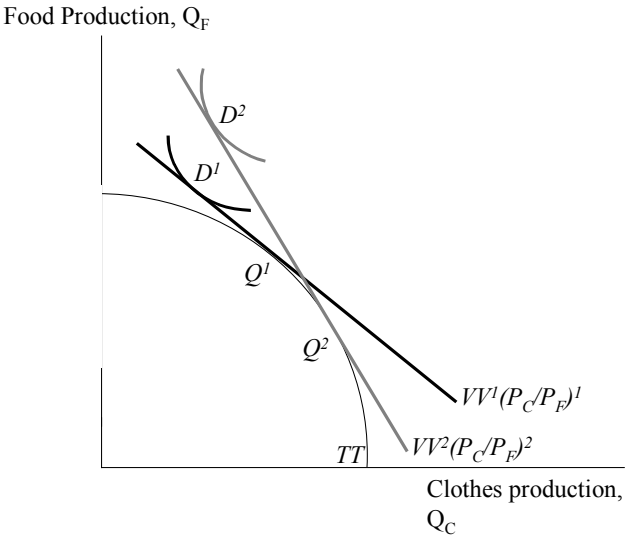
Now let's consider what happens when P_C/P_F increases. Firstly, the economy will produce more C and less F and will move the production from Q^1 to $Q^{2.}$. This will move the isovalue line; in which the consumption must be from VV^1 to VV^2. Finally, the consumption economy will also move from D^1 to $D^{2.}$

The movement from D^1 to D^2 will affect two increases of $P_C/P_{F.}$ Firstly, the economy moved to a higher indifference slope: in a better situation, all because this economy is a clothes exporter. When the relative price of clothes increases, the economy may import more food for any given volume of exportation. Therefore, the higher relative price of your exportation good is an advantage. Secondly, the change in relative prices will result in a dislocation through the indifference slope in the direction of food, leaving clothes.

Both effects are familiar to the basic economy theory. The improvement of the welfare is a wealth effect; while the dislocation of consumption to any given welfare level is a substitution effect. The wealth effect will increase the consumption of both goods, while the substitution effect will move the economy to consume less *C* and more *F*.

In the beginning it is possible that the wealth effect is not so strong, that when P_C/P_F increases both goods consumption really increases. However the proportion of *C* consumption and *F* consumption will fall, which is to say that the relative supply of *C* will fall, as shown below:

Effects of an increase in clothes relative prices



The isovalue inclination is equal to clothes negative relative price P_C/P_F, therefore when the relative price increases, all isovalue lines will get a steeper. Particularly, the maximum value line will move from VV^1 to VV^2. The production will move from Q^1 to Q^2, consumption will also move from D^1 to D^2.

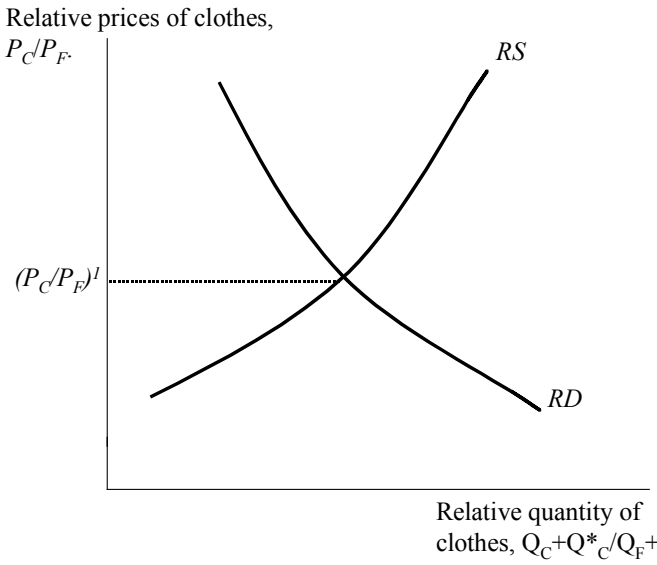
Determination of relative prices

Let's imagine that the global economy consist in two countries, with the same denomination, local (export clothes) and foreign (export food). The change terms of the local country are measured by P_C/P_F . Q_F and Q_C are quantity of clothes and food produced by the local economy: Q^*_F and Q^*_C are quantities produced abroad.

To determine P_C/P_F, we find the intersection of the worldwide relative supply of clothes and your worldwide relative demand. The worldwide relative supply *(RS)* has an inclination to the top, because a n increase in P_C/P_F will make both countries to produce more clothes and less food. The worldwide relative demand slope *(RD)* is inclined to the bottom because an increase in P_C/P_F will make both countries move the clothes consumption to the food consumption

direction. Below, it is possible to see the intersection of slopes (point 1), where the relative price equilibrium is defined ($P_C/P_F)^1$.

Worldwide relative supply and demand



The higher P_C/P_F *is,* the higher the world-wide clothes relative supply (RS) will be and the world-wide clothes demand will be smaller in relation to the food world-wide demand (RD). The relative equilibrium ($(P_C/P_F)^1$) is determined by the interSection of relative world-wide supply and demand.

Appendix 2.

Table A1 – Prices in USD – Period 1

ARG		Wine	Cheese	S. Flower Oil	Eggs	Honey	Meat	Energy	Telephone	Gas	Bulb	Fridge
Year	Month											
1990	MAR	0,30	5,29	0,89	1,65	0,45	1,51	5,29	0,06	1,46	2,12	163,65
1990	APR	0,44	4,44	1,29	1,67	0,49	1,07	8,18	0,06	1,34	3,08	238,13
1990	MAY	0,49	4,06	1,43	1,48	0,54	1,19	7,39	0,07	1,42	3,41	263,14
1990	JUN	0,53	3,75	1,54	1,31	0,59	1,14	6,47	0,06	1,24	3,67	283,53
1990	JUL	0,59	3,43	1,73	1,36	0,64	1,07	5,51	0,06	1,13	4,14	319,47
1990	AUG	0,58	3,70	1,70	2,21	0,70	1,05	7,05	0,06	1,22	4,05	313,00
1990	SEP	0,70	3,61	2,03	1,45	0,77	1,40	4,96	0,06	1,19	4,85	374,85
1990	OCT	0,84	2,97	2,44	1,19	0,84	1,14	4,62	0,06	1,06	5,83	450,46
1990	NOV	0,95	2,97	2,78	0,84	0,92	0,97	3,98	0,09	1,15	6,64	513,00
1990	DEC	1,04	2,38	3,05	0,63	1,00	0,67	3,66	0,08	0,95	7,28	562,28
1991	JAN	0,86	2,50	2,52	0,81	0,64	0,77	0,81	0,12	0,91	6,01	464,13
1991	FEB	0,64	2,73	1,88	0,88	0,69	0,98	1,08	0,13	1,00	4,48	345,70
BRAZIL												
1990	MAR	1,04	10,46	0,36	1,38	0,41	2,96	11,49	0,11	2,72	0,65	196,38
1990	APR	0,95	10,00	0,39	1,20	0,45	2,36	15,46	0,13	2,80	0,77	285,76
1990	MAY	0,98	7,98	0,43	1,10	0,49	2,32	14,35	0,13	2,60	0,79	315,77
1990	JUN	1,16	7,77	0,47	1,02	0,54	2,34	12,98	0,13	2,35	0,81	340,23
1990	JUL	1,10	7,10	0,51	1,13	0,59	2,18	11,48	0,13	2,08	0,79	383,37
1990	AUG	1,16	7,70	0,56	1,36	0,65	2,15	11,05	0,13	2,25	0,79	375,60
1990	SEP	1,04	7,59	0,61	1,14	0,71	2,94	9,41	0,13	2,19	0,79	449,82
1990	OCT	0,87	6,52	0,67	0,88	0,77	2,49	8,07	0,14	1,98	0,74	540,55
1990	NOV	0,70	5,56	0,73	0,61	0,85	1,79	6,52	0,16	1,86	0,62	615,60
1990	DEC	0,61	5,14	0,80	0,54	0,92	1,39	6,66	0,19	1,66	0,56	674,74
1991	JAN	0,55	4,77	0,51	0,64	0,59	1,44	0,60	0,23	1,51	0,53	556,96
1991	FEB	0,60	5,23	0,55	0,72	0,64	1,86	1,11	0,26	1,68	0,56	414,84
PARAGUAY												
1990	MAR	0,86	11,81	0,37	1,15	0,24	3,34	9,54	0,13	3,07	0,54	114,55
1990	APR	1,10	8,60	0,48	1,38	0,26	2,03	17,78	0,11	2,41	0,89	166,69
1990	MAY	1,05	8,94	0,53	1,18	0,29	2,59	15,35	0,15	2,91	0,85	184,20
1990	JUN	1,13	7,77	0,58	0,99	0,32	2,34	12,59	0,13	2,35	0,79	198,47
1990	JUL	0,94	7,03	0,64	0,96	0,34	2,16	9,76	0,13	2,06	0,67	223,63
1990	AUG	1,73	7,54	0,66	2,04	0,38	2,11	16,58	0,13	2,21	1,19	219,10
1990	SEP	1,00	7,21	0,76	1,10	0,41	2,79	9,03	0,13	2,08	0,76	262,39
1990	OCT	0,93	5,48	0,88	0,94	0,45	2,09	8,63	0,11	1,67	0,79	315,32
1990	NOV	0,77	6,34	0,99	0,67	0,49	2,04	7,17	0,18	2,12	0,68	359,10
1990	DEC	0,49	4,16	1,08	0,43	0,54	1,13	5,33	0,15	1,34	0,45	393,60
1991	JAN	0,51	5,39	0,82	0,60	0,34	1,63	0,55	0,26	1,70	0,49	324,89
1991	FEB	0,54	5,86	0,69	0,64	0,37	2,09	0,99	0,29	1,88	0,50	241,99
JRUGUAY												
1990	MAR	0,37	0,40	0,36	0,89	0,34	0,16	1,65	0,01	0,48	0,77	212,74
1990	APR	0,40	0,44	0,39	0,90	0,38	0,18	1,80	0,01	0,52	1,11	309,57
1990	MAY	0,44	0,48	0,43	0,80	0,41	0,19	1,97	0,01	0,57	1,18	342,08
1990	JUN	0,48	0,53	0,47	0,70	0,45	0,21	2,15	0,01	0,62	1,23	368,58
1990	JUL	0,52	0,58	0,51	0,73	0,49	0,23	2,36	0,01	0,68	1,31	415,32
1990	AUG	0,57	0,63	0,56	1,19	0,54	0,25	2,58	0,01	0,74	1,41	406,90
1990	SEP	0,63	0,69	0,61	0,78	0,59	0,27	2,82	0,02	0,81	1,49	487,30
1990	OCT	0,68	0,75	0,67	0,64	0,64	0,30	3,08	0,02	0,89	1,72	585,59
1990	NOV	0,75	0,83	0,73	0,45	0,70	0,33	3,37	0,02	0,97	1,85	666,89
1990	DEC	0,82	0,90	0,80	0,34	0,77	0,36	3,68	0,02	1,06	1,94	730,96
1991	JAN	0,52	0,57	0,51	0,44	0,49	0,23	2,34	0,01	0,68	1,64	603,37
1991	FEB	0,56	0,62	0,55	0,48	0,53	0,25	2,54	0,01	0,73	1,29	449,42

ARG		Hotel	Chicken	Orange	Tooth Paste	Shampoo	Chocolate	Soap	Fabric	Paper	Towel P.	Coffe
Year	Month											
1990	MAR	42,90	1,53	0,19	0,41	0,09	1,09	0,08	0,13	1,14	0,28	0,69
1990	APR	49,84	2,22	0,23	0,60	0,13	1,59	0,12	0,14	1,26	0,41	0,59
1990	MAY	56,92	2,46	0,20	0,67	0,15	1,75	0,13	0,15	1,06	0,45	0,63
1990	JUN	39,85	2,65	0,16	0,72	0,16	1,89	0,14	0,17	1,05	0,49	0,56
1990	JUL	37,60	2,98	0,14	0,81	0,18	2,13	0,16	0,18	1,14	0,55	0,51
1990	AUG	36,81	2,92	0,19	0,79	0,18	2,08	0,15	0,20	1,17	0,54	0,50
1990	SEP	32,32	3,50	0,15	0,95	0,21	2,50	0,18	0,22	1,13	0,65	0,48
1990	OCT	33,78	4,21	0,14	1,14	0,25	3,00	0,22	0,24	1,00	0,78	0,44
1990	NOV	30,65	4,79	0,13	1,30	0,29	3,42	0,25	0,26	0,83	0,88	0,46
1990	DEC	33,02	5,25	0,11	1,43	0,32	3,74	0,28	0,29	0,98	0,97	0,39
1991	JAN	24,36	4,33	0,12	1,18	0,26	3,09	0,23	0,18	0,82	0,80	0,38
1991	FEB	28,69	3,23	0,15	0,88	0,19	2,30	0,17	0,20	0,93	0,60	0,45
BRAZIL												
1990	MAR	35,75	2,09	0,43	0,62	0,91	0,69	0,25	3,13	0,95	1,04	1,26
1990	APR	41,53	1,65	0,44	0,57	0,81	0,66	0,25	2,78	1,05	0,93	1,19
1990	MAY	47,43	1,55	0,40	0,55	0,74	0,61	0,22	2,75	0,88	0,85	1,13
1990	JUN	33,21	1,52	0,32	0,52	0,71	0,59	0,26	3,90	0,88	0,78	1,02
1990	JUL	31,34	1,92	0,29	0,47	0,69	0,56	0,30	0,52	0,95	0,71	0,91
1990	AUG	30,68	2,08	0,31	0,54	0,70	0,61	0,31	3,55	0,98	0,79	0,87
1990	SEP	26,93	2,41	0,30	0,54	0,62	0,59	0,34	3,78	0,94	0,78	0,81
1990	OCT	28,15	1,95	0,27	0,51	0,50	0,51	0,31	3,58	0,84	0,71	0,75
1990	NOV	25,54	1,27	0,24	0,45	0,42	0,46	0,25	2,27	0,69	0,65	0,66
1990	DEC	27,52	1,12	0,21	0,43	0,38	0,43	0,21	2,05	0,82	0,62	0,58
1991	JAN	20,30	1,25	0,25	0,49	0,40	0,45	0,24	1,71	0,68	0,80	0,58
1991	FEB	23,91	1,40	0,31	0,54	0,44	0,54	0,27	1,72	0,78	0,81	0,71
PARAGUAY												
1990	MAR	25,02	2,36	0,35	0,70	0,75	0,78	0,20	3,53	0,95	0,86	1,42
1990	APR	29,07	1,42	0,50	0,49	0,94	0,57	0,29	2,39	1,05	1,07	1,03
1990	MAY	33,20	1,74	0,42	0,62	0,79	0,69	0,24	3,08	0,88	0,91	1,26
1990	JUN	23,25	1,52	0,31	0,52	0,69	0,59	0,25	3,90	0,88	0,75	1,02
1990	JUL	21,93	1,90	0,25	0,47	0,59	0,55	0,25	0,51	0,95	0,60	0,90
1990	AUG	21,47	2,04	0,47	0,53	1,05	0,60	0,47	3,47	0,98	1,18	0,85
1990	SEP	18,85	2,29	0,29	0,52	0,60	0,56	0,33	3,59	0,94	0,75	0,77
1990	OCT	19,71	1,64	0,29	0,43	0,54	0,43	0,34	3,01	0,84	0,76	0,63
1990	NOV	17,88	1,44	0,26	0,52	0,46	0,52	0,27	2,58	0,69	0,72	0,75
1990	DEC	19,26	0,90	0,17	0,35	0,31	0,35	0,17	1,66	0,82	0,49	0,47
1991	JAN	14,21	1,41	0,23	0,56	0,37	0,51	0,23	1,94	0,68	0,74	0,66
1991	FEB	16,74	1,57	0,27	0,60	0,39	0,60	0,24	1,93	0,78	0,72	0,79
JRUGUAY												
1990	MAR	46,47	0,11	0,03	0,15	0,37	0,13	0,10	0,13	1,23	0,09	0,27
1990	APR	53,99	0,12	0,04	0,16	0,40	0,14	0,11	0,14	1,36	0,10	0,29
1990	MAY	61,66	0,13	0,04	0,18	0,44	0,15	0,12	0,15	1,15	0,11	0,32
1990	JUN	43,17	0,14	0,04	0,19	0,48	0,17	0,13	0,17	1,14	0,12	0,35
1990	JUL	40,74	0,16	0,05	0,21	0,52	0,18	0,15	0,18	1,24	0,13	0,38
1990	AUG	39,88	0,17	0,05	0,23	0,57	0,20	0,16	0,20	1,27	0,14	0,42
1990	SEP	35,01	0,19	0,06	0,25	0,63	0,22	0,18	0,22	1,22	0,15	0,46
1990	OCT	36,60	0,21	0,06	0,27	0,68	0,24	0,19	0,24	1,09	0,17	0,50
1990	NOV	33,21	0,23	0,07	0,30	0,75	0,26	0,21	0,26	0,90	0,18	0,55
1990	DEC	35,77	0,25	0,07	0,33	0,82	0,29	0,23	0,29	1,06	0,20	0,60
1991	JAN	26,39	0,16	0,05	0,21	0,52	0,18	0,15	0,18	0,89	0,13	0,38
1991	FEB	31,08	0,17	0,05	0,23	0,56	0,20	0,16	0,20	1,01	0,14	0,41