



FUNDAÇÃO
GETULIO VARGAS

EPGE

Escola de Pós-Graduação
em Economia

Ensaio Econômico

Escola de

Pós Graduação

em Economia

da Fundação

Getúlio Vargas

Nº 617

ISSN 0104-8910

Is China a Northern Partner to Mercosul?

Renato Galvão Flôres Junior, Masakazu Watanuki

Junho de 2006

Os artigos publicados são de inteira responsabilidade de seus autores. As opiniões neles emitidas não exprimem, necessariamente, o ponto de vista da Fundação Getulio Vargas.

Is China a Northern Partner to Mercosul ?

Abstract

We contrast Free Trade Areas involving Mercosul and the EU25, the US and China, respectively, using a new CGE model and associated database. Roughly, the China FTA lies halfway the other two, a bias towards the US pattern being suggested. When considering China a new Northern partner, protective deals don't seem advisable. China's advantages should prevail when facing the US or the EU: its need of capital goods, for instance, may open profitable cross-exchanges. China's emergence can be a positive factor, if placed in an enlarged policy space where, together with its Asian neighbours, it counter-balances the US-EU polarity.

JEL classification: D58, F12, F14, F15.

Key words: CGE models; free trade areas; China's emergence; Southern Cone.

Renato G. FLÔRES Jr.°

EPGE / Fundação Getulio Vargas, Rio de Janeiro

Masakazu WATANUKI

IADB / Integration Department, Washington, D.C.

* The authors are indebted to Robert Devlin, Martin Grandes and Paolo Giordano, as well as to participants at seminars and informal discussions in Rio (EPGE/FGV), Washington (INT+REG1/IADB) and Paris (American University); Maximiliano Parra and Augusto Stabilito provided invaluable research assistance. Though this paper is part of an IADB/FGV (EPGE) project for designing a comprehensive CGE model, they are solely responsible for the findings and analysis in the text, which in no case involve their institutions.

1. Introduction

The trade and development literature quite often states, in a somewhat definitive way, that South-South agreements shouldn't be pursued, given the limited welfare enhancing possibilities they offer. North-South free trade areas, on the contrary, are usually hailed as the right option for a southern bloc. In this paper we contrast three integration schemes involving Mercosul, namely Free Trade Areas (FTAs) with the EU25, the US and China.

Within the South American context, Mercosul stands as the main recent integration initiative. The bloc is progressively becoming a major player, eager for partners that would allow a fuller development of its production capabilities. The two first FTAs are clearly with a Northern partner, but show nearly opposite results, neither exactly desirable. The US one channels Mercosul's imports to the States, all other partners losing market share in the bloc; the latter has nearly the opposite effect, Mercosul drastically re-orienting its exports to the EU25, while increasing its import demand in most other markets.

It was expected that the third option – something that may perhaps come true sooner than imagined - would characterize a South-South agreement, given the status of both partners. Nevertheless, the Chinese option revealed, though in less intensity, patterns close to ones in the previous agreements, suggesting that the Eastern Dragon already shares, in the specific instances analysed here, properties akin to developed economies. In spite of a proviso on the quality of Chinese data, the results clearly signal that the Asian giant is already an important and serious partner, inducing a North-South pattern in such agreement

Our findings may be taken as adding to the uneasiness of those who at present suffer from 'fear of China'. The scarce academic literature on the China – South America economic relations usually emphasises the threat they represent to the debatable competitiveness of the latter economies, Lall, Weiss and Oikawa (2005) and Moreira (2004). We look at them from a more encompassing and somewhat different viewpoint, and try to go deeper into the results, extracting additional lessons on the potential role of China as a partner to Mercosul.

All the analyses were conducted using a brand new static CGE model, AMIDA – Analysing Mercosul's Integration Decisions and Agreements, to which is associated a notable database, particularly in relation to the Americas. We use the CGE tool one step

ahead, inferring weaknesses and advantages present whether the bloc faces the two Northern or the (supposedly) Southern partner. The way to do this is to systematically cross information along the three different FTAs. By assuming the formation of ideal, full FTAs and contrasting the three sets of results we are able to draw a broader picture, which goes beyond the usual gains & losses analysis of standard CGE applications. Moreover, the paper is perhaps the first attempt to incorporate China as a serious actor in CGE evaluations involving Mercosul.

The structure of the text is the following. Section 2 contains a few lines on methodological aspects related to the model and discusses data sources and decisions. It also presents the sectoral aggregation, the regions and the scenarios. Base year flows are surveyed in Section 3, where results are also commented. Section 4 tries to make a deeper assessment of the findings. Section 5 assesses the probable impact of some missing model features and then concludes.

2. Basic facts on the model and the database

2.1. Technical background

The model follows those developed in Flôres (1997, 2003), being a static, computable general equilibrium (CGE) structure in which strategic interaction takes place in certain sectors. Contrary to the common practice of introducing *ad hoc* “scale gains” in an otherwise perfect competition CGE¹, perfect and (explicitly) imperfect competition sectors co-exist in the model. This approach was fashioned in Gasiorek, Smith and Venables (1992) – drawing on a partial equilibrium formulation by Smith and Venables (1988) –, who used it to evaluate the impacts of the *Europe 92* initiative.

In general, due to the scale effects – enhanced in the larger markets created by the regional integrations –, welfare gains are higher than those produced by the perfect competition alternatives². However, in all FTAs examined here, country markets remain *segmented* as what is at stake is not the creation of a common market. The results are

¹ For a discussion of this topic, and the (usually) accompanying “dynamic elasticities” device, see, among others, Flôres (2000).

² See, for instance, Baldwin and Venables (1995).

driven by the joint effect of lowering trade barriers, production efficiency in the imperfect competition sectors and the internal search for equilibrium. Though the latter is common to all CGE structures, this overall combination may point to patterns unable to be unveiled by other models.

Handling the two kinds of competition in a single general equilibrium framework poses theoretical problems related to the existence and uniqueness of solutions, fully discussed, for instance, in Chapter 11 of Ginsburgh and Keyzer (1997). In our particular case, the specifications used guarantee the existence of a unique solution.

Flôres and Watanuki (2005) provide a detailed description of the model equations, carefully discussing their role and pros and cons. Calibration and data issues are also addressed in detail. Anyone interested in knowing in depth the workings of the model should resort to this Manual; in the remaining of this sub-section, we briefly outline some key points.

For each economy, in the demand side, there is a representative consumer with a Dixit-Stiglitz-Spence CES utility function in an Armington-like tree structure. In the production side, perfect competition sectors may work either under CES or Cobb-Douglas technologies, and intermediate inputs are treated – in all sectors - via a shortcut using the input-output (I-O) coefficients.

Firms in imperfect competition sectors are symmetric and play a Cournot-Nash strategy in each market/region. A key parameter is the perceived elasticity of demand in region i , for product j , manufactured in region i' , $e(i', i; j)$. If $\sigma(i; j)$ is the elasticity of substitution, in region i , between goods j from different origins and $s(i', i; j)$ is region's i' market share for product j , in region i , it is defined by the equation:

$$1/e(i', i; j) = 1/\sigma(i; j) + (1 - 1/\sigma(i; j)) s(i', i; j) \quad . \quad (1)$$

Wages are flexible, as labour is assumed mobile among sectors, but the (sector specific) capital allocation is kept constant; in equilibrium, different closures (even “disequilibrium” ones, like trade surpluses or deficits) can be easily applied. Total labour remains constant in each economy.

The structure of the model – by combining both standard and innovative features³ - allows portraying distinct levels of regional integration in a progressive scenario evaluation.

2.2. *The data set*

A notable Western Hemisphere Database, combining information from the UN, Eurostat, OECD, TRAINS, US Trade Representative, CEPAL, the World Bank, national statistical institutes and central banks, GTAP's latest database and the IDB was produced.

The base year refers to 2001, which seemed adapted to the regions and particular features of the model. We consider this a fairly ideal decision, as 2002 and 2003 were not very representative years for Brazil and, especially, Argentina, and much information for 2004 was still unavailable. As for China, it was already perceived as a major player, as papers like Young (2002) testify.

Production and demand structures received careful attention in the case of Mercosul. A key element relates to the I-O matrices for Brazil and Argentina: the 1996 and 2000 versions, respectively, were updated and inserted. Also, Armington elasticities came from special sources for these two countries. Capital remuneration rates were improved whenever possible.

The US, Mexican, AC, Japanese, Chinese and EU economic data were reasonably checked. Substitution elasticities were either picked from the literature – as a best, educated guess – or came directly from domestic sources.

Chinese data are always a source of debate, Young (2003), though we've relied on knowledge produced by IADB (2004). Hong Kong data are in a separate region⁴, and we've used the classical FOB/CIF convention for Chinese trade flows, contrary to what is advocated, for instance, by the US-China Business Council. As we work with the country as a whole, more serious problems with internal, domestic statistics, as discussed in Naughton (1999) or Poncet (2003), are avoided. However, these considerations do not invalidate the proviso that statistical data for China are probably among the least reliable ones in our database.

³ See, as mentioned before, Flôres and Watanuki (2005) for complete details.

⁴ Actually, with other nine “tigers”, in the region called Asia10 (see further, in the text).

Information on the complete protection structure is always debatable, even if one sticks to the case of tariffs. Preferential tariffs – especially those originating from trade agreements – are usually poorly depicted. They were thoroughly reviewed in cases like Mercosul, the US and the EU. Given the importance of the last two regions, improvements on their protection structure were made with the aid of data from the United States International Trade Commission – USITC website and EUROSTAT and Messerlin (2001), respectively.

Data from INTAL, ALADI and recent studies conducted by IPEA in Brazil were also useful complementary sources. At the level of detail of the present study, many nuances and, sometimes, important tariff peaks either disappear or are smoothed out when aggregated to produce a single figure for the sector. Nevertheless, the fact that the protection structure was computed bottom-up, easily allows translating any detailed (8-digits) concession/restriction to the aggregation level of the model.

Beyond tariffs, Flôres (1997, 2003) and Gasiorsek, Smith and Venables (1992) assumed the existence of additional trade costs which can be associated to a variety of factors, impairing or raising the cost of trade between countries, like transportation, bureaucracy, distribution margins, etc. Real FTAs zero the tariffs and reduce, without necessarily eliminating, these latter costs. We estimated gross transport margins with the aid of COMTRADE, minimising discrepancies with official statistics. In most bilateral flows they amount to less than 10 per cent, though there are significant differences at the sectoral level, due to inconsistencies and misreporting. They were then reduced, between the partners in each scenario, by 4 percentage points, at most, as trade facilitation. No evaluation was made of other trade costs.

2.3. *Sectors and Regions*

We aimed at an as comprehensive as possible world regionalisation and sectoral disaggregation. The economies were decomposed into twenty-five sectors distributed along six groups, namely⁵:

⁵ For the sectors, names between brackets are as they appear in the tables, in the next sections.

- I. Agriculture: Wheat, corn and other grains (Grains); Vegetables & fruits; Oilseeds & soybeans; Sugar; Coffee, rice & other crops (Coffee, rice & others); Animal products.
- II. Agribusiness (ab): Bovine meat (#); Poultry meat (#); Dairy products; Beverages & tobaccos (Bev. & tobacco) (#); Vegetable oils.
- III. Energy: Minerals; Energy products.
- IV. Light Manufactures: Textiles & apparel (Text. & apparel); Leather, wood & paper (Leather, wood, paper); Other light manufactures (Other light manufac.).
- V. Heavy Manufactures: Chemical and plastic products (Chemicals & plastics); Ferrous metals; Non-ferrous metals; Motor vehicles (#); Other transport equipment (Other transp. equip.) (#); Electric equipment; Machinery.
- VI. Services: Utilities & construction; Trade and services.

The first five groups comprise the 23 trade-in-goods sectors that will be the main focus of our analyses. Five out of them – those marked with a ‘#’ above – were modelled under imperfect competition (i.c.). These structures are better portrayed in the model regions related to Mercosul, the US, Japan and the EU25 (see below). Arguments can be raised on the choice of the i.c. sectors, *dairy products* qualifying at least as well as *bovine meat*, and *electric equipment* and *machinery* being other important candidates. Notwithstanding, data availability for properly characterising these more complex markets had to be a key factor in directing the present choice.

Decisions on the regions face a classical dilemma in CGE practice: due attention to the areas of concern (and those which affect them) together with care in not fragmenting too much the model, what, among other practical problems, may add distortions to its construction and operation. As our main objective lies in analysing the different scenarios *from a Mercosul perspective*, we divided the world into the following ten regions:

- 0. Mercosul
- 1. Mexico
- 2. the United States
- 3. the Andean Community – AC (Bolivia, Colombia, Ecuador, Peru and Venezuela)

4. the Rest of the Americas (or Western Hemisphere) – RoWH (comprising the remaining 23 potential FTAA countries)
5. the EU25 countries
6. Japan
7. China
8. the Asian 10 emerging economies - Asia10 (Hong Kong, Taiwan, South Korea, Singapore, Brunei, Indonesia, Malaysia, Phillipines, Thailand and Vietnam)
9. the Rest of the World - RoW.

As regards the quality of the data adaptation to these regions, the best ones seem, as mentioned, those for Mercosul, Mexico, the AC and the US, as well as the EU25 and Japan. The Rest of the Western Hemisphere is naturally a simplification, though it includes, beyond the whole Central America, countries like Canada and Chile. Equilibrium flows to the Rest of the World may also be obtained by difference and econometric techniques. In this last region, are found countries that may be relevant for certain sectors, like Australia and New Zealand, or India. All the (former) New Tigers, beyond new emerging Asian economies, which are becoming competitive either in specific agricultural goods or in traditional sectors like textiles, are in Asia10.

Table 1 shows, for Mercosul, the values of the trade flows, for the twenty-three merchandise sectors, plus the services group. It is an essential tool for understanding the scope of the model and the true meaning of the results discussed here.

Insert Table 1 by here

2.4. *The scenarios*

Three scenarios, which will be called *basic*, were defined. Actually, their corresponding integration options may be translated into manifold ways as well as combined in multiple forms. However, in their basic formulation they suit the objectives of this paper. Indeed, our experiment consists in simulating three perfect FTAs: two will have a “Northern character” and the third, with China, is exactly the one we want to check

whether it presents features common to the other two. The three agreements to be discussed are:

Scenario A. The first clearly North-South scenario: Mercosul closes a full FTA agreement with the US.

Scenario B. The second North-South one, with the EU25-Mercosul FTA fully implemented.

Scenario C. This scenario analyses the impact of Mercosul's free trade with China.

As full FTAs are implemented in all cases, a clearer cross evaluation of them can be pursued.

3. Analysis

3.1. A glimpse on the structure of the base year

Table 2 is a partial summary, for the three regions at stake, of information contained in Table 1. In spite of the lower volumes – and Mercosul's 131,7 m US\$ only trade surplus - one sees that China roughly follows the pattern of the two other regions, notably as regards a positive performance in Heavy Manufactures trade, the main imprint of a North-South relation. It is also the only of the three to present a surplus in Light Manufactures trade.

Insert Table 2 by here

It is interesting to notice the modest surpluses Mercosul enjoys in the Agribusiness group, either with China or the US, relatively to the EU25. Table 3, where the relative exports and imports profiles of the three regions are displayed, enhances this perception. Both in exports and imports – if one aggregates the two manufactures groups – the Chinese figures aren't much far from the EU ones. As expected, the biggest *demandeur* – in relative terms - of Mercosul's Energy exports is China.

Insert Table 3 by here

3.2. *The North-South FTAs*

We concentrate initially on the impacts in the trade flows, displaying results as percentage changes from Table 1 entries, on *the Mercosul trade flows*. All figures should be basically evaluated in relation to each other, within and between tables, and not taken separately, as a precise single value for the changes. The importance of this sub-section is to identify situations – or rather sectors and regions – where a deeper insight on the consequences of the FTAs can be obtained. Detailed quantification of profits or losses should be made at a greater level of detail, ultimately with the aid of partial equilibrium models.

Tables 4 and 5 show the regional distribution of the increases, according to the five groups of sectors⁶. Both agreements present territorial externalities with however certain nuances. The US one seems to induce either advantages or efficiency gains in light and heavy manufactures sectors, where Mercosul is able to increase its exports to all other areas in the world. In the latter group, sensible increases take place in the three Asiatic regions – Japan, China and Asia10 –, the EU25 and the RoW. Nevertheless, the imports pattern is largely dominated by a very high penetration of the US flows, with, but for agricultural sectors, decreases in the other sources. Though these may be small, for the manufactures' groups figures are again more significant, particularly for Heavy Manufactures, exactly in the same five regions already mentioned. Very clearly, the agreement will provoke trade deviation, in these sectors, from Asia and the EU25 to US suppliers. A similar pattern, reasonably significant, also takes place with the energy group.

Increases in exports to the partner are usually more modest in scenario A than in B. This very often corresponds to lower absolute values. Manufacturing groups IV and V sell, to the US, under scenario A, extra values of 1,98 bn US\$ and 3,30 bn US\$, respectively, while the much higher European percentages under scenario B amount to 2,83 bn US\$ and 3,55 bn US\$, respectively: a sizeable difference in the first case.

⁶ Both can be complemented by other tables, showing the same information at the sector level. These, as well as any more detailed table, can be obtained from the authors.

Insert Tables 4 and 5 by here

The EU25 FTA pattern in Table 5 is nearly opposite to the one depicted in Table 4. The considerable rise in exports to the EU takes place at the expense of generalised decreases in all other regions, for every sector group but Heavy Manufactures, where only the Mexican and US flows – two neighbouring EU competitors - decrease. Imports, however, increase almost everywhere, exceptions being the Asian regions and Mexico in Light Manufactures, and all destinations in Heavy Manufactures, where there is a clear trade deviation in favour of the partner's exports. The US FTA forces a decrease in all Mercosul's imports, Agriculture excepted; though exports rise everywhere, but again in Agriculture.

Table 6 describes in detail the changes in trade flows under the two scenarios. Four out of the five highest increases for exports, in the EU25 case (B), are in commodities (2) and agribusiness (2) sectors, the other being *textiles & apparel*. In the US case, two heavy manufactures sectors appear, beyond one in the agribusiness – thanks largely to orange juice - and two traditional ones, *textiles* (again) included.

In a rough overall picture, the EU25 FTA favours demand for more traditional Mercosul's exports, while the US one promotes some higher value-added exports. Even so, there are sensible increases in Mercosul's exports of *non-ferrous metals* and *machinery* to the EU, for instance.

Insert Table 6 by here

The protectionist European CAP - Common Agricultural Policy shows itself indirectly in the significant increases in bovine and poultry meat; US figures in the agribusiness sectors being more modest. However, the EU25 remains competitive in this area and, either due to this, or to compensate the demand surge in the EU, or both, changes in Mercosul's imports of agricultural commodities and agribusiness are, but for two exceptions (*grains* and *bovine meat*), considerably higher in the EU25 FTA. Indeed,

this is also valid for most of the remaining sectors, only exceptions being *other transport equipment* and *electric equipment*.

At the bottom of the Table, the value of the correlation coefficients between each two corresponding vectors is displayed (not including services). Given the very high increase in *bovine meat* exports in Scenario B, the coefficients, for exports, were computed with and without this sector. There is no (linear) relation between the two exports patterns, while the imports ones show a certain degree of common behaviour.

The combination of all results suggests a few things. First, both FTAs with a Northern bloc will enhance Mercosul's competitiveness in Heavy Manufactures, very likely at the cost of inducing a considerable (though needed) readjustment in this group of sectors. Second, regionally induced patterns may vary significantly: while Scenario A transforms the US into the major Mercosul supplier, in spite of probably also turning the Southern Cone into a more competitive bloc, Scenario B strongly channels Mercosul exports to the EU, in such a way that it is impelled to demand more goods from all other regions. Clearly, this signals to the more distorting EU protection structure, but also warns on the higher US dependency the sole completion of Scenario A may entail. Both situations seem, in principle, undesirable.

3.3. *The Mercosul-China FTA*

Following the same caveats in the beginning of the previous subsection, we now look at the Mercosul-China FTA. Table 7, displaying, by sector groups, the regional changes induced, is a companion to Tables 4 and 5. Table 8 gives more detailed information on the total and Chinese flows, and pairs with Table 6.

Comparing Table 7 with Table 5, we see that, qualitatively, its pattern is very similar to the one generated by the Mercosul-EU25 FTA. The apparent difference, in exports, lies in group V. The well acknowledged Chinese *voracity* for capital goods reveals itself in the enormous five times increase in Mercosul's exports, leaving no room to satisfy the nearby demands. Exports now suffer a deviation in the two Asian and RoW regions, being not affected in the remaining of the globe. But Japan and Asia10 are – like Mexico and the US in the EU25 FTA – two “neighbouring” competitors of China, for Mercosul's group V exports. This suggests that closer associations with the Middle Empire should be jointly pursued with others involving economies in these two competing regions, where significant intra-industrial trade with

China takes place, Ahearne et al. (2003). Such a strategy would probably reduce likely trade deviations, opening novel, sometimes compensatory, opportunities.

In the case of imports, the similarity is a little less, all regions, as regards group IV, being now affected. China reaps traditional sources of light manufactures in the Western Hemisphere – the US, the Andean Community and the Rest of the WH – that the EU25 was unable to eliminate. But the more surprising issue lies in Heavy Manufactures where, though the deviations are relatively modest, China becomes the sole Mercosul supplier to considerably increase its exports, *exactly as happens in the FTAs with the EU and the US*.

Insert Table 7 by here

If, in the regionally induced pattern, affinities took place with scenario B, then the opposite is expected to manifest with the US. Indeed, in exports, as seen, the US doesn't exclude other destinations (but in Agriculture), while, in imports, it wipes out competitors in a much more pervasive way than China does.

Table 8 shows that, in general, though the figures for the 'China flows' are usually high to very high, the impact on the total flows is small. As regards exports, the latter don't exhibit either the spectacular surges in the EU25 case or – with two exceptions, *textiles & apparel* and *motor vehicles* - the more modest but even so steady US increases.

Insert Table 8 by here

In terms of the overall induced exports pattern, the Chinese effect is now closer to the US one, giving rise to a maybe "more natural" Heckscher-Ohlin effect, less distorted by the huge increases in Agriculture and Agribusiness sectors that are triggered by the EU25 FTA. Whether this comparative-advantage-based pattern will be a growth inducing one, or will evolve into a vertical intra-industry relationship, with the upper goods coming from the East, is something to be closely checked. What looks

perhaps worrying is that, in the China FTA, many indications of contraction appear for total exports in exactly the very same two groups. This suggests a stronger than expected rearrangement of Mercosul's economy caused by the around 132 per cent total increase in its trade relations with China.

4. A broader view

4.1. Labour, output and welfare

Changes in trade flows have not a clear, unidirectional relation with what happens to labour, output and, most importantly, welfare. We first concentrate on a synthetic evaluation of the three scenarios from these standpoints.

We remind that labour is kept constant in each economy/region, sectoral values being reallocated in each scenario. Given this, and the logic of the model, in general, changes induced on labour and output have the same direction. As a consequence, dividing the respective changes by sector, in order to evaluate the variations in gross labour productivity for each agreement, results not very informative. The constant total labour closure enhances the absolute value of the related changes, so that, nearly uniformly, productivity *decreases* for a sector where output expands, and *increases* for those that suffer a contraction. Though this can make sense, the fact that it is a consequence of the mechanics of the model makes the productivity analysis less realistic.

Table 9 shows the different correlation coefficients between the 23 (sectoral) changes, both in manufactures' labour and output, for each pair of scenarios, as well as simple summary statistics. In the case of labour, the China-EU25 figure is somewhat close to the US-EU25 one; the same happening, in a clearer way, with output, though now in absolute values. This makes for mixed evidence on how close the Chinese impacts are to the other two sets. Reminding the comparatively low values obtained in Table 6⁷ for the changes due to the US and EU scenarios, the correlation approach becomes even less conclusive.

It is worth noticing the much greater dispersion of output changes, though its averages are considerably lower than those for labour; something due, again, to the fact

⁷ With respect to those in Table 8.

that the former aren't constrained. If the coefficient of variation is taken as a rough measure of the amount of adjustment implied by the FTA, the US one ranks top, with a 26,7 coefficient, while China has the more modest value, equal to 7,6.

Insert Table 9 by here

Table 10 tries to shed more light on the previous results by showing the full set of output changes. The Mercosul-EU25 agreement induces a more worrying contraction on the heavy manufacturing sectors *motor vehicles*, *other transport equipment* and *machinery*, what, for the two last ones, also happens with the US agreement, though with less intensity. This might be due to the major unleashing of agribusiness exports to the EU distorting somewhat the results. Moreover, given the more traditional sides of the European economy, there is less scope for Mercosul manufactures in that market, the reverse taking place.

Insert Table 10 by here

Notable increases, in the case of the EU25, are the expected ones: *bovine* and *poultry meat*; the remaining ones are modest, never surpassing 4 per cent, what applies uniformly for the US. A notable contraction takes place in *other light manufactures* for China, at the same time that a surge takes place in *motor vehicles*.

Another single figure of merit is provided by Table 11, which ranks the options with respect to two welfare measures. In terms of real GDP variation, China surpasses the US, though still far from the EU25 results. If the finer, equivalent variation (EV) is used, though still a competitive option, it moves to the lowest position. This means that China, if on one hand seems to induce, via its FTA with Mercosul, a trade flows pattern similar to that created by the EU25 one, on the other hand, in welfare gains, it is already competing with a US-Mercosul FTA; an assertion that will be better qualified in the next subsection.

Welfare results – both in plain real GDP variation and in *equivalent variation* (EV) – are however surprisingly low, for a model including imperfect competition. The explanation probably lies on the fact that a substantial part of the gains, in all three agreements, derive from the perfect competition sectors, those in strategic interaction many times suffering a contraction.

Insert Table 11 by here

4.2. *Is China a Northern partner ?*

Considering the signs of the changes, an additional way of assessing how close the China profile in Table 10⁸ is to the other two is to count the number of full coincidences and oppositions, plus that when China matches only one of them. There are 11 coincidences and 8 oppositions, meaning that the US and EU25 changes move in the same direction (“as China”) in 19 sectors. In 3 out of the 4 remaining sectors, the sign of the Chinese change matches that of the US. Overall, for 14 sectors, the China impact is qualitatively equal to the US one, the same occurring for 12 ones, in the case of the EU25.

Neglecting variations less than 1 per cent, a deeper insight can be obtained. Only four figures remain for China, while four pairs related to the other FTAs disappear. These four remaining sectors are telling. In *textiles and apparel* China is responsible for the only sizeable output increase. Increases are also present in *motor vehicles* and *other transport equipment*, where now it acts as a counterpoint to significant (specially in the EU25 case) decreases in the other two FTAs. On the other hand, in *other light manufactures* the contraction is much more sweeping than those provoked by the US and the EU.

Summing up, a FTA with China doesn’t interfere in the fate of 11 sectors that could be defined as winning (positive changes, higher than 1 per cent), nor in that of five losers (negative changes, higher than 1 per cent) when considering the Northern agreements⁹. It does “save” two Heavy Manufactures sectors and provides both a better

⁸ Only for manufactures.

⁹ It doesn’t interfere either in three other sectors, where changes were thoroughly negligible.

and an even worse fate to other two, in the Light Manufactures group. This explains both the low correlation with the US and the negative one with the EU25 in Table 8.

Mercosul, in the Northern integrations, suffers contractions in *beverages and tobaccos, energy products, chemicals and plastics, non-ferrous metals, motor vehicles, other transport equipment, machinery and other light manufactures*; with China, only in the last one a contraction takes place. The reverse is that no action takes place in the other winning sectors, as mentioned above. This must however be qualified, as six out of these sectors own their classification to only one FTA result. Indeed, all are in the Agriculture and Agribusiness groups, and the FTA is the EU25 one, which presents perhaps a more peculiar result, driven by the opening of the CAP-protected market¹⁰.

Despite the proviso that the aggregation level of the sectoral division blurs a mix of positive and negative situations, the above synthesis looks quite reasonable in terms of framing more clearly the role of China, as of in 2001. Even conceding that such base year plays in favour of Mercosul, as regards trade with China, the picture just described undeniably places the Asian giant as an interesting alternative – or rather complement -, with a Northern touch, to the two developed partners the bloc usually considers.

Unfortunately, it also lays bare a key deficiency of the bloc, which is really competitive in a few classical manufactures sectors and selected segments of the agribusiness (plus sugar): lower value-added activities. All its non-competitive areas comprise key industrial sectors.

Table 12, showing the pattern *induced* on Mercosul flows by the China FTA, complements the analysis. The striking feature revealed by the Table is that the induced profiles – both for exports and imports - move closer to those displayed in Table 3 by the US. This is evident for the two manufactures groups, a bit less for the three other groups, due to the still considerable weight of the agriculture-agribusiness complex.

China will certainly continue to be an important customer of Mercosul's agricultural commodities and a selective importer in Agribusiness and Energy. However, action – under free trade – will move to higher value-added products. Mercosul still runs a modest trade surplus, but the combined deficit in manufactures increases by 16,9 per cent. If the internal fragmentation identified by Poncet (2005), coupled to impending macroeconomic and systemic financial crises, does not progress

¹⁰ As mentioned in section 3.2 .

in a negative direction, the patterns here obtained are then likely to display a more radical ‘dominating supplier’ relation as the one in Scenario A, with the US.

5. Conclusions.

Our study focussed mainly on market access for goods. The dynamics of other crucial concessions – like, for instance, those regarding foreign direct investment – may greatly affect the results here discussed. Moreover, better treatment of the services sector seems mandatory.

Another missing issue is rules of origin (RoO). Since at least Hoekman (1993), specialists have been emphasizing the role played by RoO in concessions and preferential agreements, like the Generalised System of Preferences or the North America Free Trade Agreement (NAFTA). Nevertheless, adequate treatment of RoO in the CGE framework is only beginning, and in fairly debatable ways. The IADB has been making efforts to develop a system that may allow an easier and more systematic way of treating these questions, something to be incorporated in later versions of the model¹¹. Probably not for China, but for the other two FTAs this may have an impact on the results.

Finally, in terms of issues not covered, the WTO dimension will certainly add further disturbances. In sectors where Mercosul will undoubtedly reap gains in almost any scenario, like *leather, wood, paper* or even agriculture in general, multilateral liberalisation will have an impact on these very gains, by enhancing the market access of other competitors, not only underdeveloped ones, but the likes of India or other Asiatic countries, not forgetting the US and, of course, China itself. We conjecture that this will enhance the predominance of manufactures in all post-FTA flows.

In qualitative terms, being a less competitive economy, Mercosul, when facing FTA’s with the US or the EU, was able to accrue profits in its performing traditional sectors, where, to its competitive advantages, must be added the richness of related natural endowments. In the more modern sectors the situation was not very clear. In general, a contraction will take place, imports will raise and, rather than from a competitiveness effect – which would set the sector in better shape for surviving in the

¹¹ See Bouët et al. (2003) for one approach within the CGE context, and Garay and Cornejo (2002), as one of the documents related to the IADB efforts.

world arena – welfare gains in the imperfect competition sectors seem mostly due to the sheer reduction in tariffs. This pattern is reasonably serious in scenario A, but also arises when the US is discarded for the EU25.

The broad finding above re-emerges, even if in more modest terms, when a FTA is formed with China. Such agreement puts the relationship between the two regions roughly halfway those Mercosul entertained with the two Northern economies, a bias towards the US pattern being suggested. On the one hand, given that the Middle Empire is still a reasonable importer of agricultural goods – though not much, at least yet, of agribusiness ones – the regional re-arrangements it produces are closer to those effected by the EU25 rather than the US. On the other hand, the *induced* trade patterns move closer to the ones with the US, signalling that a fully advanced industrial power is on the rise. With a difference however: it is also threatening in traditional, light manufactures.

The signs of China getting closer to the US and the EU25 - in terms of “after FTA” effects – only add to the certainty of its importance in the very near future, even in South America.

It is high time for Mercosul to take bold steps in its integration project and trade policy. As for the latter, it must decide whether, moved primarily by its internal forces, it will streamline and upgrade its exports profile, or let it at the mercy of distinct integration shocks.

We hope the first option will be pursued. In doing this, it must take into account China, as a new Northern partner. This may have several implications. Protective deals to (temporarily) secure positions in light manufactures sectors, as Central American economies did with the US through the recent CAFTA, don’t seem much advisable. Rather, China’s *advantages* should be evaluated as when facing the US or the EU. Its need of capital goods, for instance, may open opportunities of profitable cross-exchanges in heavy manufactures.

Strategic, rather than protective associations, should also be searched in an enlarged policy space where to the US - EU polarity China, *together with its dynamic Asian neighbours*, would be counter-posed. Contrary to the usually pessimistic views, China’s emergence can be a positive challenge to the Southern Cone.

References

- Ahearne, A. G., Fernald, J. G., Lougani, P. and Schindler, J. W. (2003). *China and Emerging Asia: Comrades or Competitors?* Working Paper n. 2003-27. Chicago: Federal Reserve Bank of Chicago.
- Baldwin, R. and Venables, A. J. (1995). Regional economic integration, in G. Grossman and K. Rogoff, eds., *Handbook of International Economics*, vol. III. Amsterdam: North-Holland.
- Bouët, A., D. Laborde, S. Tarascou and A. Yapaudjian-Thibaut. (2003). The costs of the FTAA for the European Union with and without an agreement with Mercosur, in A. G. A. Valladão, ed. *The Costs of Opting Out – The EU-Mercosur Agreement and the Free Trade Area of the Americas*. Paris: Presses de la Fondation Nationale de Sciences Politiques.
- Flôres, R. G., Jr. (1997). The gains from Mercosul: a general equilibrium, imperfect competition evaluation. *Journal of Policy Modeling* 19(1); 1-18.
- Flôres, R. G., Jr. (2000). Comment, in *Brazil, Mercosur and the Free Trade Area of the Americas*, vol.1. Brasília: Instituto de Pesquisa Econômica Aplicada – IPEA.
- Flôres, R. G., Jr. (2003). The case of Brazil: costs and opportunities of different scenarios, in A. G. A. Valladão, ed. *The Costs of Opting Out – The EU-Mercosur Agreement and the Free Trade Area of the Americas*. Paris: Presses de la Fondation Nationale de Sciences Politiques.
- Flôres, R. G., Jr. and M. Watanuki. (2005). The AMIDA Model – Technical Manual. Preliminary Version, processed. Washington, D. C.: Inter-American Development Bank.
- Garay, L. J. and Cornejo, R. (2002). *Metodologia para el Análisis de Régimenes de Origen: Aplicación en el Caso de las Américas*, INTAL-ITD-STA Working Paper 8. Washington, D. C.: Inter-American Development Bank.
- Gasiorek, M., Smith, A. and Venables, A. J. (1992). Completing the internal market in the EC: factor demands and comparative advantage, in L. A. Winters and A. J. Venables, eds., *European Integration: Trade and Industry*. Cambridge, UK: Cambridge University Press.
- Ginsburgh, V. and Keyzer, M. (1997). *The Structure of Applied General Equilibrium*. Cambridge, Mass.: The MIT Press.
- Hoekman, B. (1993). Rules of origin for goods and services – conceptual issues and economic considerations. *Journal of World Trade* 4; 81-99.
- IADB. (2004). *The Emergence of China. Opportunities and Challenges for Latin America and the Caribbean*. Cambridge, Mass.: Harvard University Press.
- Lall, S., Weiss, J. and Oikawa, H. (2005). China's competitive threat to Latin America: An analysis for 1990-2002. *Oxford Development Studies* 33(2); 163-94.
- Messerlin, P. (2001). *Measuring the Costs of Protection in Europe*. Washington, D.C.: Institute for International Economics.
- Moreira, M. M. (2004). *Fear of China: Is There a Future for Manufacturing in Latin America ?* Processed. Washington D. C.: Inter-American Development Bank.
- Naughton, B. (1999). *How much can regional integration do to unify China's markets ?* Conference for research on economic development and policy research. Stanford, Ca.: Stanford University.
- Poncet, S. (2003). Measuring Chinese domestic and international integration. *China Economic Review* 14(1); 1-21.
- Poncet, S. (2005). A fragmented China: measure and determinants of Chinese domestic market disintegration. *Review of International Economics* 13(3); 409-30.

- Smith, A. and A. J. Venables. (1988). Completing the internal market in the European Community: some industry simulations. *Eur. Economic Review* 32; 1501-25.
- Young, A. (2000). The razor's edge: distortions and incremental reform in the People's Republic of China. *Quarterly Journal of Economics* 115(4); 1091-136.
- Young, A. (2003). Gold into base metals: productivity growth in the People's Republic of China during the Reform Period. *Journal of Political Economy* 111(6); 1220-61.

Table 1: Mercosul: Trade flows – exports (fob) and imports (cif), 2001 -, by regions (10⁶ US\$).

1.A: Exports (to) [cont.]

SECTORS	REGIONS				
	Mexico	US	AC	RoWH	EU25
Grains	19,0	3,0	191,6	155,5	301,4
Vegetables & fruits	210,7	2,7	18,2	54,7	797,0
Oilseeds & soybeans	26,1	44,4	116,4	52,6	2.312,9
Sugar	105,6	-	6,0	107,7	24,4
Coffee, rice & others	464,6	37,6	47,0	112,9	1.441,3
Animal products	838,0	53,0	207,5	271,7	1.976,7
Bovine meat (ab)	39,5	2,6	14,7	215,7	547,8
Poultry meat (ab)	186,7	-	5,3	18,9	828,8
Dairy products (ab)	33,9	94,7	55,0	29,9	0,5
Bev. & tobacco (ab)	62,0	9,8	15,6	36,9	91,2
Vegetable oils (ab)	39,0	1,3	256,6	221,6	3.653,7
Minerals	556,7	72,9	87,4	228,2	1.857,8
Energy products	639,1	1,4	61,0	2.104,2	226,9
Text. & apparel	357,0	49,8	158,8	152,6	329,2
Leather, wood, paper	3.306,2	188,2	215,3	512,3	2.438,9
Other light manufac.	115,9	11,4	27,1	24,7	48,8
Chemicals & plastics	1.033,9	204,6	745,4	732,6	954,0
Ferrous metals	1.382,3	154,9	303,6	275,8	695,5
Non-ferrous metals	861,4	70,7	134,5	206,7	837,7
Motor vehicles	1.356,0	1.142,6	593,8	445,0	931,1
Other transp. equip.	2.430,4	9,7	25,1	44,1	707,2
Electric equipment	1.417,6	104,7	131,3	136,9	213,9
Machinery	1.387,2	283,2	578,3	519,3	793,2
(Services)	2.166,4	139,5	85,5	515,4	5.839,4
TOTAL	19.035,4	2.682,9	4.081,0	7.175,7	27.849,2

1.A: Exports (to) [end]

SECTORS	REGIONS				TOTAL
	Japan	China	Asia10	RoW	
Grains	134,6	2,5	207,1	1.112,2	2.127,0
Vegetables & fruits	1,4	-	10,2	88,7	1.183,6
Oilseeds & soybeans	171,3	1.496,7	286,5	308,6	4.815,4
Sugar	0,2	25,1	106,1	1.639,2	2.014,3
Coffee, rice & others	194,0	88,3	84,4	423,1	2.893,1
Animal products	299,2	56,3	179,6	526,6	4.408,7
Bovine meat (ab)	7,4	1,0	103,1	324,1	1.255,9
Poultry meat (ab)	177,8	6,2	206,5	731,1	2.161,2
Dairy products (ab)	1,9	-	4,4	40,2	260,6
Bev. & tobacco (ab)	43,9	0,4	9,6	28,6	298,0
Vegetable oils (ab)	31,1	21,5	638,9	2.285,3	7.149,0
Minerals	716,9	668,4	336,0	668,2	5.192,4
Energy products	-	27,3	-	168,8	3.228,6
Text. & apparel	40,6	126,2	17,8	66,2	1.298,2
Leather, wood, paper	240,3	387,0	580,2	371,1	8.239,6
Other light manufac.	16,6	1,4	7,8	20,7	274,4
Chemicals & plastics	107,4	78,4	159,3	357,4	4.373,2
Ferrous metals	113,2	116,3	429,8	385,5	3.857,1
Non-ferrous metals	385,3	24,3	52,5	379,7	2.952,8
Motor vehicles	9,3	130,0	31,7	332,4	4.972,0
Other transp. equip.	0,8	60,9	18,9	256,1	3.553,2
Electric equipment	19,1	25,6	40,2	36,0	2.125,2
Machinery	36,6	101,9	94,6	354,6	4.148,9
(Services)	837,2	205,6	1.552,5	2.159,8	13.501,3
TOTAL	3.586,0	3.651,3	5.157,9	13.064,5	86.283,8

1.B: Imports (from) [cont.]

SECTORS	REGIONS				
	Mexico	US	AC	RoWH	EU25
Grains	17,6	-	0,1	15,0	0,2
Vegetables & fruits	9,7	3,3	79,1	114,5	32,5
Oilseeds & soybeans	1,8	0,7	0,1	2,0	1,1
Sugar	-	-	-	-	-
Coffee, rice & others	38,4	0,7	13,3	13,6	48,7
Animal products	224,2	29,5	110,9	180,1	310,5
Bovine meat (ab)	4,9	-	-	2,3	3,7
Poultry meat (ab)	3,5	-	0,6	8,2	21,0
Dairy products (ab)	11,0	0,2	-	4,2	41,1
Bev. & tobacco (ab)	26,4	5,0	1,2	60,5	272,3
Vegetable oils (ab)	8,6	0,1	2,4	0,2	81,9
Minerals	166,9	21,1	105,3	298,6	381,5
Energy products	337,8	-	773,5	100,3	79,4
Text. & apparel	163,7	32,5	31,3	60,5	357,7
Leather, wood, paper	446,7	14,6	40,9	464,3	894,7
Other light manufac.	109,8	4,9	6,8	15,5	177,8
Chemicals & plastics	4.950,9	470,2	252,1	485,1	5.389,5
Ferrous metals	105,3	13,4	5,9	20,2	438,1
Non-ferrous metals	545,4	16,2	172,3	423,3	964,1
Motor vehicles	537,4	232,8	9,8	69,6	2.516,1
Other transp. equip.	2.075,4	0,7	-	92,1	951,9
Electric equipment	3.633,5	200,3	0,7	254,0	1.784,6
Machinery	5.211,3	147,8	58,3	292,8	7.367,9
(Services)	4.129,2	209,0	98,8	1.002,9	9.650,2
TOTAL	22.759,3	1.403,1	1.763,2	3.979,9	31.766,5

1.B: Imports (from) [end]

SECTORS	REGIONS				TOTAL
	Japan	China	Asia10	RoW	
Grains	-	-	-	0,7	33,4
Vegetables & fruits	-	10,5	3,3	28,2	281,2
Oilseeds & soybeans	-	0,1	-	1,1	6,9
Sugar	-	-	-	-	-
Coffee, rice & others	4,5	4,6	27,7	68,6	219,9
Animal products	5,8	21,4	53,2	257,3	1.192,9
Bovine meat (ab)	-	-	0,3	2,8	14,0
Poultry meat (ab)	0,2	-	-	0,4	33,8
Dairy products (ab)	-	-	-	21,0	77,5
Bev. & tobacco (ab)	0,4	0,1	0,8	42,7	409,3
Vegetable oils (ab)	0,1	-	33,4	11,8	138,4
Minerals	47,8	54,8	38,6	143,0	1.257,5
Energy products	42,6	185,6	27,4	2.399,6	3.946,1
Text. & apparel	18,4	302,7	597,2	368,0	1.932,0
Leather, wood, paper	23,6	177,0	149,3	117,4	2.328,5
Other light manufac.	33,6	295,7	100,5	37,2	781,9
Chemicals & plastics	532,5	550,4	805,6	2.582,7	16.018,9
Ferrous metals	68,6	23,0	59,4	186,5	920,4
Non-ferrous metals	143,8	117,0	111,5	263,0	2.756,6
Motor vehicles	847,5	8,2	301,7	307,7	4.830,8
Other transp. equip.	135,3	87,5	70,2	90,5	3.503,7
Electric equipment	807,1	644,8	2.110,5	735,9	10.171,5
Machinery	1.496,2	830,6	1.053,0	1.156,7	17.614,5
(Services)	699,7	297,4	2.614,2	2.948,1	21.649,5
TOTAL	4.907,6	3.611,4	8.157,8	11.770,8	90.119,6

Table 2: Mercosul's trade flows with the US, the EU25 and China – a few summary statistics: trade balance (X-M), by groups and total, and total trade volume (X+M), in million US\$.

GROUPS	REGIONS		
	US	EU25	China
Agriculture	1.372,3	6.460,7	1.632,3
Agribusiness	306,7	4.702,0	29,0
Energy	691,1	1.623,8	465,3
Light Manufactures	3.058,9	1.386,7	-260,8
Heavy Manufactures	-7.190,4	-14.279,6	-1.724,1
TOTAL BALANCE	-1.761,3	-106,4	131,7
TRADE VOLUME	35.498,9	44.126,2	6.759,7

Table 3: Mercosul's trade flows with the US, the EU25 and China – exports and imports profiles, by groups (in per cent).

GROUPS	REGIONS					
	US		EU25		China	
	X	M	X	M	X	M
Agriculture	9,9	1,6	31,1	1,8	48,4	1,1
Agribusiness	2,1	0,3	23,3	1,9	0,8	0,0
Energy	7,1	2,7	9,5	2,1	20,2	7,3
Light Manufactures	22,4	3,9	12,8	6,5	14,9	23,4
Heavy Manufactures	58,5	91,6	23,3	87,8	15,6	68,2

Table 4: Mercosul's FTA with the US (Scenario A): Trade flows changes by Regions and Groups of Sectors.

4A. Exports.

REGIONS	GROUPS				
	I	II	III	IV	V
US	56.92	60.67	21.24	52.44	33.39
Mexico	-1.67	0.50	0.62	0.57	7.16
Andean	-0.26	0.48	1.00	1.04	5.27
RoWH	-0.51	0.85	0.42	0.75	6.35
EU25	-1.64	0.71	2.18	1.32	8.96
Japan	-1.57	1.46	2.36	1.89	8.96
China	-0.93	1.01	2.46	2.39	10.77
Asia10	-0.57	0.88	2.33	1.00	7.81
RoW	-0.30	0.79	2.27	1.89	9.20

4B. Imports.

REGIONS	GROUPS				
	I	II	III	IV	V
US	175.50	192.49	54.44	141.28	64.45
Mexico	-0.56	-1.73	-2.74	-3.17	-9.06
Andean	0.39	-1.34	-1.58	-2.28	-7.55
RoWH	0.01	-1.76	-2.39	-0.95	-9.37
EU25	0.31	-1.59	-2.43	-2.23	-12.01
Japan	2.94	-1.69	-1.41	-5.21	-12.09
China	0.67	-1.30	-1.73	-5.06	-10.94
Asia10	2.02	-1.12	-1.54	-3.59	-9.26
RoW	0.90	-1.57	-1.52	-3.16	-9.20

Key to the Groups [(number of sectors)]: I – agriculture (6), II – agribusiness (5), III – energy (2), IV – light manufactures (3), V – heavy manufactures (7).

Table 5: Mercosul's FTA with the EU25 (Scenario B): Trade flows changes by Regions and Groups of Sectors.

5A. Exports.

REGIONS	GROUPS				
	I	II	III	IV	V
US	-17.08	-6.49	-3.51	-4.05	-2.09
México	-18.51	-2.75	-3.15	-2.84	-2.39
Andean	-21.89	-8.28	-5.45	-0.96	1.02
RoWH	-17.26	-5.71	-2.15	-3.05	1.52
EU25	79.72	144.99	54.04	100.41	69.21
Japan	-26.65	-5.72	-11.30	-7.99	3.36
China	-17.32	-16.08	-11.35	-8.14	3.75
Asia10	-21.28	-11.20	-11.89	-7.79	3.46
RoW	-17.19	-8.89	-11.71	-7.68	2.40

5B. Imports.

REGIONS	GROUPS				
	I	II	III	IV	V
US	57.04	10.19	5.02	0.28	-9.82
México	51.61	8.11	4.38	-0.34	-7.38
Andean	43.52	16.76	5.08	0.16	-6.89
RoWH	44.76	6.66	4.52	1.51	-8.04
EU25	312.61	201.38	86.58	117.17	73.11
Japan	66.33	9.35	2.18	-2.11	-10.72
China	49.09	8.21	5.12	-2.04	-8.97
Asia10	62.53	26.85	2.51	-0.78	-6.89
RoW	58.03	10.22	5.49	-0.41	-7.73

Key to the Groups [(number of sectors)]: I – agriculture (6), II – agribusiness (5), III – energy (2), IV – light manufactures (3), V – heavy manufactures (7).

Table 6: Mercosul's FTAs with the US and the EU25: Total trade flows changes (exports and imports) under each scenario.

SECTORS	The US FTA		The EU25 FTA	
	Exports	Imports	Exports	Imports
Grains	1.09	66.74	11.86	59.48
Vegetables & fruits	3.70	5.69	28.67	46.25
Oil seeds & soybeans	0.39	34.03	-5.26	62.06
Sugar	6.01	-	7.59	-
Coffee, rice & others	7.95	35.52	41.61	135.55
Animal products	7.81	33.57	40.98	123.91
Bovine meat (ab)	3.76	34.42	269.02	25.99
Poultry meat (ab)	4.36	6.70	81.55	60.92
Dairy products (ab)	13.02	32.65	0.33	114.67
Bev. & tobacco (ab)	25.71	10.67	10.23	118.95
Vegetable oils (ab)	0.70	13.62	24.32	198.44
Minerals	5.89	12.87	14.03	33.53
Energy products	2.04	0.80	-0.08	5.72
Text. & apparel	25.09	14.44	42.36	31.80
Leather, wood, paper	20.87	12.00	23.30	23.88
Other light manufac.	6.21	42.02	9.34	62.56
Chemicals & plastics	15.08	7.89	12.37	8.44
Ferrous metals	13.52	7.63	15.75	26.12
Non-ferrous metals	12.83	9.38	24.88	15.86
Motor vehicles	19.11	22.27	9.95	100.34
Other transp. equip.	26.05	41.32	4.42	25.21
Electric equipment	20.73	5.61	8.91	3.71
Machinery	16.35	11.61	18.26	15.76
(Services)	0.97	-1.10	-2.67	3.29
TOTAL	9.51	9.09	19.42	18.57

Correlation between the two patterns: i) Exports, -0.08 (without bovine meat), -0.21 (with bovine meat); ii) Imports, 0.27 .

Table 7: The Mercosul-China FTA: Trade flows changes by Regions and Groups of Sectors.

7A. Exports.

REGIONS	GROUPS					Total
	I	II	III	IV	V	
US	-1.43	-1.06	-0.19	-0.83	0.93	0.18
Mexico	-1.49	-0.54	-0.10	-0.53	1.57	1.06
Andean	-1.09	-0.60	-0.54	-0.01	0.40	0.02
RoWH	-1.21	-0.72	-0.26	-0.56	0.22	-0.27
EU25	-1.75	-0.66	-0.81	-1.64	0.20	-0.94
Japan	-2.07	-1.23	-0.80	-1.50	-1.48	-1.45
China	31.20	117.26	10.29	311.57	490.03	141.13
Asia10	-1.54	-0.85	-0.75	-1.90	-1.30	-1.29
RoW	-1.71	-0.73	-0.97	-1.49	-0.05	-1.02

7B. Imports.

REGIONS	GROUPS					Total
	I	II	III	IV	V	
US	2.32	1.35	0.44	-2.75	-0.86	-0.84
Mexico	1.81	1.45	-0.05	-2.75	-1.41	-1.34
Andean	1.31	1.15	0.63	-2.03	-0.15	-0.37
RoWH	1.29	1.48	0.22	-0.44	-0.49	-0.14
EU25	2.28	1.39	0.20	-2.29	-1.51	-1.40
Japan	3.95	1.43	0.06	-7.40	-1.97	-2.01
China	196.71	339.17	35.77	286.55	103.92	142.74
Asia10	3.35	0.99	0.05	-3.21	-1.18	-1.40
RoW	2.66	1.47	0.73	-2.50	-0.76	-0.27

Key to the Groups [(number of sectors)]: I – agriculture (6), II – agribusiness (5), III – energy (2), IV – light manufactures (3), V – heavy manufactures (7).

Table 8: The Mercosul-China FTA: Total and Chinese trade flows changes (exports and imports).

SECTORS	Total flows		Mercosul-China flows	
	Exports	Imports	Exports	Imports
Grains	-0,46	0,63	10,46	-
Vegetables & fruits	-0,01	5,56	-	154,81
Oil seeds & soybeans	-0,05	1,73	0,40	88,76
Sugar	3,23	8,80	427,89	-
Coffee, rice & others	3,61	6,09	264,23	140,81
Animal products	2,29	0,63	308,42	229,70
Bovine meat (ab)	-0,67	1,39	514,65	0,00
Poultry meat (ab)	-0,94	1,41	122,58	0,00
Dairy products (ab)	-0,82	1,61	0,00	0,00
Bev. & tobacco (ab)	-0,84	1,58	192,63	339,17
Vegetable oils (ab)	-0,18	0,91	95,92	0,00
Minerals	0,72	5,73	9,99	130,07
Energy products	-0,26	1,08	17,68	7,91
Text. & apparel	83,24	42,45	863,32	281,98
Leather, wood, paper	4,73	5,80	129,30	72,66
Other light manufac.	9,92	148,71	970,99	419,25
Chemicals & plastics	2,20	2,00	158,52	52,93
Ferrous metals	1,10	3,94	87,85	100,15
Non-ferrous metals	0,28	4,54	165,61	95,67
Motor vehicles	43,81	-3,47	1.551,86	462,18
Other transp. equip.	3,05	12,58	110,77	411,27
Electric equipment	3,27	1,62	233,41	35,33
Machinery	6,19	4,50	218,07	156,30
(Services)	-1,12	1,40	-1,64	1,62
TOTAL	5,04	4,84	133,09	131,12

Correlation between the two patterns: i) Exports, 0.62 (without motor vehicles), 0.69 (with motor vehicles); ii) Imports, 0.46 .

Table 9: Sectoral changes in labour and output in the three scenarios – correlations between the scenarios and summary statistics (figures in italic refer to *output changes*).

REGIONS	Correlation with			Average Change		Standard Deviation	
	US	EU25	China				
US	1	0,65	0,20	0,27	<i>0,07</i>	0,84	<i>1,82</i>
EU25	<i>0,44</i>	1	0,46	0,31	<i>0,76</i>	0,88	<i>8,46</i>
China	<i>0,14</i>	<i>-0,39</i>	1	1,16	<i>0,37</i>	3,67	<i>2,84</i>

Table 10: Total output changes (percentage from base values), for the three scenarios.

SECTORS	Base values	Scenarios		
		A	B	C
Grains	7,9	0,11	2,50	-0,13
Vegetables and Fruits	5,3	0,28	1,65	-0,17
Oilseeds & Soybeans	12,5	0,24	0,90	-0,10
Sugar	9,6	1,54	1,28	0,78
Coffee, Rice & Others	12,4	0,47	2,19	0,23
Animal Products	63,6	0,08	2,12	0,03
Bovine Meat	16,8	0,61	20,63	-0,01
Poultry Meat	7,0	1,67	23,06	-0,39
Dairy Products	16,3	0,10	-0,88	0,04
Bever. and Tobaccos	13,0	0,37	-4,28	-0,04
Vegetable Oils	15,1	0,26	8,56	-0,13
Minerals	25,8	0,21	0,39	-0,10
Energy Products	35,5	-0,03	-1,60	-0,23
Textiles & Apparel	26,2	0,64	0,02	1,52
Leather, Wood, Paper	45,2	3,81	3,31	0,55
Other Light Manufac.	15,8	-1,80	-2,71	-6,74
Chemical & Plastics	60,0	-1,14	-1,96	-0,10
Ferrous metals	20,8	2,32	-0,71	0,63
Non-ferrous Metals	27,0	-0,92	-2,11	-0,04

Motor Vehicles	23,6	0,60	-16,34	11,14
Other Transp. Equip.	15,7	-4,37	-13,81	2,58
Electric Equipment	13,6	1,08	0,60	0,16
Machinery	31,0	-4,56	-5,28	-0,92
Utilities & Construction	124,2	-0,85	-0,25	0,15
Trade and Services	641,9	0,10	-0,27	-0,06
Total	1286,0	-0,03	-0,21	0,17

* in billion US\$

Table 11: A few figures of merit: Welfare changes and total trade flows variations (percentage from base values (in US\$ bn)), for the three scenarios.

	Base Values	US	EU25	China
Real GDP	438,1	0,189	0,788	0.298
Welfare (EV)	75,7	0,377	0,482	0.257
Exports *	72,8	11,09	23,52	6,18
Imports *	68,5	12,31	23,40	5,93

* only merchandise trade

Table 12: Mercosul's trade flows induced by the China FTA – exports and imports profiles (in per cent) and trade balance (in million US\$), by groups.

GROUPS	China (induced)		Trade Balance
	X	M	X-M
Agriculture	26,4	1,4	2.081,0
Agribusiness	0,8	0,0	62,8
Energy	9,2	4,1	440,9
Light Manufactures	25,5	37,3	-879,4
Heavy Manufactures	38,2	57,3	-1.440,9
TOTAL	100	100	264,4

Últimos Ensaaios Econômicos da EPGE

- [593] Luiz Renato Regis de Oliveira Lima e Raquel Menezes Bezerra Sampaio. *The Asymmetric Behavior of the U.S. Public Debt..* Ensaaios Econômicos da EPGE 593, EPGE-FGV, Jul 2005.
- [594] Pedro Cavalcanti Gomes Ferreira, Roberto de Góes Ellery Junior, e Victor Gomes. *Produtividade Agregada Brasileira (1970–2000): declínio robusto e fraca recuperação.* Ensaaios Econômicos da EPGE 594, EPGE-FGV, Jul 2005.
- [595] Carlos Eugênio Ellery Lustosa da Costa e Lucas Jóver Maestri. *The Interaction Between Unemployment Insurance and Human Capital Policies.* Ensaaios Econômicos da EPGE 595, EPGE-FGV, Jul 2005.
- [596] Carlos Eugênio Ellery Lustosa da Costa. *Yet Another Reason to Tax Goods.* Ensaaios Econômicos da EPGE 596, EPGE-FGV, Jul 2005.
- [597] Marco Antonio Cesar Bonomo e Maria Cristina Trindade Terra. *Special Interests and Political Business Cycles.* Ensaaios Econômicos da EPGE 597, EPGE-FGV, Ago 2005.
- [598] Renato Galvão Flôres Junior. *Investimento Direto Estrangeiro no Mercosul: Uma Visão Geral.* Ensaaios Econômicos da EPGE 598, EPGE-FGV, Ago 2005.
- [599] Aloisio Pessoa de Araújo e Bruno Funchal. *Past and Future of the Bankruptcy Law in Brazil and Latin America.* Ensaaios Econômicos da EPGE 599, EPGE-FGV, Ago 2005.
- [600] Marco Antonio Cesar Bonomo e Carlos Carvalho. *Imperfectly Credible Disinflation under Endogenous Time-Dependent Pricing.* Ensaaios Econômicos da EPGE 600, EPGE-FGV, Ago 2005.
- [601] Pedro Cavalcanti Gomes Ferreira. *Sobre a Inexistente Relação entre Política Industrial e Comércio Exterior.* Ensaaios Econômicos da EPGE 601, EPGE-FGV, Set 2005.
- [602] Luiz Renato Regis de Oliveira Lima, Raquel Sampaio, e Wagner Gaglianone. *Limite de Endividamento e Sustentabilidade Fiscal no Brasil: Uma abordagem via modelo Quantílico Auto-Regressivo (QAR).* Ensaaios Econômicos da EPGE 602, EPGE-FGV, Out 2005.
- [603] Ricardo de Oliveira Cavalcanti e Ed Nosal. *Some Benefits of Cyclical Monetary Policy.* Ensaaios Econômicos da EPGE 603, EPGE-FGV, Out 2005.
- [604] Pedro Cavalcanti Gomes Ferreira e Leandro Gonçalves do Nascimento. *Welfare and Growth Effects of Alternative Fiscal Rules for Infrastructure Investment in Brazil.* Ensaaios Econômicos da EPGE 604, EPGE-FGV, Nov 2005.

- [605] João Victor Issler, Afonso Arinos de Mello Franco, e Osmani Teixeira de Carvalho Guillén. *The Welfare Cost of Macroeconomic Uncertainty in the Post-War Period*. Ensaios Econômicos da EPGE 605, EPGE-FGV, Dez 2005.
- [606] Marcelo Côrtes Neri, Luisa Carvalhaes, e Alessandra Pieroni. *Inclusão Digital e Redistribuição Privada*. Ensaios Econômicos da EPGE 606, EPGE-FGV, Dez 2005.
- [607] Marcelo Côrtes Neri e Rodrigo Leandro de Moura. *La institucionalidad del salario mínimo en Brasil*. Ensaios Econômicos da EPGE 607, EPGE-FGV, Dez 2005.
- [608] Marcelo Côrtes Neri e André Luiz Medrado. *Experimentando Microcrédito: Uma Análise do Impacto do CrediAMIGO sobre Acesso a Crédito*. Ensaios Econômicos da EPGE 608, EPGE-FGV, Dez 2005.
- [609] Samuel de Abreu Pessoa. *Perspectivas de Crescimento no Longo Prazo para o Brasil: Questões em Aberto*. Ensaios Econômicos da EPGE 609, EPGE-FGV, Jan 2006.
- [610] Renato Galvão Flôres Junior e Masakazu Watanuki. *Integration Options for Mercosul – An Investigation Using the AMIDA Model*. Ensaios Econômicos da EPGE 610, EPGE-FGV, Jan 2006.
- [611] Rubens Penha Cysne. *Income Inequality in a Job-Search Model With Heterogeneous Discount Factors (Revised Version, Forthcoming 2006, Revista Economia)*. Ensaios Econômicos da EPGE 611, EPGE-FGV, Jan 2006.
- [612] Rubens Penha Cysne. *An Intra-Household Approach to the Welfare Costs of Inflation (Revised Version, Forthcoming 2006, Estudos Econômicos)*. Ensaios Econômicos da EPGE 612, EPGE-FGV, Jan 2006.
- [613] Pedro Cavalcanti Gomes Ferreira e Carlos Hamilton Vasconcelos Araújo. *On the Economic and Fiscal Effects of Infrastructure Investment in Brazil*. Ensaios Econômicos da EPGE 613, EPGE-FGV, Mar 2006.
- [614] Aloisio Pessoa de Araújo, Mario R. Páscoa, e Juan Pablo Torres-Martínez. *Bubbles, Collateral and Monetary Equilibrium*. Ensaios Econômicos da EPGE 614, EPGE-FGV, Abr 2006.
- [615] Aloisio Pessoa de Araújo e Bruno Funchal. *How much debtors' punishment?*. Ensaios Econômicos da EPGE 615, EPGE-FGV, Mai 2006.
- [616] Paulo Klinger Monteiro. *First-Price Auction Symmetric Equilibria with a General Distribution*. Ensaios Econômicos da EPGE 616, EPGE-FGV, Mai 2006.
- [617] Renato Galvão Flôres Junior e Masakazu Watanuki. *Is China a Northern Partner to Mercosul?*. Ensaios Econômicos da EPGE 617, EPGE-FGV, Jun 2006.