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Post-crisis China Impact on Trade Integration and Manufacturing Competitiveness Between Argentina and Brazil

1. Introduction

In 2016, the economic recession and following political turmoil in Argentina, Brazil, and Venezuela cast doubts on the future of Mercosur, whose performance had been under debate for a long time. As a free trade area and a customs union, Mercosur achieved early success in promoting intra-regional trade. In its early days, growth in intra-regional trade was strong and rose from US\$ 5.2 billion in 1991 to US\$ 20.3 billion in 1997, with the share of intra-regional trade in total trade rising from 8.9% in 1990 to a peak of 24.5% in 1997. Nonetheless, such beneficial commercial ties between Mercosur states, according to Yeats (1997), were inefficient because of a trade diversion effect. The growth of trade flows in Mercosur in the 1990s focused on products in which member countries did not display a comparative advantage. Moreover, the apparent reason fueling this growth was the substantial preference margins offered to inefficient local producers. For some (Bekerman & Rikap, 2010), Yeats' argument didn't consider the situation prior to the formation of Mercosur, when both Brazil and Argentina pursued import substitution industrialization, discouraging imports of manufactured products. Thus, the construction of Mercosur yielded a substantial degree of trade creation, while diverting a minor amount of trade from nonmembers. A more head-on argument claims that the liberal trade based on static comparative advantages determined by given factor endowments might cause asymmetric potential growth effects, a danger that could lock resource abundant countries in the sub-industrialized status. Under such circumstances, the integration process involving developing countries that are most mutually "similar" could provide tools to develop scale economies and learning processes that would make it possible to generate dynamic comparative advantages both inside and outside the region (Rodrik & Wolfsan, 1995; Amsden, 1997). Thus, a free trade area arrangement between developing countries, such as Mercosur, with preferential policies, secures access to new, mutually similar markets, which could serve as a platform for subsequently gaining access to markets outside the bloc.

Theoretical debates aside, the truth is that the integration process of Mercosur measured by intra-regional trade intensity was halted in the new century. The levels of both openness and interdependence fell during the crises of 1999-2002. However, economic growth and openness have picked up since that time. Consequently, this time it was the rest of the world that underpinned trade growth. The ratio between extra-regional trade to intra-regional trade grew from 3.6 in 1998 to 5.5 in 2008, and further to 6.4 in 2014 - the highest mark since the bloc's foundation. More importantly, smaller countries in the block still lack the highly expected dynamic comparative advantage in industrial products, and their trading structure both inside and outside the bloc has hardly changed. Preferential access granted under Mercosur largely benefited Brazil, serving its industrialization objectives. More than a decade after the argument presented by Yeats, Moncarz et al. (2010) still found that the bulk of Brazilian exports to Mercosur partners consisted of sophisticated industrialized products where Brazil did not possess a clear comparative advantage in the global market.

During this process, the international environment changed with the emergence of China as a manufacturing powerhouse and the largest trading nation in the world. In less than 15 years, between 2001 and 2014, China's exports grew from US\$ 20.3 billion to US\$ 2.2 trillion,

successively surpassing Japan, Germany, and the United States. In the meantime, China's imports increased from US\$ 213.7 billion to US\$ 1.2 trillion, only lagging behind the United States. From Mercosur's perspective, China was the source of 16.3% of its total imports in 2014, and the destination of 14.2% of its exports, while the middle kingdom only accounted for 3.2% and 2.8% respectively in 2001. Nowadays, China is the largest trading partner of Brazil and the second largest of Argentina, Uruguay, and Paraguay. China's trade expansion in Latin America was initially depicted as an opportunity for most of Latin American countries, as their export structures were largely complementary (Lall, 2005; Blázquez-Lidoy et al., 2007; Qureshi & Wan, 2008; Lederman, 2009) and China's demand improved the trade terms of commodity exporting countries. Nonetheless, this optimistic tone faded while concerns grew given China's manufacturing competitiveness, especially in economies belonging to Mercosur, whose design aims to generate sustainable long-term growth potential by increasing industrialization. While recognizing the positive effects of commodity exports to China, the pessimists highlighted how China's appetite for raw materials might distort the incentive structure and lure the resources away from the manufacturing sector, causing the "primarization" and "deindustrialization" or manufacturing "hollowing out" in the case of Brazil (Jenkins & Barbosa, 2012; Jenkins, 2014;) and "*sojización*"¹ in the case of Argentina (López et al., 2010). In addition, this stream of literature also warned of the incapability of domestic producers to compete with China's manufacturing items in their national markets (Moreira, 2007; Jenkins et al., 2008; Gallagher & Porzecansky, 2010).

This concern became even more relevant after the global financial crisis, when industrial and trade policies implemented in Mercosur, such as Argentina and Brazil, attempted to strengthen the import substitution strategy to protect their domestic markets and to localize the productive chains. This paper tends to update our understanding about China's impact on Mercosur trade integration and manufacturing competitiveness during the post-crisis period, using Argentina and Brazil as examples. Based on disaggregated trade statistics between 2009 and 2014, the research is designed to go beyond country borders and examine the dynamic trilateral trade relationship, taking into account the crisis effect on industrial and trade policy formulation. Through a constant market share analysis, this paper first finds the persistence of China's asymmetric trade pattern with Argentina and Brazil, but a decline in China's weight in explaining the decreasing bilateral trade intensity between Argentina and Brazil; second, it explores the divergent export performance between Argentina and Brazil to China, mainly attributed to the competitiveness shift in the soybean sector; and finally, it researches the enlargement of a competitiveness gap between Mercosur countries and China in the upstream of the manufacturing supply chain.

The following text will be organized in the subsequent order: section two presents the main characteristics of China's trade pattern with Argentina and Brazil, and discusses both short-term and long-term crisis effects on industrial and trade policies adopted in respective countries; section three introduces the method employed; section four reports and analyzes the competition between Argentina and Brazil in China, as well as the resulting consequence on their bilateral trade structure; section five reports and analyzes China's presence in manufactured goods imported by Argentina and Brazil, and evaluates China's direct impacts on their bilateral manufacturing trade flows; section six concludes with a general reflection on the present and future situation of Mercosur.

¹ "Sojización" is the replacement of traditional crops in a region with soy. One of the factors that influence this process is the increase in the price of soybeans.

2. Mercosur Trade Integration and Industrialization Under China's Rise

From its inception, Mercosur was conceived as an attractive project of regional integration. The strong political will between re-democratized governments in Brazil and Argentina, culminating in the Integration and Economic Cooperation Program (PICE) in 1986, paved way for the signing of the Treaty of Asuncion in 1991, which later resulted in the establishment of a common market composed of Argentina, Brazil, Paraguay, and Uruguay in 1994. The integration model, through preferential tariff concessions between member countries and the construction of an imperfect customs union, was expected to amplify market size, achieve scale economies, stimulate productive restructuring, and increase the competitiveness of member countries. Fundamental to the initial success was the macroeconomic coordination, especially the alignment of the exchange rates between Brazil and Argentina. The period of appreciation of the exchange rate and the search for open regionalism from 1995 to 1999 led to an increase in intra-group trade flows. However, heavily affected by the Asian crisis in 1998, Brazil and Argentina successively entered into exchange crisis between 1999 and 2002, which gave rise to unilateral protectionist measures, and more importantly, weakened mutual trust on the commitment formerly given to the joint action plan.

Newly elected governments after the exchange crisis, both in Argentina and Brazil, somehow relaunched their regional integration plans. Once the understanding was regained, the initial commitment of these governments was retaken and deepening integration was reconsidered. Nevertheless, under left-wing political leadership on both sides, the integration process has been more contextualized towards more inward-looking domestic priorities, such as job creation and protecting national industries. The practice of unilateral protectionist measures, especially tariff and non-tariff restrictions and non-automatic import licenses, such as *Declaraciones Juradas Anticipadas de Importaciones* (DJAI)² imposed by the Argentine government, was maintained. Mercosur can thus be described as an “incomplete free trade area” and an “imperfect customs union”.

Few advance in institution building impeded the deepening of regional integration in the 21st century. Compared with other trade blocs, such as the European Union, NAFTA, and ASEAN+3, Mercosur lagged far behind in terms of intra-group trade. Between 2002 and 2014, intra-group trade only accounted for 13% of total Mercosur trade. Moreover, the trade with the rest of South and Central American countries grew so slowly that its share reduced from 41% to 26%. It is clear that Mercosur had deepened its trade relations with countries located outside Latin America in the 2000s, among which China played a unique role both as an exporter and importer.

2.1. Characteristics of China's Trade with Mercosur

On the export side, Mercosur's exports to China grew from US\$ 3.8 billion in 2002 to US\$ 56.6 billion in 2014, making China the second largest export market behind the United States. On the import side, Mercosur's total imports from China increased by 24 times in value, achieving US\$ 59.2 billion in 2014, and surpassed EU15 as the largest source of manufacturing imports

² As one of the most important political instruments, the *Declaraciones Juradas Anticipadas de Importación* (DJAI) was put in place in January 2012. The application of this regulation covers the entire universe of goods imported into the country in definitive form for consumption. Despite the official declaration to simplify the operation of foreign trade and to establish a single window for the procedures of entry or exit of Argentinian goods, the implementation of this authorization procedure, in particular due to the “Observations” made by the Secretary of Internal Commerce (so-called until December 2013, then the Ministry of Commerce) resulted in increases in the time required to import products, affecting those coming from the MERCOSUR member states and other sources (BID, 2014).

of Mercosur. Undoubtedly, the biggest story of Mercosur’s extra-regional trade development in the 2000s was the rise of China, which has moved from the periphery to the core of Mercosur’s trade map. However, China is not simply just another trade partner as the United States and the European Union have been. Mercosur’s extra-regional trade pattern has long been asymmetric by exporting commodities in exchange for manufactured goods. However, its trade relation with China goes even further in this direction. As shown in Table 1, according to the estimation of Hiratuka (2016), the intra-industrial trade index between China and Mercosur was a mere 1.7 in 2014, which was incredibly lower than that of the U.S. (21.8) and the EU (16.6). This phenomenon could be explained by the high concentration of few products between Mercosur and China. 78.8% of the exports from Mercosur to China in 2014 were attributed to three types of commodities at the HS 2-digit level: HS12 Oil seeds and oleaginous fruits, HS26 Mineral ores, slag, and ashes, and HS 27 Mineral fuels and oils, while 55.3% of its imports from China were composed of three lines of manufactured goods: HS 85 Electrical machinery and equipment and parts thereof, HS 84 Nuclear reactors, boilers, machinery, and mechanical appliances, and HS 29 Organic chemicals. The degrees of concentration both on the export and import side were higher than that with the United States and the European Union.

Table 1: Comparison of Trade Patterns Between Mercosur and Its Main Partners in 2014

	Intra-industrial trade index*	Degree of concentration**		Trade balance of medium and high technology intensive manufactured goods (US\$ million)	
		CX3	CM3	2001	2014
Mercosur	37	48.2%	45.7%	4.7	-11.1
US	21.8	38.4%	47.6%	-3 441.1	-10 120.3
EU	16.6	36.2%	40.3%	-8 643.4	-24 370.8
China	1.7	78.8%	55.3%	-961.9	-29 692.4

(Source: Hiratuka 2016)

*Intra-industrial trade index refers to Grubel-Lloyd index at HS 4-digit level. For a product i , $GL_{ij} = [(X_{ij}^k + M_{ij}^k) - |X_{ij}^k - M_{ij}^k|] * 100 / (X_{ij}^k + M_{ij}^k)$, where X_{ij}^k is the export of product i from country j to country k , and M_{ij}^k is the import of product i from country k to country j . For the calculation of the GL index of each country with Mercosur, the index of each member country is weighted with trade shares of product i , and the bilateral trade weights are used to add the indices of each member country.

** The indicator CX3 measures the relative weight of the first three chapters exported by a country (or region) as part of its total exports. Alternatively, the indicator CM3 will show the dependency level of the country (region) in relation to its first three imported products.

Under this context, two opposite opinions have been forged considering China’s impact on Mercosur trade integration and industrialization. On one hand, China’s quest for commodities, including fuels, as well as agricultural and mineral primary goods not only quantitatively boosted the exports of Mercosur’s traditional competitive goods in the world market, but also steeply drove trade terms in favor of Mercosur exporters. Therefore, a favorable export record with China represented a positive source of growth for Latin America (Ortiz et al., 2015; Vianna, 2016), and allowed Mercosur member countries to maintain a relatively high growth rate, and gain more autonomy in deciding their economic policies for national industry recovery (Hiratuka, 2016). China thus could be depicted as part of the favorable external condition that, at least before the global financial crisis, supported manufacturing resurgences in Argentina and Brazil. On the other hand, China broke Mercosur’s imperfect shield against external competition. China’s exports, led by medium and high technology intensive goods, has been translated into Mercosur’s impressive increase of deficits against China in that

category. From 2001 to 2014, the deficit was augmented by 31 times in value, reaching 29.7 US\$ billion which made China the largest source of deficits in sophisticated industrial goods. Given the importance of the Mercosur market for manufacturing trade between member countries³, China's growing manufacturing exports to Mercosur was partly achieved at the cost of Mercosur member countries in their regional markets⁴. In this sense, China could be considered an interrupting factor that endangers the regional integration of Mercosur and its productive structure upgrading.

However, it is too simple to follow a dichotomous perspective considering China's overall impact on Mercosur trade integration and competitiveness as a tradeoff between export gains and import losses. Lederman et al. (2009), consistent with the neo-liberal approach, stressed the possibility of importing cheaper technology intensive products to improve economic efficiency. On the contrary, Jenkins et al. (2008), more akin to neo-developmentalism point of view, emphasized the difficulty to maintain a competitive industrial sector not only because of the direct competition with China, but also the "primarization" or "deindustrialization" induced by favorable relative prices of primary and natural resource intensive goods. Due to the complex nature of trade effect, China's influence on Mercosur integration and industrialization is dynamic and is contingent upon trade structure, trade and industrial policies, as well as the state capacity of involved countries, which would evolve over time in response to new challenges imposed by the external environment and unexpected events, such as the 2008 global financial crisis.

2.2. Crisis Effect

The 2008 global financial crisis altered the external condition and exerted both short-term and long-term effects on industrial and trade policies in China, and two major Mercosur economies - Argentina and Brazil. For China, a collapse in trade flows was observed in late 2008. In general, China's merchandise exports and imports declined by 16.0% and 11.1%, respectively, between 2008 and 2009. For Argentina and Brazil, the impact was greater on intra-bloc commerce. Argentina-Brazil bilateral trade, which decelerated in the end of 2008, entered a free-fall period in the first months of 2009. In January, Argentine exports dropped 51% against the previous year, a contraction not seen since the 2001 crisis, with Mercosur being the worst affected destination. Brazil's industrial activity declined rapidly and the country had its first trade deficit in 93 months.

To mitigate the crisis shock, all three countries have since adopted expansionary fiscal measures to sustain domestic growth. In China, the former "prudent fiscal policy and tight monetary policy" was replaced by "positive fiscal policy and moderately easy monetary policy" with a massive fiscal stimulus package amounting to RMB 4 trillion in 2008 (Luo & Zhang, 2010). In Argentina, 91.7 billion pesos were disbursed between 2008 and 2010. 74% of this amount was allocated to finance large-scale infrastructure plans in 2009 (IILS, 2011). As for Brazil, the previous emphasis on international competitiveness and exports was replaced by explicit efforts to sustain (and protect) domestic demand. The Productive Development Policy launched in 2008, aiming initially at upgrading the industrial pattern of investments, was transformed into a set of anti-cyclical measures to finance large national companies' survival,

³ In 2014, about one third of manufacturing exports were concentrated inside of the bloc. The share could be even higher if the manufactured goods are medium and high technology intensive items.

⁴ Through constant market share analysis, Hiratuka (2016) concluded that China was responsible for an overall 34% of market share losses suffered by Mercosur member countries between 2001 and 2014. At country level, Brazil was the biggest loser with 62% of its losses attributed to China's competition, followed by Uruguay (41%), Paraguay (22%) and Argentina (20%).

such as Petrobás (De Oliveria, 2017). Regarding the trade policy arena, there was a policy U-turn since the second half of 2008 in China. Previous tightening trade policy was relaxed. Export duty rebate rates were raised six times from mid-2008 to mid-2009, and the coverage extended to all kinds of key sectors, including textiles, apparels, iron and steel, nonferrous metals, petrochemicals, etc. (Gourdon et al., 2016). Contrary to China's offensive stance to promote its exports, Argentina bluntly adopted defensive measures to protect its domestic market, while Brazil was initially more reluctant to take protectionist measures under Lula's administration. Therefore, Argentina unilaterally widened policy instruments to "surgically" target specific tariff positions, which included automatic and non-automatic licenses, VER agreements, criterion values, antidumping duties, and export-import parity agreements (Dalle & Lavopa, 2010).

These anti-crisis measures proved to be effective. By 2010, exports and imports of all three countries had completed the U shape recovery from the recession of 2008-2009, GDP growth rates respectively reached 10.6%, 10.1%, and 7.5% in China, Argentina, and Brazil. However, policy orientation diverged afterwards.

On the one hand, the global financial crisis was considered as impetus to accelerate the structural reform launched before the crisis in China. The policy support to the exports of labor and energy intensive products scaled back as early as 2010, eliminating the export duty rebates to products such as steel, nonferrous metals, processing materials, silver powder, starch, ethanol, pesticides, pharmaceutical and chemical products, plastic products, rubber products, and glass products (Gourdon et al., 2016). The fiscal and monetary policy became tightened again, lowering the official expectation of GDP growth rate to 7.5% in 2011. While the fifth generation of Chinese leaders headed by Xi Jinping and Li Keqiang took office, China's 12th five-year plan (2011-2015) openly declared the ambition to make the Chinese economy more domestic demand and innovation dependent, by raising the expenditure on R&D to 2.2% of GDP and fostering the growth of new emerging strategic industries⁵. Consequently, China's trade structure would be expected to continue climbing the value-added ladder, exporting more high technology products based on domestic inputs.

On the other hand, the deterioration of trade terms, the continuation of a credit squeeze and the hike of inflation pressure have made the macroeconomic condition more hostile in Argentina and Brazil since 2011. The "temporary" trade relief measures became permanent, and the global financial crisis enhanced the triad of development composed of "commodities, credit, and domestic consumption". For example, after Cristina Kirchner started her second mandate, a stricter version of the non-automatic import license – DJAI – was put in place to "manage" the trade, and the tax on exports of Argentina's main commodity, soybeans, was raised to collect more fiscal revenues (Gallo, 2012). The growing protectionist stance is even clearer in Brazil. Under the pressure from import-competing sectors, during Dilma Rouseff's first term (2011-2016), there was the "restoration" of full-fledged protectionism in trade and industrial policies (Veiga & Rios, 2015). To start, Brazil became more active in defending its internal market by trade related policies. In September 2011, Brazil submitted proposals to its Mercosur partners to allow a temporary increase in national tariffs above the Mercosur common external tariff to defend local producers from extra-regional imports of a specified list of consumer goods. It also resorted to measures such as the removal of tariff discounts to compensate for

⁵ New emerging strategic industries are energy conservation and environmental protection industries, new-generation IT industry, biological industry, high-end equipment manufacturing industry, new energy industry, new material industry and new-energy automobile industry. According to the 12th five-year plan, they are expected to account for 8% of GDP by 2015.

currency appreciation, and the re-introduction of non-automatic import licensing to calm import demand (Doctor, 2012). In addition, Brazil became the “world champion” regarding the use of trade remedy measures, with 152 measures recorded from 2011 to 2015 (De Oliveria, 2017). But more importantly, the return of protectionism under Rousseff was principally implemented through industrial policy measures inspired by import substitution. The Brasil Maior Plan (2011-2014), which claimed to aggregate value through innovation, was found to focus more on defending the internal market and compensating Brazilian firms for the “Custo Brasil” (Czarnecka-Gallas, 2013). The legal framework to enhance preference for national products and services in government purchases was updated and policy actions were made more expedient. Special sectorial regimes were reinforced or revised with the aim of providing incentives for those firms willing to foster a local supply industry (Kupfer et al., 2013). In short, the intensification of the requirements of local content seems to be the main “novelty” of Rousseff’s industrial policy.

Therefore, during the aftermath of the global financial crisis, the slowdown of China’s economic expansion, due to the transformation from the quantitative growth to the qualitative development on one side, and the rise of protectionism and the revival of importation substitution strategy in Argentina and Brazil on the other, suggest the end of the golden age of bilateral trade between China and Mercosur. Moreover, China’s efforts to encourage the exports of technology intensive goods, especially the industrial parts and components, might cause a conflict of interest with Argentina and Brazil, which intend to internalize and localize the industrial activity. In the following part, after the presentation of the methodology adopted, this paper will empirically analyze and explain the understanding of China’s impact on Mercosur trade integration and industrial competitiveness through the trade channel.

3. Methodology and Data

Most researchers have adopted three different approaches to estimate China’s impact on exports and imports of other economies. The first is the measure approach using various indices, such as “relative market share analysis”, “export structure similarity”, and “revealed comparative advantage”; the second is the CGE model which is used in performing counterfactual analysis and in forecasting; the third is the regressions specifically based on gravity models. All these methods have their merits and limits. The measure approach is the most convenient and intuitive for tracing and comparing export performance in a relatively short time between partners involving China. Once applied to disaggregated data, this method could provide rich information at both the sector and product level. However, only rough evidence and certain types of correlations would derive from comparison, and quantitative importance cannot be assessed using this approach. On the contrary, CGE models provide quantitative outcomes from a general equilibrium perspective, but require strong assumptions that do not necessarily hold in the reality. Moreover, the results also vary according to different methods for calibrating the models. Finally, regressions are powerful and rigorous in establishing the causality between China’s demand and offer and exports and imports of other economies. This method works better with a large time series data set, but at the same time, also demands more detailed data, which is not always available especially for developing countries. As a result, most literature adopting the regression method cannot reveal the differential effects of China at the industry or product level, thus eliminating the rich details provided by trade data.

The analysis in this text is based on the standard CMS method, which can identify the major causes of market share changes and compare the evolution of national competitiveness at different product level of China, Argentina, and Brazil at their partners’ markets. In the

meantime, we would also follow the modified CMS approach elaborated by the Brazilian economist Jorge Batista (2008) to assess the quantitative gains and losses of Argentina and Brazil due to China's competition at their Mercosur neighbor's market.

The standard constant market share (CMS) model developed by Fagerberg and Sollie (1987), when adopting our trilateral trade framework between China, Argentina, and Brazil, would be written as follows:

In each country U of three partners under study

$$\Delta K_H = K_H^{t+1} - K_H^t = \sum_{i=1}^z \left[\frac{X_{Hi}^t}{M_{Ui}^t} \times \left(\frac{M_{Ui}^{t+1}}{M_U^{t+1}} - \frac{M_{Ui}^t}{M_U^t} \right) \right] + \sum_{i=1}^z \left[\frac{M_{Ui}^t}{M_U^t} \times \left(\frac{X_{Hi}^{t+1}}{M_{Ui}^{t+1}} - \frac{X_{Hi}^t}{M_{Ui}^t} \right) \right] \quad (1) \quad (2)$$

$$+ \sum_{i=1}^z \left[\left(\frac{M_{Ui}^{t+1}}{M_U^{t+1}} - \frac{M_{Ui}^t}{M_U^t} \right) \times \left(\frac{X_{Hi}^{t+1}}{M_{Ui}^{t+1}} - \frac{X_{Hi}^t}{M_{Ui}^t} \right) \right] \quad (3)$$

where t , $t + 1$ are subscripts that refer to the initial and final year of the comparison, respectively; M_U is country U 's total imports; M_{Ui} is U 's imports of commodity i , $i = 1, 2, 3 \dots z$; X_H is country H 's total exports to U ; X_{Hi} is country H 's exports of commodity i to U , $i = 1, 2, 3 \dots z$; and K_H is the macro market share of country H in U 's imports.

Using initial years' weights (Laspeyres indices) throughout the calculations, the above model attributes the change in the macro market share of country H in total imports of a given country U (China, Argentina and Brazil respectively in this paper) between the time t and $t + 1$ to the following three effects.

1. *The product composition effect*: This effect calculates what the aggregate market share of country H on the U's market would have been if its market shares in individual commodity groups had remained constant. In other words, it captures the exogenous effect on the demand side. The sign of the "product composition effect" would be positive if country H had concentrated its exports in the initial year on the commodities whose markets were growing relatively fast, and would be negative if H had been concentrated in slowly growing commodity markets. This assumed initial advantage or disadvantage would be moderated by:

2. *The competitiveness effect*⁶: This effect calculates to what extent the macro share gain or loss of country H on the U's market could be attributed to the sum of its gains and losses in micro shares on individual commodities. The sign of the competitiveness effect indicates the overall gain or loss of export competitiveness of country H against its competitors on the market of U's imports, but by itself it doesn't necessarily imply the rise or decline of the national industrial competitiveness because of relative dynamism of U's demand of individual commodity groups that change over time, which results in:

3. *The relative adaptation effect*: This effect indicates to what degree country H has succeeded in adapting the commodity composition of its exports to the changes in the commodity composition of the U's market. The sign and value of this effect depends on the correlation between the product composition effect and the competitiveness effect. The sign of the "relative adaptation effect" would be positive if country H has adapted its export structure faster than the average of all countries exporting to country U, by gaining market share in

⁶ It is different from the "competitiveness effect" with the Paache index, which is weighted by the shares of each commodity in the end year.

products for which demand was growing faster than average and/or losing market share in products for which demand was growing slower than average. In other words, the relative adaptation effect measures to what extent country H has adjusted its export structure in the final year compared with its position in the initial year to the changing import structure of country U between time t and $t + 1$.

The standard CMS model improves on the relative market share (RMS) model by distinguishing the competitiveness effect from the product composition effect, however it still falls short in telling us to what extent a country's gain or loss of competitiveness could be attributed directly to another country's loss or gain in competitiveness. Brazilian economist Jorge Batista (2008) explored the potentiality of the CMS method, and developed a new version of the CMS model that can distribute the gain or loss of one supplier to its competitors. The basic idea is that in a zero-sum game, the gain or loss of market share of country H in a specific country's market should be equal to all the losses or gains in market shares of the rest of the competitors. Thus, we have:

$$\Delta K_H = \sum_{J \neq H}^n \left(\frac{X_J^t}{M_U^t} - \frac{X_J^{t+1}}{M_U^{t+1}} \right)$$

where $t, t + 1$ are subscripts that refer to the initial and final year of the comparison, respectively; subscript J refers to the competitor, $J = 1, 2, 3 \dots n$; M_U is the country U 's imports of manufactured goods; X_J is country J 's exports of manufactured goods to U , $J = 1, 2, 3 \dots n$; and ΔK_H is the change in the macro market share of country H in U 's imports.

The modified CMS identity thus allows us to estimate quantitatively the distribution of the gain or loss of market share of a specific country in U 's markets between the time t and $t + 1$ to its competitors, both at the aggregate level as well as at the disaggregate level by product group.

Both methods presented above require input of trade data disaggregated at the most detailed level, since data aggregated at high level would combine different individual commodities that are not replaceable, thus suggesting nonexistent competition. For this end, we would use COMTRADE data disaggregated at the HS 6-digit level (1996 version), and choose to extract relevant data from CEPII's BACI database for two reasons. First, BACI recalculates the FOB import values, making exporter country's reported data more consistent with importer country's one. Secondly, the reliability of country reporting is assessed based on the reporting distances among partners. These reporting qualities are used as weights in the reconciliation of each bilateral trade flow twice reported. It is also worth noting that both analytical tools are very sensitive to changes in the base year. Trade shares at a disaggregate level can vary from year to year, and the volatility of certain products could be so radical that an inappropriate selection of reference years for comparison would generate misleading results. Such potential methodological errors could become more pronounced during the post-crisis era, when the world trade recovery is still uncertain and the market is overly sensitive to unexpected incidents. To mitigate this problem, we substitute single year point data by average shares over a longer three-year period. More precisely, we cut the whole 2009-2014 period into two, three-year sub-periods, and consider average shares over 2009-2011 as reflecting immediate crisis impact on trade between Argentina, Brazil, and China, and that over 2012-2014 as representing more consolidated and recent situation after post-crisis policies being gradually materialized in respective countries. We later refer to the OECD's ISIC Rev. 3 technology intensity definition to regroup manufactured items according to their technology level, and BEC Rev. 4 to

distinguish capital, intermediate and consumption goods. To do this, WITS correspondence tables would be applied.

4. China's Import Effect

China's imports from Argentina and Brazil were overwhelmingly tilted toward single commodities. Over the whole period between 2009 and 2014, soybeans (HS 120100) on average accounted for around 60% of imports from Argentina, while an average 31% of China's imports from Brazil consisted of soybeans, with another 38% attributed to iron ores (HS 260111 and 260112). It is therefore not surprising to find that both countries' market share changes over China's market were largely determined by China's demand and their respective competitiveness in these specific products over time.

Table 2: Market Share Change of Argentina and Brazil in China's Merchandise Imports by Effect Components, 2009-2014

	Aggregate	Production Composition	Competitiveness	Relative Adaptation
Argentina	-0.14	0.03	-0.15	-0.02
Soybeans	-0.10	0.03	-0.12	-0.01
Brazil	-0.06	-0.02	-0.03	-0.00
Soybeans	0.28	0.09	0.17	0.02
Iron ores	-0.25	-0.12	-0.15	0.02

Two observations can be drawn from Table 2. First, there was the contrasting dynamism between soybeans and iron ores for Brazil, which highlights the ongoing structural transformation of the Chinese economy in recent years. China's demand for soybeans stayed robust and produced positive product composition effect, while its demand for iron ores slowed down so quickly that it completely offset the gains Brazil benefited from with its soybeans exports. Second, even though China's demand for soybeans also drove imports from Argentina, its competitiveness in soybeans exports deteriorated, while Brazil presented a clear competitive edge over the years. More precisely, as shown in Table 3, the direct competition between Brazil and Argentina in soybean exports to China caused the latter net losses, equivalent to US\$ 1.13 billion over the period studied, which represented 94% of Argentina's total net losses to Brazil. This loss is not only significant in absolute terms, but also eye opening in relative terms, given the fact that Argentina gained US\$ 123.42 million from Brazil in the same commodity group between 2002 and 2008.

Table 3: Net Gains and Losses of Argentina in China's Merchandise Imports by Competitors, 2009–2014 (million US\$)

	Brazil	United States	Rest Competitors	Total
Soybeans	-1132.73	-698.32	-110.54	-1941.58
Other agriculture goods*	-56.06	-63.86	-79.63	-199.55
Mining & Quarrying	-0.20	-3.35	-250.56	-254.10
Industrial manufacture	-18.96	-17.88	-84.40	-121.24

*Other agriculture goods include Agriculture and Hunting (HS01), Forestry and logging (HS02), Fishing (HS05), and agriculture based manufacture (HS 15 and 16).

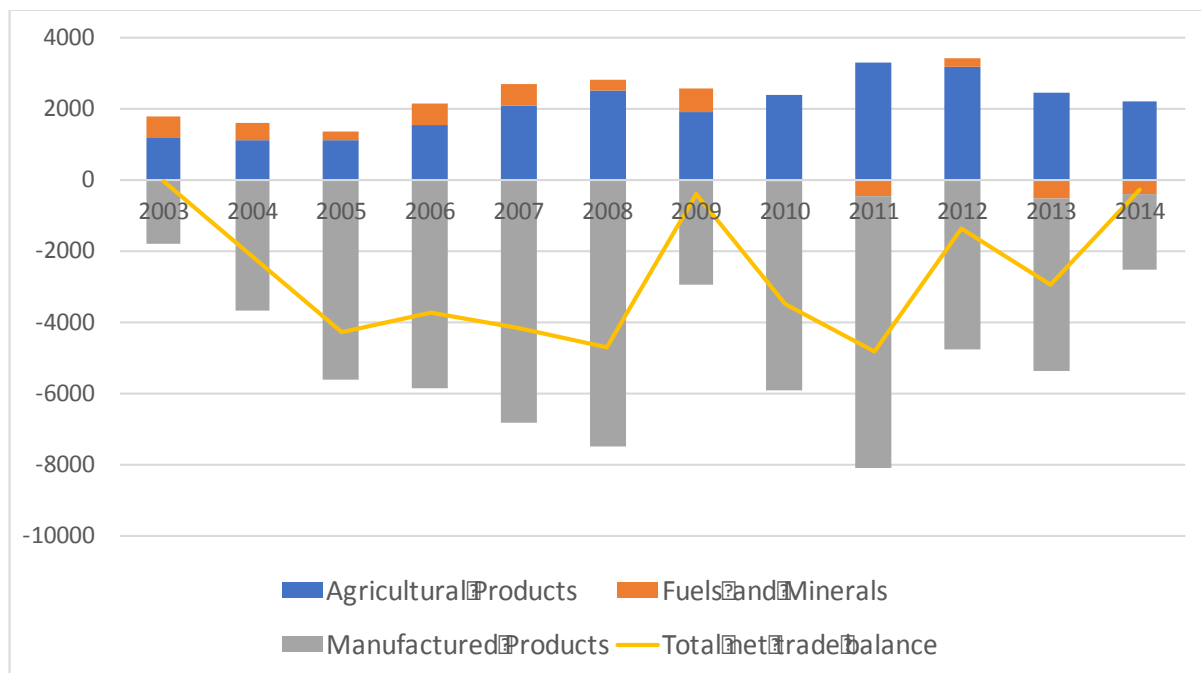
This shift of the competitive scenario could be attributed to different policies implemented. In Argentina, Kirchner's government adopted discriminatory export taxes expecting to raise government funds for social investment by increasing the government's fiscal revenues from

rising world grain prices, and to reduce domestic food prices by encouraging farmers to switch to growing staple foods like wheat and corn. Export taxes for soybeans were raised firstly in November of 2007 from 27.5% to 35%, and further to 46% in June of 2008, provoking the Argentine Farm Crisis, which resulted in the Senate's rejection of the government's decision in July. However, during the entire 2009-2014 period, the export tax for soybeans stayed at 35% against 23% for wheat, and 20% for corn. Consequently, the growth area harvested as well as the production of soybeans in Argentina slowed down significantly in the post crisis era. On the contrary, in Brazil, Lula's government implemented liberalization policies regarding soybean cultivation, rendering unhampered access to imported fertilizers, pesticides, and seeds, under the pressure of the farmers' associations seeking to capture the market opportunity rendered by China and to expand the domestic production capabilities (Rothacher, 2016). Brazil thus experienced a boom in its soybean sector comparable to that observed in Argentina before the crisis. According to FAOStat, the agriculture land used for soybean cultivation in Brazil increased by 42.5% from 21.25 million hectares in 2008 to 30.27 million hectares in 2014, making the total yield of soybeans grow from 59.83 million tons to 85.76 million tons.

The question thereafter is about the representativeness of our observation in the soybean sector. In other words, did China's increasing demand of agricultural commodities trigger an overall convergence of economic structure between Argentina and Brazil, thus reducing Brazil's dependence on imported food items from Argentina? The answer is probably no, as the proportion of agriculture in Brazil's national economy has hardly changed between 2009 and 2014. The agriculture value added accounted for 5.0% of GDP in 2014, a 0.2 percentage points decrease compared with 2009, while the labor engaged in agriculture also decreased during the same period. The share of credit outstanding in the agriculture sector stayed consistently at 1.5-1.6%. Thus, the so-called "*sojización*" was restricted within the agricultural sector with very limited spillover effect on the whole economic structure. The same could be said about Argentina. During the 2009-2014 period, the agriculture sector represented around 7-8% of its GDP without much variation. The "*de-sojización*" in Argentina suggests a policy orientation not aiming to accelerate industrialization, but to channel resources from soybean cultivation to plantation of basic staple foods. If we assume that Argentina and Brazil followed different specialization paths in their agriculture sector, it would imply higher trade potential between Brazil and Argentina. Indeed, total trade flows of agriculture goods, including agriculture based manufactures such as edible oil and meat products, between Argentina and Brazil almost doubled in the post-crisis era. More importantly, Argentina maintained and amplified its trade surplus with Brazil, led by wheat (HS100190), malt (HS 110710), and wheat flour (HS 110100).

Nevertheless, Argentine total net trade balance with Brazil was overall negative, and determined by industrial manufactured goods. But, after a continuous enlargement of trade deficits in manufactured items between 2003 and 2008, the bilateral trade flows, as Figure 1 shows, became more volatile in the post-crisis period, including a tendency of deficit reduction since 2011. During this process, Brazil's exports to Argentina hardly changed, while those from Argentina to Brazil increased by 12%, from an average US\$ 11.1 billion during 2009-2011 to US\$ 12.4 billion during 2012-2014. Certain products, especially motor vehicles for transport of goods and persons, turned to be positive and deficits were cut sharply in the category of telecommunication equipment, engines, and household equipment, resulting in the improvement of the current account of Argentina against Brazil. The total trade deficits were cut from the peak of US\$ 4.8 billion in 2011 to US\$ 327 million in 2014.

Figure 1: Trade Balance of Argentina with Brazil by Product Groups, 2003-2014 (million US\$)



(Source: UN COMTRADE)

The decrease of a manufacturing trade surplus of Brazil with Argentina seems to justify the concern of “primarization”. This concern assumes that investors, lured by China’s demands and rising commodity prices, would prioritize the investment in lower value-added extractive industry, causing industrial downgrading instead of upgrading. Consequently, the export structure would be concentrated in resource intensive goods, which are profitable during a commodity boom, but vulnerable to the external shock once the price hike ends. In the meantime, the easier rentier income would postpone the painful reform program and risky investment in technology intensive sectors, casting negative impact on manufacture competitiveness in the long run. As already shown in Table 2, Brazil’s loss of momentum in exports of iron ores to China was mainly attributed to its lack of competitiveness. It is worthwhile to qualify China’s reduction of demand in relative terms. China’s recorded falling imports of iron ores between 2012 and 2014 were measured by values, however the absolute imported quantity increased by 25% during the same time, which was higher than that recorded between 2009 and 2011. Therefore, the reduction of Brazil’s exports of iron ores to China was not mainly caused by the decline of China’s demand, but the loss of competitiveness in front of other major iron ore producers, such as Australia and Russia. In other words, Brazil’s former

expansion of iron ore exports to China was fed by a high rentier margin, rather than supported by productivity gains. Although the iron ore production has scaled back after the boom ended, the committed investment in the field takes time to be recouped, which in turn debilitates its industrial apparatus. In this sense, the recent narrowing of trade surplus with Argentina might reflect the delay of industrial modernization and sophistication in Brazil. However, the stagnation of industrial upgrading doesn't necessarily mean the loss of market share in the third market, unless there exist competent competitors that have successfully replaced the position occupied by Brazil. To what extent can China, given its industrial capacity and manufacturing exports, cause the rise and fall of imports and exports of manufactured goods between Argentina and Brazil? This question will be examined and answered in the following section.

5. China's Export Effect

Considering imports of manufactured goods⁷, Argentina has a smaller market than Brazil, but both countries experienced a similar growth rate during the post-crisis period. Total imports of manufactured goods of Argentina increased by 21% from an average US\$ 49.4 billion between 2009 and 2011 to US\$ 59.6 billion between 2012 and 2014, while those of Brazil also grew by 21% from US\$ 151.4 billion to US\$ 192.8 billion. However, bilateral trade between Argentina and Brazil was much less dynamic. Argentina's imports from Brazil merely increased by 0.1% from US\$ 15.64 billion to US\$ 15.66 billion, causing a 5.4 percentage points reduction of Brazil's market share in Argentina. In the meantime, Brazil's imports from Argentina increased by a higher 11%, which was still lower than the overall growth rate of its total imports. In the end, Argentina accounted for 6.4% of Brazil's manufactured imports during 2012-2014, a decrease of 0.9 percentage points from 2009-2011. In contrast, China's exports maintained impressive momentum, respectively reaching 39% and 43% of growth in Argentina and Brazil. China's market share in Argentina grew from 15.4% to 17.7%, while that in Brazil grew from 16.3% to 18.3%.

5.1. Competitiveness Matters

The loss of Brazil's macro market shares in Argentina could be attributed to Argentina's changing import structure especially in high technology products. However, according to Table 4, the demand factor only partially explains the contrasting performance between Brazil and China. It is the competitiveness that drove the rise of China's market share and the fall of Brazil's. In both cases, the competitiveness effect is determinant. While China maintained the competitiveness, which was concentrated in medium-high and high technology items, Brazil suffered a significant deterioration in the same category.

Table 4: Market Share Change of Brazil and China in Argentina's Manufactured Imports by Effect Components, 2009-2014

	Aggregate	Production Composition	Competitiveness	Relative Adaptation
Brazil	-5.4	-1.31	-4.57	0.49
Medium-high technology	-2.29	-0.17	-2.35	0.23
High technology	-1.46	-0.67	-1.32	0.53
China	2.34	-0.44	1.86	0.92
Medium-high technology	1.44	-0.16	0.95	0.65
High technology	1.09	0.08	0.71	0.30

⁷ Manufactured goods in this paper don't include agriculture related manufactures, thus only covering products with ISIC codes ranging from 17 to 37.

On the other hand, Argentina benefited from Brazil's evolving import demands, which in turn produced positive production composition effect in medium-low and medium-high technology sectors. However, as demonstrated in Table 5, this advantage was not sufficient to compensate its loss of competitiveness. On the contrary, China successfully offset the initial disadvantage, represented by the negative production composition effect, by continuous improvement in its competitiveness. Again, it is the competitiveness effect that matters the most.

Table 5: Market Share Change of Argentina and China in Brazil's Manufactured Imports by Effect Components, 2009-2014

	Aggregate	Production Composition	Competitiveness	Relative Adaptation
Argentina	-0.91	0.22	-1.07	-0.07
Medium-low technology	-0.46	0.17	-0.50	-0.13
Medium-high technology	-0.35	0.10	-0.53	0.08
China	2.01	-0.28	1.82	0.47
Medium-low technology	0.53	-0.05	0.51	0.07
Medium-high technology	1.10	-0.11	0.86	0.36

The coincidence of sectoral concentration of competitiveness effects in medium-high and high technology intensive products between Brazil and China, as well as those in medium-low and medium-high technology intensive products between Argentina and China, might suggest a direct grab of market share by China from the hands of Argentina and Brazil in their neighbor's market. Nevertheless, we should not forget that Brazil's worsened competitiveness in medium-high and high technology sectors puts itself at a disadvantageous position not only against China, which is quickly climbing the industrial value-added ladders, but also against more advanced industrialized economies, such as the United States and European countries. In the same way, as Argentina's loss of competitiveness took place basically in medium-low and medium-high technology sectors, it would undergo pressures imposed by other middle-income economies that specialized in producing medium-low technology items. Moreover, all three countries recorded positive relative adaptation effects (except for Argentina in medium-low technology sector), which indicate quicker adjustment and possible specialization responding to demand changes, that would mitigate the direct competition.

5.2. Relative Decrease of China's Influence

The quantitative estimation of losses to top competitors by Argentina and Brazil, as presented in Table 6, shows that China was the biggest source of losses. In the meantime, Argentina did lose to other developing economies such as India and Mexico, While Brazil did lose to developed countries such as the United State and Germany. Nevertheless, the biggest shift of competition scenario during the post-crisis period is the emergence of the United States as the winner. According to our calculation⁸, during the ante-crisis period, Brazil's gains from the United States were estimated to be US\$ 402.8 million, while Argentina's gains from the country were equivalent to US\$ 322.9 million. The regain of competitiveness of the United States means that China's contribution to total losses of Argentina and Brazil was relatively reduced. China's weight in Brazil's total losses was cut from 62.8% before the crisis to 28.1% after the crisis, and from 49.5% to 29% in the case of Argentina.

Table 6: Losses of Argentina and Brazil to Top Competitors in Neighbor's Market, 2009-2014

Argentina	Brazil
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⁸ For comparative purpose, the calculation of gains and losses of Argentina and Brazil by competitors before the crisis is conducted through the comparison between averages of two sub-periods, 2003-2005 and 2006-2008.

	Value (US\$ m)	Distribution (%)		Value (US\$ m)	Distribution (%)
China	-568.86	29.0%	China	-938.35	28.1%
U.S.	-335.57	17.1%	U.S.	-626.45	18.7%
India	-107.84	5.5%	Germany	-222.18	6.6%
Mexico	-92.81	4.7%	Russia	-207.01	6.2%
Netherlands	-79.30	4.0%	Netherlands	-187.92	5.6%
Other	-778.99	39.7%	Other	-1159.48	34.7%
Total	-1963.37	100.0%	Total	-3341.40	100.0%

It is worth pointing out that due to the shale oil revolution, the gains of the United States from both countries were concentrated in refined petroleum products. From Brazil, the United States gained US\$ 205 million in aviation fuel (HS 271000), followed by US\$ 84 million in airplanes and aircraft (HS 880240), and US\$ 13 million in insecticides (HS 380810); while Argentina lost to the United States US\$ 289 million in aviation fuel (HS 271000), US\$ 75 million in propane (HS 271112) and respectively US\$ 23 million and US\$ 13 million in herbicides (HS 380830) and insecticides (HS 380810). As China is more specialized in manufacturing machinery and electronic goods, China continues to be the most relevant competitor in some strategic sectors, which merits further analysis.

5.3. Intermediate Goods and New Competition

Table 7 sums up gains and losses with China in individual commodities disaggregated at the HS 6-digit level and regrouped by technology intensity and BEC classification. Two observations need to be highlighted. In the first place, compared with the estimation of losses at the aggregate level presented in Table 6, the losses calculated more precisely at disaggregate level were much lower, indicating the exaggeration of the direct competition with China. Secondly, the losses to China were not only concentrated by sector, but also principally fed by the losses in intermediate goods. The “*intermediate-ization*” of China’s exports to Argentina and Brazil corresponds to the general trend of China’s trade structure transformation. As Lemoine and Unal (2017) pointed out, while China’s share in world exports of consumption goods remained stable between 2007 and 2014, and that of capital goods jumped from 18 to 26 percent, China’s exports of intermediate goods, and especially parts and components, have made a breakthrough in world markets, and China has been a net exporter of semi-finished products since 2006 and of parts and components since 2007. This reflects a dramatic change that China is no longer specializing only in assembly, but takes part in the upstream stages of international supply chains, given the fact that the capacity to export intermediate goods reflects more correctly the national technology level by avoiding the “statistical illusion” caused by the concentration of final assembly operations (Gallagher & Porzecanski, 2010).

Table 7: Gains and Losses of Argentina and Brazil to China by Technology Level and BEC Classification, 2009-2014 (US\$ million)

	Capital goods	Intermediate goods	Consumption goods	Other	Total
Argentina					
Low	-1,17	-27,79	-10,84	0,00	-39,80
Medium-low	-2,39	-81,73	-5,96	0,86	-89,21
Medium-high	59,49	-130,85	-23,94	49,19	-46,10
High	-3,31	-8,11	0,35	0,00	-11,07
Total	52,63	-248,48	-40,40	50,06	-186,18
Brazil					
Low	-0.49	-24.85	-19.75	0.00	-45.10

Medium-low	-1.99	-37.48	-6.00	-1.31	-46.78
Medium-high	-65.62	-142.13	-25.94	-5,20	-238.88
High	-25.60	-140.76	4.54	0.00	-161.82
Total	-93.71	-345.21	-47.16	-6.50	-492.58

Two areas illustrate and explain how China has consolidated its competitiveness in intermediate goods especially in medium-high and high technology sectors. The first area affects mostly Brazil's trade with Argentina in ICT products, where Brazil gained from China in Office, accounting, and computing machinery, but lost to China in Radio, TV, and communication equipment. As presented in Table 8, Brazil's gains in Office, accounting, and computing machinery were basically due to the shift that happened in capital goods. More precisely, Brazil's loss to China in Digital Processing Units (HS 847130) and Digital Automatic Data Processing Machines (HS 847141) during the 2003-2008 period were transformed to gains from China during 2009-2014, while its loss in Input or Output Units (HS 847160) was cut sharply to US\$ 12.6 million. The erosion of China's competitiveness in final products was also recorded in consumption goods, such as Reception Apparatus for Television (HS 852812) which turned to be one source of gains for Brazil after the crisis. On the other hand, Brazil's losses to China were overwhelmingly concentrated in intermediate goods for communication equipment, among which Parts of Telephone Sets, Telephones for Cellular Networks or for Other Wireless Networks (HS 851790) covered the losses almost entirely.

Table 8: Breakdown of Brazil's Gains and Losses with China in Major High-Tech Products in Argentina (US\$ million)

	Office, Accounting and Computing Machinery		Radio, TV and Communication Equipment	
	2003-2008	2009-2014	2003-2008	2009-2014
Capital goods	-64.22	6.39	-37.64	-28.44
	<i>847130: -15.44</i>	<i>847130: 17.45</i>		
	<i>847141: 0.00</i>	<i>847141: 11.98</i>		
	<i>847160: -42.52</i>	<i>847160: -12.64</i>		
Intermediate goods	-1.00	0.19	-26.93	-135.45
			<i>851790: -0.59</i>	<i>851790: -135,04</i>
Consumption goods	-0.01	0.00	-21.98	4.58
			<i>852812: -21.14</i>	<i>852812: 4.62</i>

Three reasons might explain Brazil's regain of competitiveness against China in the computer sector. Firstly, Argentina unilaterally raised the tariff rates of electronic consumer goods imported from non-Mercosur countries to as high as 35% since 2013. This temporary raise of tariff barriers distorted the competitiveness of exporters in favor of Mercosur states. Second, the computer sector, identified as strategic sector for a long time in Brazil, has benefited from trade protectionism and "infant industry" incentives for more than two decades. In the whole period after the 1999-2001 crisis, Bekerman and Dalmasso (2010) found that desktop machines and computer equipment had the strongest value-added growth driven by productivity gains. Therefore, computers and storage devices are the only exception among eight sub-sectors in the ICT industry, which didn't witness a growth of trade deficits between 2010 and 2014 (Zylberberg, 2016). Third, in penetrating the Latin American market, all world leaders in the PC market, including China's Lenovo, have all taken assembly in-house, rendering the local producer, such as Brazil's Positivo, unique advantage in developing customized products and solutions to specific market segments that have not been properly addressed by world industry leaders (Araújo & De Sousa, 2017).

However, it is worth noting that Argentina's import demands for computer related products contracted by 15% between 2009-2011 and 2012-2014, while its imports of communications equipment increased by 89% during the same period. Under this context, we may conjecture that China's loss of market share to Brazil in the computer sector was the result of its leaving the slower track to consolidate its competitiveness in a more dynamic market segment. More importantly, China not only hosts some of the largest mobile phone manufacturers, such as Huawei, Xiaomi, and OPPO, but also incubates one of the global platform leaders MediaTEK. The company has developed design capabilities to create chipsets for mobile handsets. Its low-cost chipsets have made it a viable competitor in China as well as other emerging economies (Brandt & Thun, 2011). In comparison, despite efforts to localize production, Brazil has relied on imports to improve its sparsely populated and antiquated mobile telecommunications network. Communications equipment made up more than a quarter of the ICT trade deficit in 2014 (Zylberberg, 2016). The contrast between the two countries in fostering the development of new and innovative sectors might explain how the competition, under Argentina's special trade regime⁹, has resulted in over US\$ 135 million losses to Brazil in a single product line.

China's move to tap into the growing market segment through the exports of intermediate goods could also be illustrated by the evolution of competition in the second area – the automotive industry. As the selling story of Mercosur achievement, the automotive industry is perhaps the most integrated sector between Argentina and Brazil. Ever since the implementation of Protocol No. 31 in 2002, the bloc laid the foundations for a true automotive common market, setting both common rules for the administration of trade with extra-zone countries and a quasi-free trade scheme between the members. As for the rules under which exchange with the rest of the world would take place, Argentina and Brazil agreed to establish a common external tariff of 35% for vehicles, 14% for agricultural machinery, and 2% for auto parts not produced within the bloc. On the other hand, for other components produced within the bloc, it was agreed that a tariff harmonization scheme would be sanctioned, so that from 2005 onwards they would be identical in both countries. The creation of a common automotive market clearly demonstrates the import substitution strategy implemented in both countries, by erecting a high tariff barrier to the entry of assembled vehicles, while rendering relative freedom to import necessary auto parts that local supplies are incapable of producing.

The protective measures generated a creation effect on regional trade, especially when the global automotive industry underwent a structural transformation giving more importance to the emerging markets since 2009. Between the periods under study, the bilateral trade between Argentina and Brazil of automotive products increased by 19% from an average US\$ 12.8 billion to an average US\$ 15.2 billion, which was much higher than the grow rate of 5% at the aggregate level. More importantly, since 2009, a bilateral trade pattern has emerged that marks a division of labor between Argentina and Brazil due to the structural asymmetry of market size and policy incentives. While Argentina maintains a trade surplus on assembled vehicles with Brazil between 2009 and 2014, Brazil became a net exporter of auto parts (Bil, 2016). For Pelicarić (2017), the growth of automotive production in Argentina was accompanied by the increase of the imported content, which largely benefited Brazil. In the words of Inés Gárriz and Tupac Panigo (2015), Brazil has used the bloc as a “refuge” in the face of falling extra-zone markets after the international crisis.

⁹ While Argentina has severely restricted the imports of consumer goods since 2009, there is the continuation of special regional trade regime to implement its import substitution industrialization strategy. One such region is the Tierra del Fuego Free Trade Zone, where imports of parts and components are free of import duties, and goods produced in the Free Trade Zone can be imported duty-free into the rest of the Argentine territory.

Nevertheless, the relatively better performance of the Brazilian auto part subsector against Argentina doesn't necessarily mean the overall improvement of its competitiveness outside the overprotected regional market. In fact, in 2013, Brazil's trade balance of auto parts reached a new level of deficit. The national auto part industry is still trapped in producing items of lesser technological value and importing items of greater value, a long lasting systematic problem to which the recent Inovar-Auto program didn't provide a solution (Palmeri et al., 2014). In the meantime, in China, the shift of the development of its auto industry from scale expansion to strength growth signifies the acceleration of auto part industry integration and internationalization. Percentage of the total output of the parts sector in the total output of the auto industry has steadily increased to above 40%. Despite the large number, average small size and overall technological backwardness of local auto parts manufacturers, some listed Chinese manufacturers posted better net profit margin than international tycoons in recent years, which is mainly attributed to their investment in advanced technology in certain market segments, cheaper but equally qualified products, and higher production efficiency (Deloitte, 2011). Nowadays, as a key link in the global production and supply system of autos and parts, China not only hosts almost all the world leading auto parts manufacturers, but is also a huge exporter of home-made auto tires, glasses and audio products. According to the analysis of international trade statistics of around 30 auto parts items by Baba (2016), the international competitiveness of China's general auto parts changed from "weak" in 1992 to "slightly strong" in 2013. Certain items, such as auto body parts, have dramatically changed from being "very weak" to being "strong".

Despite the deep integration of China's auto part industry in the Asian chain of values (Amighini, 2012), the momentum of exports of auto parts from China can also be seen in Argentina and Brazil. Table 9 presents clear evidence of how the losses related to China's competition in the automotive industry have been overwhelmingly concentrated in intermediate goods between 2009 and 2014 for both Argentina and Brazil, while China's threat in the assembled vehicle sector waded significantly in favor of automobile manufacturers located in Argentina and Brazil between 2003-2008 and 2009-2014.

Table 9: Breakdown of Losses and Gains of Argentina and Brazil with China in Motor, Railroad, and Transport Equipment (US\$ million)

	Argentina		Brazil	
	2003-2008	2009-2014	2003-2008	2009-2014
Capital goods	1.27 <i>870431: -1.25</i>	81.36 <i>870431: 86.85</i>	-0.20	-1.03
Intermediate goods	-11.00	-54.35	-15.56	-43.36
Consumption goods	-0.05	-0.15	-72.57 <i>871120: -71.90</i> <i>871130: -0.18</i>	3.98 <i>871120: 1.64</i> <i>871130: 2.35</i>
Other	-1.02 <i>870321: -1.20</i> <i>870322: 0.08</i> <i>870323: 0.06</i>	49.19 <i>870321: 7.53</i> <i>870322: 29.20</i> <i>870323: 12.44</i>	-14.62	-5.20

In short, the two cases analyzed above suggest a new frontier of competition, where China's presence could be both a curse and a blessing to the manufacturing future of Argentina and Brazil. The outcome, however, depends on the policy adjustment both at regional level as well as at the national level.

6. Conclusion

Despite the resilience to short-term crisis impact in China, Argentina, and Brazil, the long-term crisis aftermath and different macroeconomic situations determined the destiny of anti-crisis measures implemented during the first years of the crisis. The anti-cyclic measures phased out quickly giving way to the continuation of the structure reform program launched before the crisis in China, while protectionist measures and import substitution policies were strengthened in Argentina and Brazil. China's economic "new normal", which is expected to include more domestic consumption and be more innovation dependent, thus exerts common and differentiated influence on Argentina and Brazil. The main takeaways of our empirical trilateral trade analysis could be summarized following this delineation.

Regarding the common impacts, although China's import demands of consumer goods have increased rapidly, it was basically nurtured by the craze among Chinese consumers for luxury goods, which largely benefited the developed countries. In 2014, 67% of consumer goods imported by China were in the high-end segment, and 80% of the consumption goods were imported from developed countries (Lemoine & Unal, 2017). Therefore, China's current consumption driven transformation hardly affected its trade pattern with Argentina and Brazil. The bulk of its imports from two countries were composed of primary commodities. In the meantime, China's efforts to reduce the productive overcapacity and limit further growth of energy and labor intensive industries in favor of technology intensive sectors have intensified its exports of intermediate goods to Argentina and Brazil, especially when they have resorted to protectionist measures to restrict the imports of extra-regional consumer goods. As a consequence, although the overall losses due to China's competition in the partner's market have relatively reduced for both Argentina and Brazil, they were concentrated in more sophisticated intermediate goods segments.

Considering the differential influences, there would be no better example than the divergent export performance of soybeans in Argentina and Brazil, facing China's robust demands. The competitive scenario changed radically in favor of Brazil during the post-crisis period, when the policy adjustment turned away from the "*sojización*" in Argentina. On the contrary, the penetration of Chinese made intermediate goods caused more losses for Brazil than for Argentina, given the fact that Brazil is the only country that has a complete upstream-downstream industry system within Mercosur.

The variation of China's impact, be it positive or negative, between Argentina and Brazil, highlights two internal problems that have plagued Mercosur integration advances: the persistence of structural asymmetry and the lack of policy coordination. Mercosur was not formed to respond to the real demands of transnational business people in reducing transaction costs of cross-border activities, but a State-led political attempt to find an alternative regional industrialization way. This State-led integration process doesn't necessarily fail, but needs supranational regulations that harmonize both the structural and the regulatory asymmetries that may exist between countries implementing it. Otherwise, the development of the bloc may serve to deepen existing asymmetries and generate tensions that undermine the performance of the integration process itself (Bekerman & Dalmaso, 2010). Unfortunately, as Baer and Silva (2014) argued, "the deleterious effects of the conflict of national interests have been a recurrent and important issue in preferential agreements among Latin American countries in the past, and still are in the present". The problem arises from conflicts between political commitment to its own people and the respect to the regional strategic priorities in each member country, as well as from the different visions of benefits provided by the union between Brazil and its smaller partners (Doctor, 2013). When national interests outweigh the Mercosur union, the

already weak institutionalization would be further undermined by the poor implementation of agreed regional rules at the national level, such as unilateral protectionist measures recurring to non-tariff internal trade barriers (BID 2013) and deviations from the common external tariffs (Baer & Silva, 2014).

The global financial crisis justified the inward-looking industrial policies carried out separately in Mercosur member countries. Nevertheless, no matter how innovation-orientated they claimed to be, the industrial policies in Argentina and Brazil were path dependent and conservative in nature. Rather than supporting new and innovative sectors, the industrial policies, such as those implemented in Brazil, were formulated to subsidize traditional and low technology sectors (Kasahara & Botelho, 2016). Under this context, a technological breakthrough in other countries would exacerbate the international competitiveness of Mercosur countries in a radical manner. This is the case for how the shale gas revolution in the United States made the country a market grabber in Argentina and Brazil, nullifying their efforts made to consolidate the competitiveness in the oil and gas sector.

Behind the inefficiency of such industrial policies lays the fundamental problem related to import substitution strategy in a world where the industrial production is fragmented and organized along the global value chain (GVC). The import substitution strategy is not necessarily incompatible with a GVC-oriented trade policy. The key is to facilitate market access to inputs and intermediate goods into the domestic market and seek preferential access for exports into the main foreign markets. However, the version adopted in Mercosur not only pursues a vision to develop and maintain full production chains within the bloc, but also uses the common regional market to negotiate the reciprocal concession with the EU and the United States. The insistence of reciprocity and multilateralism postpones the deep integration into globalized international production and commercial flows, while Asian countries, including China, benefited from early preferential treatment through bilateral negotiation. Current anti-globalization protectionism symbolized by *Brexit* in the European Union and Donald Trump's presidency in the United States might suggest the close of the opportunity window for Mercosur to achieve, in the short term, any real advance in inter-bloc negotiation. Under such context, a sort of bilateralism under the current institution arrangement could be a viable option to give greater flexibility in the search of commercial associations, where each partner would advance by relatively independent roads and speeds. In this hypothetical scenario, the judgment of China's impact in general, and the debates around the penetration of Chinese made intermediate goods specifically, would be contingent on policies deployed in respective Mercosur states and on bilateral agreements on trade, investment, and cooperation.

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