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ABSTRACT

Between 2002 and 2008, Argentina experienced a phase of very high and sustained economic growth. During this period, macroeconomic policy aimed to preserve a stable and competitive real exchange rate (SCRER). There is controversy on whether the SCRER policy was a key factor fostering growth and, even more, on whether it helped promote the expansion of tradable activities and exports. We use a methodology to detect episodes of export surges among Argentina's export industries and find that labor-intensive industries—especially low- and medium-technology manufactures—experienced the highest proportion of export surges within this period. We also find that between 1980 and 2015, the highest proportion of surges in total exports occurred during the 2003–8 period. The performance of export of services was also particularly dynamic during this period. This evidence suggests that the SCRER policy was instrumental for export surges in Argentina during 2002–8.

After its great 2001–2 crisis, Argentina experienced a phase of very solid recovery and growth. Between mid-2002 and the collapse of Lehman Brothers in September 2008, the economy grew at a sustained annual rate of around 8.5 percent.[1] Certainly, part of this process was only recovery. However, since the first quarter of 2005—when gross domestic product (GDP) had surpassed its previous peak (i.e., the third quarter of 1998)—the average annual growth rate was 7.7 percent, which suggests that the passage from recovery to growth did not imply a sizable deceleration. Growth was interrupted not due to any domestic element, but to the effects of the global financial crisis. Moreover, the sources of disequilibria that had traditionally interrupted growth in Argentina—namely, the twin fiscal and external deficits—had turned at this time into twin surpluses.

It is not easy to find comparable episodes of sustained and rapid growth in Argentina's economic history. To find a long-lasting growth episode equal to or longer than the six-year period from mid-2002 to the third quarter of 2008,

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Color versions of one or more of the figures in the article can be found online at www.tandfonline.com/mpke.
[1]Since Argentina's official GDP statistics (and others) were manipulated between 2007 and 2015, we use those constructed by ARKLEMS+LAND, which are reliable and comparable beyond the period we cover in this article. See Coremberg (2014) for details.

one has to go back to 1964–74, when GDP grew without interruption at an annual rate of 5.2 percent. To find an episode with a comparable growth rate, one has to go back to 1918–24, when GDP expanded at an annual growth rate of 8 percent.

The high-growth episode from mid-2002 to the third quarter of 2008 occurred simultaneously with a macroeconomic policy targeting a stable and competitive real exchange rate (SCRER).[2] The literature identifies two main channels through which an SCRER can promote growth. On the one hand, a competitive RER tends to be associated with low foreign saving and accumulation of international reserves. This combination reduces the vulnerability of the economy to sudden stops and crises, and thus favors sustained economic growth. On the other hand, an SCRER makes tradable profitability high and stable, especially in labor-intensive industries. The expansion of tradable output accelerates growth because it relaxes the foreign-exchange constraint on growth, promotes learning, and generates positive spillovers on other sectors of the economy.

There is some agreement among analysts that the policy targeting an SCRER in Argentina between 2002/3 and 2008 was instrumental in developing a solid macroeconomic configuration that helped make economic recovery and growth strong and sustainable. The SCRER favored a significant improvement of the current account of the balance of payments and led to a sustained accumulation of international reserves at the central bank. It also promoted a sound fiscal balance because it facilitated the imposition of taxes on primary exports that amounted to 2.5 percent of GDP. The fiscal and external surpluses combined with the large stock of international reserves reduced the vulnerability to sudden stops and sharp depreciation of the peso and thus helped create a favorable macroeconomic environment for growth. Coatz, Grasso, and Kosacoff (2015), Damill, Frenkel, and Rapetti (2015), Heymann and Ramos (2012) are among those who share this view.

If there is some agreement about its macroeconomic effects, the extent to which the SCRER policy influenced the economic performance at the microeconomic and sectoral level is more controversial. Katz and Bernat (2012) find that the SCRER was favorable for the performance of low- and middle-technology industries, but it did not manage to significantly change the export basket. Herrera and Tavosnanska (2011) argue that macroeconomic policy helped accelerate output and employment growth in manufactures. Castro and Levy Yeyati (2012) highlight that the share of manufactures over GDP fell during this period, similarly to other commodity-export countries. Bianco, Porta, and Vismara (2008) and Coatz, Grasso, and Kosacoff (2015) argue that transformations in the manufacturing sector were insufficient to talk about structural change.

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[2]We define the exchange rate as the domestic price of a foreign currency (i.e., units of domestic currency per unit of U.S. dollar). A rise in the exchange rate implies a depreciation and a fall in appreciation. The same logic applies to the real exchange rate (RER).

This study aims to contribute to the assessment of the effect of the SCRER policy on the productive structure by studying the performance of Argentine exports between 2002/3 and 2008. We take advantage of the significant change in the behavior of the RER before and after this period. Between 1991 and 2001, it remained at a historically low level, and between 2010 and 2015, it followed a continuous appreciating trend. Although the SCRER period was probably not long enough to see its influence operating in full, the contrast between these periods suggests that the SCRER policy had a positive impact on the performance of tradable activities, in particular those that are labor intensive.

The behavior of the RER

Investment, production, export, and import decisions are not very sensitive to RER changes in the short run. Price incentives embodied in the RER need to be perceived as durable over time to induce long-lasting decisions. The experience we are studying in this article has two advantages in this regard. First, in the period we are focusing on—roughly going from the sharp depreciation in early 2002 until a few months before the collapse of Lehman Brothers in September 2008—the RER maintained relatively stable around a high (competitive) value. This period is long enough to observe the effect on the economy. Second, this period was preceded and followed by two relatively long periods with very contrasting behavior of the RER. The first one essentially coincides with the currency board regime—from early 1991 to the end of 2001—in which the RER remained relatively stable at a low level. The second period goes from early 2010 until the end of 2015, during which the RER follow a sustained appreciating trend. There was a very short and transitory fourth period going from June 2008 to January 2010, during which the RER fell and recovered very abruptly, returning to almost the same level as before the global crisis hit. This is a hiatus that we abstract from during our analysis.

Figure 1 plots bilateral RERs against Brazil, China, the United States, and Germany and the effective RER. The first three countries are Argentina's main trade partners during the period plotted. The bilateral RER against Germany is a good proxy of the RER against the European Union, another important trade partner as a whole. The series gives us a reasonably good characterization of the behavior of Argentina's tradable competitiveness during the period under analysis. The three periods—(1) stable and low, (2) stable and competitive, and (3) continuously appreciating—are best represented by the effective RER, but the bilateral RERs also follow a similar behavior.

As with any periodization, there might be room for disagreement. If one focuses on the bilateral RER against the United States, it would seem more reasonable to close the second period somewhere around mid-2006.
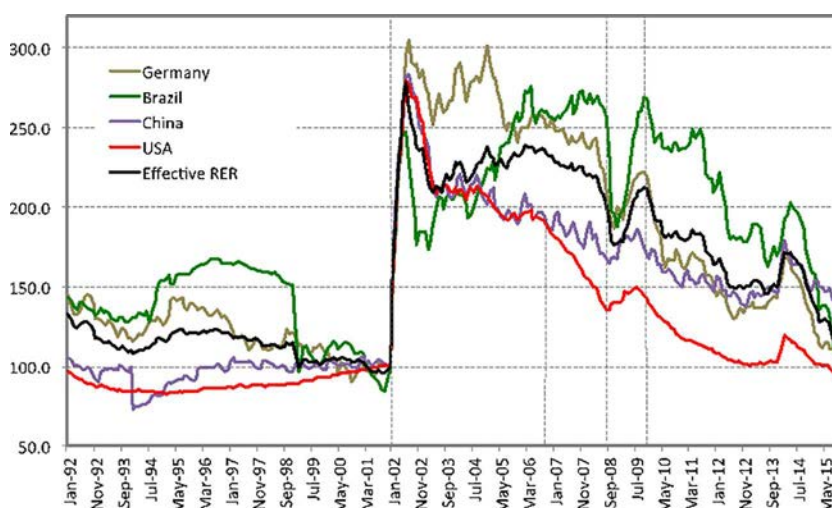
Figure 1. Effective RER and bilateral RERs against different countries.

In our view, however, macroeconomic policy kept exchange rate competitiveness as a goal taking the effective RER as a target. The appreciation against the United States was compensated by the depreciation against other Latin American countries, most notably Brazil. Figure 1 shows that since the beginning of 2010, once the economy had recovered from the effects of the global financial crisis, the effective RER started to fall significantly and almost monotonically. This change involved the abandonment of the SCRER as an objective of the macroeconomic policy in favor of a demand-led strategy.[3]

Another point that should be made concerns the behavior of the RER during the first period. It is clear that the bilateral RER against Brazil was substantially more volatile than the others. In particular, the 1995–98 average was 54 percent higher than the 1999–2001 average. There is no clear evidence that Argentina's tradable (manufacturing) production was uncompetitive against that of Brazil during 1995–98, while there was no doubt about the lack of competitiveness during 1999–2001 (Alberola, López, and Servén, 2004). As we will see later in the article, this element could help explain the behavior of Argentine manufacturing exports during the early and mid-1990s.

The RER and tradable profitability

The RER is the relative price between tradable and nontradable goods and services. As such, there exists a positive relationship between the level of the RER and the rate of profit of tradable activities, especially those that are

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[3]See Damill, Frenkel, and Rapetti (2015) for details about the different macroeconomic policy strategies followed in Argentina during the 2000s.

labor-intensive or employ a significant amount of other nontradable inputs. If production and investment decisions are influenced by the rate of profit, an SCRER should induce the expansion of labor-intensive tradable activities. We derive this intuitive relationship from the following simple formal scheme.

Take the RER (q) as the relative price between tradables and nontradables:

$$q = \frac{P_T}{P_N}. \tag{1}$$

Assume that nontradable firms operate under some sort of imperfect competition and set their price with a markup (μ) over unit labor costs.

$$P_N = (1 + \mu)\frac{W}{y_N}, \tag{2}$$

where W represents the nominal wage rate and y_N the output per worker ratio in the nontradable sector.

From Equations (1) and (2), it follows that there is an inverse relationship between the RER and the purchasing power of wages in terms of tradables.

$$\frac{W}{P_T} = \frac{y_N}{(1+\mu)}q^{-1} = w_N q^{-1}, \tag{3}$$

where w_N is the nontradable product wage; that is, $w_N \equiv W/P_N = y_N/(1+\mu)$.

Consider now a general form of the rate of profit of a representative firm in the tradable sector.

$$r_T = \frac{P_T Y_T(1 + s - t) - WL_T - P_N X_N - \sum_{j=1}^{M} P_j X_j - iD}{P_T K_T}, \tag{4}$$

where s represents a rate of subsidy per unit of output, t is an ad valorem tax, L_T is the numbers of workers employed, X_N is the amount of nontradable inputs used, X_j represents the other M inputs used for production, with their corresponding prices P_j, i is the interest rate that the firm pays on its debt D, and K_T is the capital stock. Assuming, for simplicity, a fixed-coefficient production function and using Equations (3) and (4), we get Equation (5) after a few manipulations:

$$r_T = a_K \left[1 + s - t - \left(\frac{w_N}{y_T} + x_N \right)q^{-1} - \sum_{j=1}^{M} \rho_j x_j - id \right], \tag{5}$$

where a_K is the output–capital ratio, y_T is the tradable output per worker, x_N is the nontradable input–output ratio, x_j is j's input–output ratio, ρ_j is the relative price between input j and the tradable good, and d is the debt-to-cash-flow ratio.

Development economists have traditionally argued that economic development does not occur "naturally" because of the existence of different kinds of

market failures that make *modern* activities—those whose expansion is key for structural change and growth—unprofitable at "equilibrium" prices. Industrial policy is a way to overcome this problem because it provides transitory rents (or above-"equilibrium" profits) that induce capital accumulation in these key activities. Equation (5) shows that tradable profitability can be boosted with the traditional instruments of industrial policy. Governments can increase tradable profitability and stimulate investment by: offering subsidies (i.e., $\partial r_T/\partial s > 0$), reducing taxes (i.e., $\partial r_T/\partial t < 0$), and providing subsidized inputs (i.e., $\partial r_T/\partial \rho_i < 0$) and/or credits (i.e., $\partial r_T/\partial i < 0$). Interestingly for our discussion, they could also do it by targeting a sufficiently high (i.e., competitive) level of the RER. Such a level would more likely induce investment if it is perceived as stable (or sustainable) in time. Consequently, an SCRER could be considered an instrument of industrial policy to promote the expansion of tradable activities.

Equation (5) also shows that the effect of the RER on tradable profitability would be larger, the lower the value of y_T and the higher the value of x_N. Consequently, an SCRER would be more effective to stimulate tradable activities that are more labor-intensive (i.e., a lower y_T) and more dependent on nontradable inputs (i.e., a higher x_N). This is not surprising: a higher RER implies a lower real unit labor cost in tradable activities and therefore a higher rate of profit.

What matters for the expansion of (and investment in) labor-intensive tradable activities is not just the absolute but also the relative profit rate between domestic and foreign firms. This variable also depends on the level of the RER. To illustrate this, consider, for simplicity, the case of a tradable firm that only employs labor and capital with a fixed-coefficient production function. The rate of profit of such a firm is a simplified version of Equation (5), in which the real unit labor cost ($u \equiv \frac{W}{P_T}\frac{1}{y_T}$) is the main determinant:

$$r_T = a_K(1 - u). \tag{6}$$

Assuming that foreign firms produce the same good (or service) with a similar technology (i.e., $a_K = a_K^*$) implies that the relative rate of profit (r) is a negative function of the relative real unit labor costs ($\gamma \equiv u/u^*$):

$$r \equiv r_T/r_T^* = \frac{1 - u}{1 - u^*} = f(\gamma). \tag{7}$$

The relative real unit cost (RRULC) in labor-intensive tradable activities is negatively associated with the RER.

$$\gamma = \frac{w_N}{y_T}\frac{u^*}{q}. \tag{8}$$

From Equation (8), we see that the continuous-time variation of the RRULC is determined by the variations of: (1) the nontradable product wage,

(2) the tradable labor productivity, (3) the foreign tradable real unit labor cost, and (4) the real exchange rate:

$$\hat{\gamma} = \hat{w}_N - \hat{y}_T + \hat{u}^* - \hat{q}. \tag{9}$$

Following the Balassa–Samuelson hypothesis, evidence shows that real wages in nontradable activities over long periods of time tend to move closely with the rate of labor productivity growth of the tradable sector (Summers and Heston, 1991). Unless there is a significant change over functional income distribution within the sector, the product wage and labor productivity in the tradable sector also tend to move together, making real unit labor cost stable over time. Having these observations in mind, one could assume as a first approximation that the sum of the first three elements on the right-hand side of Equation (9) could be thought as negligible, especially when compared with the size of $\hat{q}$. This is tantamount to saying that the main source of variation of the RRULC is the RER, especially in the short run.

The first three panels of Figure 2 show the evolution of the RRULC between the manufacturing sectors—which are a good representation of a labor-intensive tradable sectors—of Argentina and the United States, Brazil, and Germany together with the bilateral RER between Argentina and these three countries. Panel (d) shows the simple average of the RRULC and the inverse of the bilateral RER against the three countries. The series of panel
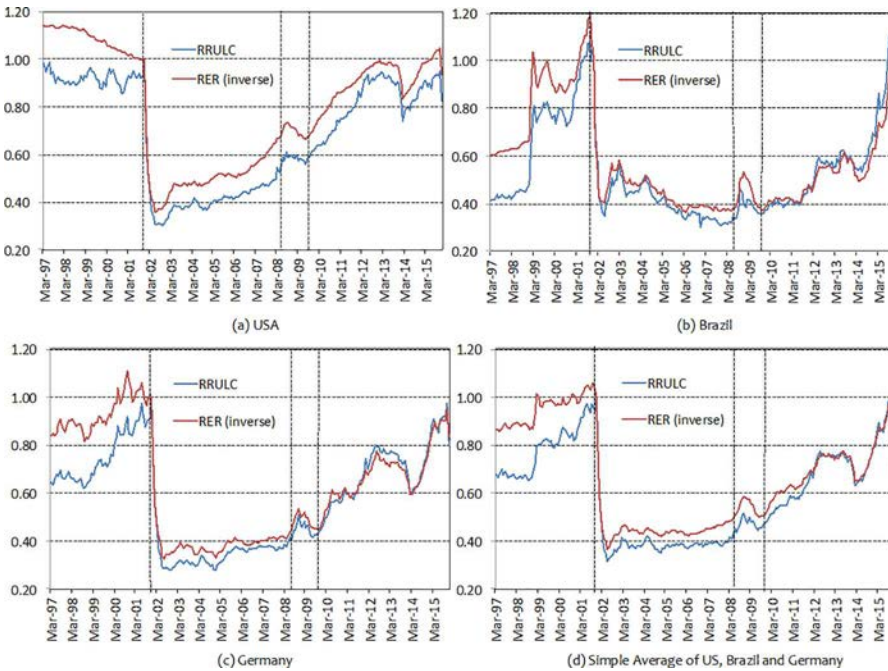

Figure 2. Manufacturing relative real unit labor cost (RRULC) and bilateral real exchange rate (RER) between Argentina and the United States, Brazil, Germany, and simple average.

(d) shows proxies of the "effective" RRULC and RER. The four panels show a clear and closely positive correlation between the RRULC and the inverse of the RER in the short run. In other words, the RRLUC mostly varies with changes of the opposite sign of the RER, as suggested by our discussion of Equation (9).

Three broad periods associated with the behavior of the RRLUC can be seen in Figure 2. These are similar to those identified in the previous section with the behavior of the RER. There is a first period until December 2001 of a stable and high RRULC. This is most clearly seen against the United States. The depreciation of the euro against the U.S. dollar since mid-1998 and the devaluation of the Brazilian real in early 1999 made Argentina's bilateral RRULC (RER) against Germany and Brazil increase (fall) during the first period, turning them relatively less stable. The distinction highlighted above regarding the behavior of the bilateral RER against Brazil during this first period also applies to the behavior of the RRULC. The second period starts with the devaluation of early 2002, making the RRULC fall significantly. It remains low and stable especially against Brazil and Germany, whereas against the United States it keeps increasing weakly but nonstop. The third period is one of a strong and sustained increase of the RRULC. This period starts in early 2010 for the cases against the United States and Germany and only in early 2012 against Brazil. Since some of these bilateral movements compensate for each other, panel (d) shows that in terms of the "effective" RRULC the three periods essentially coincide with those of the effective RER identified previously. There is a first period of high and stable RRULC during the 1990s, a period of low and stable RRULC during the SCRER period and a period of strong and sustained increase of the RRULC between 2010 and 2015. Given the strong and negative association between the RRULC and relative profitability of labor-intensive tradable activities—that is, Equation (7)—these three periods can alternatively be seen as: (1) low and stable tradable profitability, (2) high and stable tradable profitability, and (3) sustained contraction of tradable profitability.

Export performance

Following the argument developed in the previous two sections, the SCRER policy should have provided incentives for the expansion of tradable activities, especially those that are labor intensive. Due to a lack of reliable data on tradable output, our analysis focuses exclusively on export performance and takes advantage of the contrasting behavior of the RER in the three periods identified previously. This contrast is useful in evaluating the effect of the RER on sectoral performance. Because the incentives generated by the RER level take time to induce changes in firms' behavior, it is not easy to capture the relationship in standard econometric studies. By comparing relatively long

periods in which the behavior of the RER was comparatively homogeneous but within contrasting between periods, one can get an appreciation of its effect on the economy and its sectors.

Exports of goods

To study the behavior of exports of goods, we carried out an analysis of export surges similar to that by Freund and Pierola (2012). They construct an algorithm to detect episodes of significant increases in manufacturing export growth that are sustained for at least seven years. The authors find robust evidence that manufacturing export surges are preceded by exchange rate devaluations that lead to higher and less volatile RERs. Following their finding, our goal is to evaluate whether during the SCRER period in Argentina there was a significant number of episodes of acceleration of export growth (i.e., export surges), especially in labor-intensive industries. Contrary to their study, our analysis focuses on a specific period—the six years from 2003 to 2008, which is one year shorter than their seven-year threshold—and instead of looking at aggregate manufacturing exports for several countries, we analyze 758 export sectors—manufacturing and primary—in Argentina. We use COMTRADE data organized by the 4-digit Standard International Trade Classification, Revision 2.

We define an export surge as a six-year episode running from 2003 to 2008 that fulfills the following requirements:

1. *Export growth is high.* This establishes that Argentine exports of product j between 2003 and 2008 grew at an annual rate at least 33 percent higher than the long-term rate of growth of world exports of product j. The latter is defined as the average rate of growth during the twenty-year period from 1996 to 2015. The 33 percent threshold is the same as that in Freund and Pierola (2012).

2. *Export growth accelerates.* We consider that the rate of growth of exports of product j between 2003 and 2008 accelerated if its annual growth rate was at least 33 percent higher and at least three percentage points higher than the rate of growth during the previous comparable six-year period (i.e., 1996–2001). We take 2001 as the ending year of such a period because it is likely that export performance was hurt in several channels during the economic crisis of 2002. The requirement of a difference of at least three percentage points is identical to that in Freund and Pierola (2012) and avoids cases of acceleration from very low or negative growth.

3. *The export surge is not a recovery.* This requires that the peak of exports of product j at the end of the SCRER period is at least 60 percent higher than the preceding comparable period. The 60 percent threshold represents the accumulated real growth between 2000 and 2008 of world exports of goods. This threshold indicates the level that exports of product j would have

reached had they grown without interruption at the same rate as world trade during the period. Because 2008 is the year in which the global financial crisis started and world trade collapsed, we consider a broader ending point for the SCRER period and take the maximum export value of j reached in 2007–8. Similarly, because the preceding period ended with the great economic crisis, we broaden the end of this period to be 1999–2001.

4. *Export growth is not demand-led.* This requirement establishes that Argentine exports of product j between 2003 and 2008 grew at an annual rate higher than the growth of world exports of product j *during the same period*. A higher growth rate than world exports of the same product implies an increase in the market share and guarantees that the export surge was due neither to faster growth of the export-market economies nor to changes of global demand in favor of product j.

The four requirements can be stated formally as follows:

$$x_j^{A,t} \geq \left(1 + \frac{1}{3}\right) x_j^{W,t^*} \tag{R1}$$

$$x_j^{A,t} \geq \left(1 + \frac{1}{3}\right) x_j^{A,t-1} \text{ and } x_j^{A,t} - x_j^{A,t-1} \geq 3\% \tag{R2}$$

$$\text{Max}\left[X_j^{A,07}, X_j^{A,08}\right] \geq 1.6 Max\left[X_j^{A,99}, X_j^{A,01}\right] \tag{R3}$$

$$x_j^{A,t} > x_j^{W,t}, \tag{R4}$$

where j represents the export industry, x the rate of export growth, A stands for Argentina and W for world, t represents the 2003–8 period, $t-1$ the 1996–2001 period, t^* the 1996–2015 period, and X is the volume of export.

To evaluate the sectoral dimension of export surges, we use the classification of export industries developed by Lall (2000). This classification distinguishes five groups of industries: (1) primary products, (2) resource-based manufactures, (3) low-technology manufactures, (4) medium-technology manufactures, and (5) high-technology manufactures. We use Lall's classification because it is widely used and therefore makes our study comparable to others, but more important because these groups of industries vary significantly in terms of degree of labor intensity. Table 1 shows the number of workers per million 2004 pesos of value added for each of Lall's groups of industries in Argentina. The table reports the value of this ratio in 2004 (the earliest available data for the beginning of the SCRER period) and the average value for 2004–15.[4] Low- and medium-technology manufactures are the groups of activities with the highest degree of labor intensity—12.5 and 10.2, respectively, in 2004. According to our framework, exports of these groups should be the most sensitive to the level and volatility of the RER and

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[4]For the calculation, we use post–National Statistical Emergency data from National Accounts, base-year 2004.

Table 1. Degree of labor intensity of Lall's groups of industries (in workers per million 2004 pesos).

	Worker per million of 2004 AR$ of value added	
	2004–2015 average	2004
Primary products	8.01	8.04
Resource-based manufactures	8.48	8.32
Low-technology manufactures	13.07	12.48
Medium-technology manufactures	10.22	10.20
High-technology manufactures	8.83	8.57

consequently should have been relatively more responsive than the other groups during the SCRER period.

We constructed an algorithm that demands the simultaneous fulfillment of requirements R1–R4 to detect episodes of export surges of primary and manufacturing products in Argentina between 2003 and 2008. World exports in our exercise consist of a group of seventy countries for which we have reliable data for the whole sample. The results of our baseline analysis are presented in Table 2 in two forms. The upper half of the table presents total and sectoral exports and surges in terms of the number of industries; the lower half provides the same information in millions of 2000 dollars. The first group provides useful information in terms of number (percentage) of industries that had surges, whereas the second group gives a sense of the economic relevance of the sectors that had surges. The two types of information are complementary. When measured in money value, one can potentially overestimate (underestimate) the importance of export surges if the industries with surges are few (many) but their exports imply a large (small) amount of money. Similarly, one could overestimate (underestimate) the significance of surges if there is a large (small) number of industries with surges but with small (large) economic significance.

Table 2. Export surges in Argentina between 2003 and 2008, baseline exercise.

Concept	Total exports	Primary products	Resource-based manufactures	Low-technology manufactures	Medium-technology manufactures	High-technology manufactures
Number of industries	758	134	192	158	198	65
Number of industries with surges	112	15	18	27	43	9
% on surges within groups	14.8	11.2	9.4	17.1	21.7	13.8
% on total surges	100	13.4	16.1	24.1	38.4	8.0
Exports (in millons USD 2000)	208,292	83,767	38,134	22,563	58,684	5,144
Export surges (in millons USD 2000)	41,344	1,424	5,260	9,513	24,949	197
% of surges within groups	19.8	1.7	13.8	42.2	42.5	3.8
% on total surges	100	3.4	12.7	23.0	60.3	0.5

During the SCRER period, 112 out of 758 industries experienced export surges, which amounts to 14.8 percent of the total number of export industries. Analyzing the sectoral composition of surges reveals that the intensity of export surges was highest in the most labor-intensive sectors: 17.1 percent of low-technology manufactures and 21.7 percent of medium-technology manufactures had export surges. These two groups represent 47 percent of total export industries, but amounted to 62.5 percent of the total number of industries with surges. The proportions of industries that had surges within the groups of primary products, resource-based manufactures, and high-technology manufactures were below average with 11.2 percent, 9.4 percent, and 13.8 percent, respectively. The relative performance of exports of low- and medium-technology manufactures is more impressive when measured in terms of dollar value: more than 42 percent of their exports had surges and they amounted to 83.3 percent of the total value of export surges. The results are in line with our hypothesis that an SCRER provides relatively more incentives to tradable activities that are labor-intensive. It is also interesting to note that the number of export surges of primary products was relatively low and had little economic significance despite experiencing a boom of commodity prices during this period. Only fifteen industries experienced surges, amounting to only 1.7 percent of their own group's export value.

To check for the robustness of these results, we explored their sensitivity to changes in some of the requirements that define an export surge. Regarding the nonrecovery requirement (R3), we considered two alternative thresholds instead of 60 percent: R3.1) the 2007–8 peak has to be higher than 40 percent of the 1999–2001 peak, and R3.2) the 2007–8 peak has to be higher than 100 percent of the 1999–2001 peak. The first threshold is similar to the accumulated growth between 2000 and 2008 of Latin American and Caribbean exports and the second—the accumulated growth of emerging market and developing economies exports. Following a strategy similar to that of Freund and Pierola (2012), we consider an additional requirement to control for growth outliers. Requirement (R5) demands that the calculation of the annual export growth per period exclude the rate of growth of a year whose growth rate amounts to more than 60 percent of the accumulated growth rate in the period. Table 3 reports the result equivalent to the third and fourth rows of Table 2 for three additional exercises.[5] Exercise A was carried out with Requirements (R1), (R2), (R3.1), and (R4); Exercise B with (R1), (R2), (R3.2), and (R4); and Exercise C with (R1), (R2), (R3), (R4), and (R5).

These exercises yielded results very similar to those in the baseline exercise (Table 2) and are in line with our hypothesis. In the three cases, low- and medium-technology manufactures had a relatively greater number of industries with surges than the other three groups, which again performed below

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[5]The analysis using exports value gives similar results.

Table 3. Export surges in Argentina between 2003 and 2008, robustness analysis.

Concept	Total exports	Primary products	Resource based manufactures	Low technology manufactures	Medium technology manufactures	High technology manufactures
Exercise A						
% on surges within groups	17.5%	15.7%	12.5%	19.0%	23.7%	16.9%
% on total surges	100.0%	15.8%	18.0%	22.6%	35.3%	8.3%
Exercise B						
% on surges within groups	12.1%	9.0%	7.3%	13.9%	19.2%	9.2%
% on total surges	100.0%	13.0%	15.2%	23.9%	41.3%	6.5%
Exercise C						
% on surges within groups	12.1%	11.2%	8.9%	12.0%	17.7%	9.2%
% on total surges	100.0%	16.3%	18.5%	20.7%	38.0%	6.5%

average. As in our baseline exercise, industries with export surges in the two labor-intensive sectors represented between 58 percent and 65 percent of the total number of industries with surges.

The results presented so far indicate that the composition of export surges between 2003 and 2008 had a bias toward labor-intensive industries, but reveal nothing about aggregate export performance during the SCRER period compared to other periods. We have shown that this period was preceded by one in which the RER (RRULC) was stable and low (high) and followed by another in which the RER (RRULC) experienced a sustained falling (rising) trend. Therefore, besides the cross-sectoral evidence described so far, we can also analyze the influence of the SCRER policy on export performance from a time-series perspective.

To do this, we carried out a similar analysis with six-year rolling windows for Argentine exports between 1980 and 2015 to detect episodes of export surges. The definition of export surges is similar to the one used for the baseline exercise reported in Table 2, except for two modifications. First, the non-recovery requirement (R3) compares the maximum export level of the last two years of a six-year period with the last two years (instead of the last three) of the preceding six-year period. Second, and more important, since the number of reporting countries decreases as data go back in time, to construct world exports we only took thirty-four countries that provided export data in each year of the period under analysis. Because of these changes, the results of this exercise are not comparable with those reported in Tables 2 and 3.

Figure 3 reports the percentage of export industries that experienced surges for the five groups of industries according to Lall's classification and for the total number of export industries. The series indicates the percentage of total industries (or group of industries) that experienced a surge in the six-year period beginning in the year reported in the figure. For instance, the value reported for 1986 in panel (a) indicates that 21.3 percent of Argentina's export
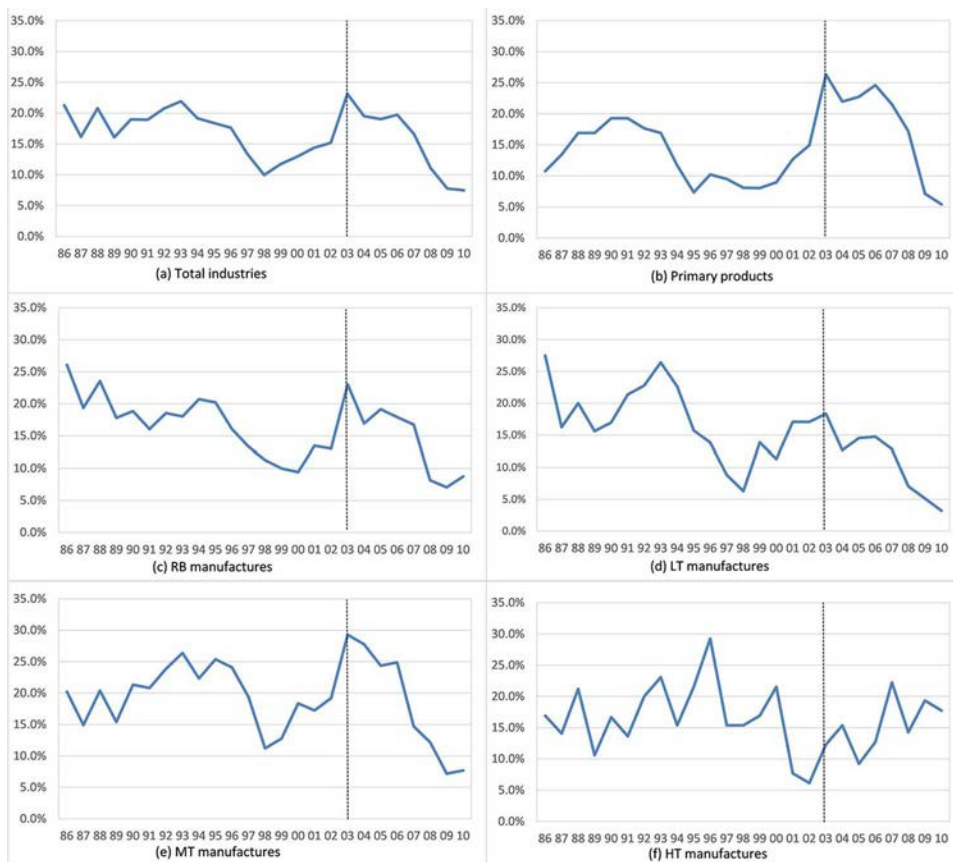
Figure 3. Proportion of export industries with surges, (in percentages).

industries experienced a surge during the 1986–91 period. The preceding period against which this period is compared is 1980–85. In all panels, the SCRER period is the one reported in 2003—highlighted with a vertical line—and the last period is the one going from 2010 to 2015.

For the purpose of evaluating our proposition from a time-series perspective, the focus is now on the comparison between years within each panel and not between sectors. Knowing that the SCRER period was favorable for tradable activities, one would expect a relatively high percentage of surges around 2003, especially compared with the previous and following comparable periods, around 1995 and 2010, respectively. This pattern should be—everything else equal—noticeable for all industries, but especially for the labor-intensive industries.

The results reported in Figure 3 support our hypothesis: during the SCRER there was a relatively high percentage of export surges in all sectors, except in the case of high-technology manufactures that had followed a very volatile behavior. This is especially clear when compared against the preceding and subsequent periods. Furthermore, in terms of the total sample of industries

(panel a), the proportion of industries experiencing export surges (23.1 percent) reached not only a local but a global maximum.[6]

The period with the second highest proportion of surges was 1993–98 (21.9 percent).[7] This result may seem odd, if one considers that it occurred during the currency board regime. However, two elements should be brought into the analysis. First, the beginning of this surge is closely associated with the formal beginning of the MERCOSUR, which implied the opening of several export markets, especially Brazil. Second, during this period the RER was not overvalued against Brazil. The combination of these two elements—the opening of the Brazilian market and a nonovervalued bilateral RER against Brazil—explains that the percentage of export surges beginning circa 1993 was relatively high in the type of products exported to Brazil (mostly manufactures).

Looking at the sectoral performance, we observe a pattern roughly similar to that of total exports, although also influenced by some idiosyncratic elements. Primary products had the highest proportion of export surges (26.3 percent) during the SCRER period. The proportion of surges was also relatively high during the following periods between 2004 and 2006. It seems clear that, besides the SCRER, another important factor leading to this result was the commodity prices boom experienced during 2004–12, briefly interrupted by the effects of the global financial crisis in 2009.[8] The performance of manufacturing industries is somewhat heterogeneous. Medium-technology manufactures had the highest proportion of industries with surges (29.3 percent) during the SCRER period. The performance of resource-based manufactures was very similar to that of medium-technology manufactures: since the late 1980s, the period with the highest percentage of industries experiencing export surges was also 2003–8. On the contrary, the proportion of low-technology manufacturing industries with surges was highest between the second half of the 1980s and the early 1990s. Nevertheless, export surges in this group of manufactures reached a local maximum during the SCRER. This result is in line with the behavior of the RER in the three periods discussed in previous sections. Overall, the time-series evidence also suggests that the SCRER policy was instrumental in stimulating the growth of goods exports between 2003 and 2008.

Exports of services

Since services are also labor-intensive, the level and stability of the RER should affect their export performance. Previous research has already

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[6]The 23.1 percent of industries with surges is comparable with the 14.8 percent reported in the third row for "total exports" in Table 2. As mentioned above, the percentages differ because the algorithm used to construct Figure 3 is different from the one used for Table 2.

[7]The third begins in 1986, which coincides with the starting year of the only manufacturing export surge detected by Freund and Pierola (2012) for Argentina.

[8]Bisang, Aniló, and Campi (2008) also emphasize important microeconomic changes carried out during the second half of the 1990s—such as no-till farming and genetically modified seeds—that enhanced agricultural productivity, thus allowing for a substantial increase in supply during the early 2000s.

suggested this link. Using a panel of sixty-six countries covering the period 1980–2009, Eichengreen and Gupta (2013) study the determinants of export growth and export surges of goods and services and find that the RER is a key determinant of exports growth, especially for modern services. López and Ramos (2013a) surveyed case studies, reports, and econometric studies and concluded that investment in knowledge-intensive services—including business and professional services, software and informatics services, architecture, marketing, design, research and developmen t (R&D), health, education, cultural and audiovisual services—depend heavily on unit labor costs. Artopoulos, Friel, and Hallak (2013) study the surge of exports of television programs in Argentina in the early 2000s as a result of the adoption of new business practices to penetrate new markets. The authors indicate that RER competitiveness also contributed to this process. López and Ramos (2013b) highlight the influence of the RER on the performance of exports of services in Argentina during the 2000s.

We extend our analysis to the behavior of export of services and look specifically at the performance of five: (1) tourism, (2) communications, (3) audiovisual services, (4) professional services, and (5) information and technology services. The first three are more intensive in medium-skill labor (MS services) and the last two are more intensive in high-skill labor (HS services). Together, these five groups moved from representing 55 percent of exports of services and 8 percent of total exports in 2001, to 71 percent and 11 percent, respectively, in 2008. Export performance was especially solid in HS services. This group grew on average at an annual rate of 33.9 percent between 2003 and 2008 and moved from representing 2.7 percent of total exports to 4.8 percent. Exports of MS grew at a very high—although less spectacular—rate of 24.3 percent per year.

An obvious candidate to explain the favorable performance of exports of services in Argentina is the SCRER policy. It could be argued, however, that this is in fact the result of a global phenomenon in which production of services is much more dynamic than the production of goods. To control for the increasing share of services in the global economy, Figure 4 shows the export–import ratio of both MS and HS services. If demand and supply of services are growing faster than other sectors as a global phenomenon, this should ceteris paribus similarly affect both exports and imports. However, if the SCRER stimulates the domestic expansion of labor-intensive tradable services, we should observe evidence of export expansion and import substitution.

Figure 4 seems to illustrate well the positive effects of the SCRER. During the period of low and stable RER, Argentina had a relatively stable deficit in its international trade of both MS and HS services. Export of MS and HS services were, respectively, around 60 percent and 50 percent of their imports. With the start of the SCRER period the export–import ratio started to grow nonstop. Both trade balances moved from deficit to surplus. The trade surplus
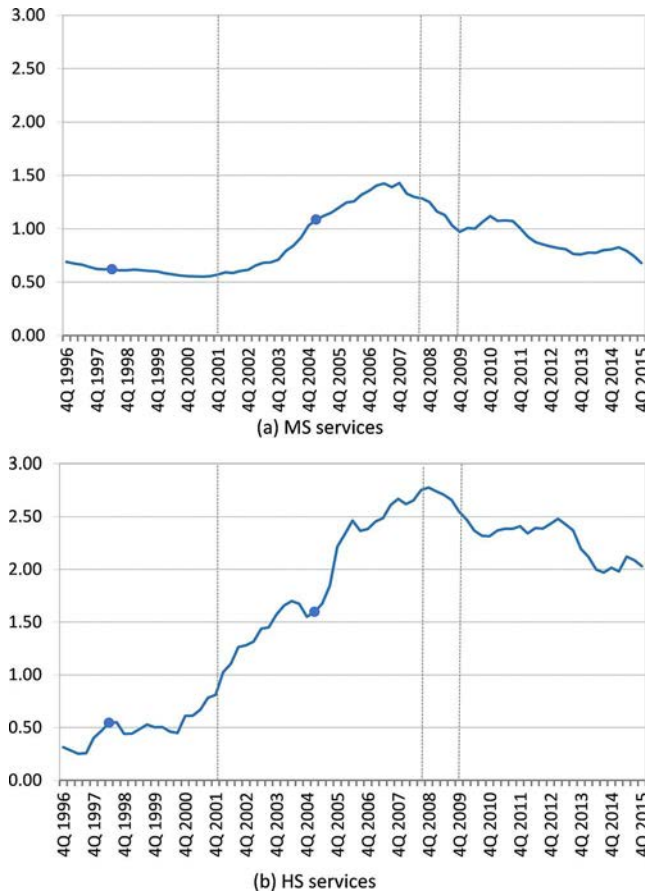
Figure 4. Trade in medium-skill (MS) and high-skill (HS) labor services, export–import ratio (yearly flows).

of MS services reached a peak between late 2007 and early 2008 and HS services peaked in late 2008, both around the end of the SCRER period. During the third period, both export–import ratios follow a declining trend. The trade balance of MS services returned to the deficit zone, whereas that of HS services remained in surplus.

One might wonder whether the improvement in the trade balance of services was associated with a decline in domestic demand following the collapse of the currency board. There was actually an increase in both series—especially in HS services—circa 2000 when GDP was contracting and before the devaluation. However, this effect is of the second order compared with the effect attributable to the SCRER. To control for it, the dots in both panels of Figure 4 show the third quarter of 1998—the precrisis GDP peak— and the first quarter of 2005—when output had already passed the precrisis peak. In the third quarter of 1998 the export–import ratio for MS was 0.61 and that for HS services was 0.55. In the first quarter of 2005, the ratios were

1.09 and 1.60, respectively. Given that the level of GDP is similar in both periods, the differences are necessarily attributable to other factors. It is hard to argue that the increase in the RER was neutral on these significant changes.

The export–import performance of both MS and HS services map quite well the behavior of the RER during the three periods. It is interesting, however, to note an important difference between them. After reaching a trade surplus equivalent to 50 percent of their imports in late 2007/early 2008, the export–import ratio of MS services began a sustained contraction. By early 2012 its trade balance had turned negative and by the end of 2015 its trade deficit was slightly lower than the one observed during the pre–SCRER period. Despite experiencing a sustained deterioration during the post–SCRER period, the trade balance of HS services remained, on the contrary, in better shape than in the pre–SCRER period. This contrasting behavior would suggest that MS services are substantially more sensitive to the behavior of the RER than are HS services. In other words, the positive effect of an SCRER policy on the performance of MS services appears to have reversed with the erosion of exchange rate competitiveness, whereas for HS services it seems to have been long-lasting. This suggests that the SCRER policy in Argentina may have generated a persistent trade effect in HS services but not in MS services. A possible explanation is along the lines of Baldwin and Krugman (1989). who argue that a large real depreciation may generate permanent improvements in trade if there are sunk entry costs. Because entry costs are sunk, some new entrants may still find it profitable to export to the foreign market even if the RER returns to its original level. This behavior may be more prevalent in HS services than in MS services for quality reasons. Since HS services supply more differentiated services than the MS services, once they enter a market and establish buyer–seller relationships (which can be seen as a sunk cost), they become harder to substitute.

Conclusions

In this article, we study export performance in Argentina between 2002 and 2008. We find that exports of labor-intensive manufactures—low- and medium-technology manufactures—had a relatively higher proportion of industries that experienced export surges. Primary and resource-based activities, on the contrary, had a relatively lower proportion of industries experiencing surges. This seems an important result because it happened simultaneously with the boom of commodity prices. Another important result is that the proportion of export surges during this period was not only higher than during the precedent and subsequent periods, when the RER was first low and then declining systematically, but also the highest since the mid-1980s. Finally, we show that the growth of export services was also very strong in absolute terms as well as relative to import growth.

These findings support the view that the policy targeting a stable and competitive RER was favorable to economic growth during this period not only through its macroeconomic channel—that is, providing a more robust macroeconomic environment that reduced the vulnerability to external shocks and thus favored aggregate investment—but also through its microeconomic/sectoral channel—that is, stimulating the expansion of tradable activities. The fact that exports of labor-intensive manufactures and medium- and high-skill services were among the most dynamic export industries suggests that the role of the RER was not irrelevant. Certainly, this process did not reach the dimension of a structural change. One should bear in mind, however, that the period during which the RER remained competitive was not long enough and that a significant change in the economic structure requires more than just an adequate macroeconomic policy. These observations, nevertheless, should not obscure that the SCRER policy was instrumental in stimulating the expansion of labor-intensive tradable activities. This reading of Argentina's experience seems important for three reasons. First, it provides a more balanced view than the widespread interpretation that sees global demand growth (particularly, China's demand growth) and the associated boom of commodity prices as the main driving forces behind Argentina's growth during this period. Second, it provides case-study evidence for the literature that finds growth-enhancing effects associated with the level and stability of the RER in developing countries. Third, it suggests that the level and stability of the RER are important for development and therefore should be an objective of macroeconomic policy.

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