

# CAPITAL GOODS IMPORTS AND INVESTMENT IN LATIN AMERICA IN THE MID 1920s.<sup>1</sup>

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## Summary

The assessment of Latin American long term economic performance is in urgent need of mobilizing more data to match the pressing demands of growth analysts. We present a systematic comparison of capital goods imports for 20 Latin American countries in 1925. It relies on both the foreign trade data of the importing countries and of the major exporting countries –the industrialized economies of the time. The quality of foreign trade figures is tested; an homogeneous estimate of capital goods imported is derived, and its per capita ranking is discussed providing new light on Latin American development levels before import substitution.

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JEL codes: N16, N66, N76.

## Introduction

The economic historiography of Latin America can offer today a general interpretation as to how the economies of the region evolved in the first globalisation era and the period following its breakdown, that is, during the final decades of the nineteenth century and the first decades of the twentieth century. Recent studies of these countries, taken individually, have shed much light upon the rhythms and characteristics of their economic progress.<sup>2</sup>

However, we still need a precise quantification of the levels of national income or GDP which covers all the countries in the region and includes their levels of capital formation, which, as is well known, is a key determinant of long-term economic growth, as well as a fundamental component of national expenditure. The most comprehensive quantitative reconstruction of GDP is the one recently published by Maddison which estimates the GDP of 13 Latin American countries since 1920. Little is known of the situation of the excluded countries for this time.<sup>3</sup>

Knowledge of the evolution of capital formation during the 1920s is much scarcer despite the magnificent work carried out by the Economic Commission for Latin America (ECLA) in its first phase. The celebrated Economic Study of Latin America 1949 introduced a way of evaluating the historical national accounts by focusing on expenditure.<sup>4</sup> A lively interest in discovering how the process of capitalisation developed ? to which can be attributed a decisive importance in the limited economic performance of the region ? moved the author of the study (Raúl Prebisch) to give a central position to capital formation in the statistical structure of his work. The study

was limited to four big economies -Argentina, Brazil, Chile and Mexico- from 1925 to 1949. The ECLA took it up in its series of studies of the economic development of the area which also tended to take the year 1925 as its starting point.<sup>5</sup> Unfortunately the ECLA did not accomplish the analysis of every country, which may explain why these studies were not awarded the status of official figures.<sup>6</sup> This meant that a complete picture of total investment in Latin American countries was not available until after the Second World War. One can certainly say that after the programme of retrospective statistics carried out by the ECLA in its early years, there had been no other attempt comparable, in its intention to include as many Latin American countries as possible, to the one by Hofman, who has produced, with great rigour, a continuous series of gross fixed capital formation from 1900 to 1994 for Argentina, Brazil, Colombia, Chile, Mexico and Venezuela.<sup>7</sup> One must agree with the author that the above countries contribute the lion's share of the Latin American economy, purely on the grounds of regional GDP. But it is also undeniable that the populations of the remaining 14 countries should not be ignored, to say nothing of the Caribbean countries which won political sovereignty at a later date.

The aim of the present article is to make known the first results of a research project which aspires to compile indices of the gross capital formation of 20 Latin American republics based on their imports of intermediate and capital goods. It is an approach which has been explored by several authors since the pioneering work on Brazil by Fishlow.<sup>8</sup> Although this author's findings revealed the enormous potential knowledge locked in foreign trade statistics no attempt has been made, until now, to undertake a systematic exploration of them which goes beyond the analysis of a handful of specific economies in certain circumstances.<sup>9</sup> The great added value of the research we are

starting lies, without doubt, in the utilisation of trade statistics from all the Latin American countries and those of their main trading partners: the Germany, UK, US (G3), France and Belgium (G5, together with the first three).<sup>10</sup> The empirical evidence offered here, in advance of the results, refers to the year 1925, complemented by information from 1924. It includes the imports of iron and steel goods and all types of electrical goods. These products have been chosen for their importance in investment expenditure. The timeframe of this study was chosen for three reasons. The first is, as we have mentioned, 1925 became the chronological departure point of the ECLA's study of the economic dynamics of the region. The second reason for fixing the lens of analysis on this year is that, with all probability, it is representative of the world economy's normal operation after the First World War, with reconstruction complete and monetary and financial stability in place. Lastly, 1925 provides us with foreign trade statistics of sufficient quality for almost all the countries under study, unlike the period before the First World War. Before this date deficiencies in information were fairly extensive and significant.

## I

Metal and electrical products constitute a fundamental component of capital goods. From the beginning of industrialisation to, at least, the mature stages of the second Industrial Revolution, machinery and other capital assets, tools, structural elements of buildings and engineering works, means of transport and in effect a large portion of capital goods, were all constructed with metal, especially iron and steel. A calculation

of the quantities used provides us with the essence of capital formation. It is also true that in the past a considerable portion of the final products destined for consumption were also made of these same metals. One only has to think of the wide range of domestic products from kitchen utensils to electrical devices through to family cars. A very practical reason prevents us from identifying the demand of investment due to consumption; the foreign trade figures of the time do not differentiate sufficiently between finished products destined for productive ends and those for the consumer.<sup>11</sup> In the case of metal production goods (numerous types of semi finished goods) it is, in general, simply impossible to establish such a distinction. This is even truer of electrical goods (equipment, material, devices). But, in overall terms, and with reference to the historic period under study, it may be given as understood that most of the metals were used to cater for the demands of investment. Numerous authors – almost all the scholars of historical national accounting – have estimated gross fixed capital formation based on the total quantity of metals consumed.

The quantitative reconstruction which we are making known here includes all the iron and steel goods imported by Latin American countries as well as all types of electrical material (from electrical machinery to the simplest electrical material). Most of the non-ferrous metal products are not included in this quantitative assessment.<sup>12</sup> It is interesting to note that iron and steel represents the vast majority of manufactured metals consumed in the region. According to figures for the value of imports only 5.8 per cent of the metals purchased abroad in 1925 were not iron or steel.<sup>13</sup>

Our work of empirical reconstruction starts with the assumption that goods of this type, so necessary for the productive investment of Latin America, were supplied basically by

a small number of industrialised countries. In more general terms this situation is already known and recognised in the historiography.<sup>14</sup> For this reason it is now essential to precisely establish what proportion of iron and steel products imported by the Latin American nations came from the G5 countries. Table 1 was compiled with the intention of answering this question. It must be noted that it was put together using the commercial figures from the Latin American republics that we have and which fulfil the minimum requirements for this comparative exercise.<sup>15</sup>

< Table 1 here >

The data in the table leaves little room for doubt or any diversity of opinion. The predominance of the G5 countries was immense and almost unvarying, in general terms between 1913 and 1925. Practically all metal goods imported by Latin America came from the countries which we have grouped as G5. The relative decline of France and Belgium was to a certain degree compensated by the G3 countries ? where we can see a similar decline in exports from UK and Germany and a compensatory increase in exports from the US ? so that the G5 countries hardly lost any ground in their absolute dominion of the Latin American market. Only for Bolivia and presumably Paraguay do we have to raise any doubt as to the use of data from the industrialised nations to establish the goods brought by the 20 countries under study.<sup>16</sup> What is more, leaving to one side these two small economies whose atypical line of commercial relations is due to the land-locked character of their territories<sup>17</sup>, it is justifiable to limit the scope of the investigation, in 1925, to the exports from the G3 countries. We can see that these sales of the G3 countries comprise nothing less than 85 per cent of the total. Any inference

drawn from this empiric base on imports of this type as a whole is, without doubt, very solid.

Can the same be said with regards to machinery? It is interesting to clarify the degree to which the purchase of machinery from abroad on the part of the Latin American nations depends on the GB countries, given that investment is more closely associated with this class of products than the group of metal goods (which also comprises of, as we have said, semi manufactured and finished products destined for consumption). Table 2 offers clear and predictable results. The relative importance of the US, Germany and Britain is even greater, close to 90 per cent and the variation is less (only in Argentina, Bolivia and Brazil is the percentage lower than 90 per cent).

< Table 2 here >

## II

A point of crucial importance is the degree of reliability the foreign trade statistics of the exporting and importing countries deserve. This is a question which has been dealt with from a theoretical and empirical point of view in previous economic literature, but studies are not exactly abundant, and almost all of them have concentrated on the total value of imports and exports.<sup>18</sup> There is some doubt that whatever may be deduced from

a comparison at this aggregate level may also be applicable to the capital goods group. For this reason it is necessary to perform a comparison of the statistics referring to iron, steel and electrical products.

When carrying out an exercise of this nature we are faced with two complications. The first is more of a limitation; it is not possible to make a direct comparison, in general terms, of the amounts because some countries do not express all the items with the same unit of measurement. It is interesting to clarify that in a great number of cases the traded products are recorded according to their weight. Some countries, and only in a reduced number of tariff headings, account in units which are not automatically convertible into units of weight.<sup>19</sup> Thus it would be possible to compare physical magnitudes only if certain countries were to be omitted or if a certain number of products were to be isolated. The former would impose a serious restriction on a study which hoped to include the entire region, while the latter would in practice become an overly arduous task. This brings us to the second complication which will be outlined below.

Conventionally, the extremely wide class of iron and steel products is classified into three large groups; metal groups (finished and semi finished), machinery and transportation material. This classification is conceptually clear and makes sense analytically. The largest part of investment is obtained from the estimation of machinery and transport equipment, although we must not lose sight of the fact that a fraction is included in metal goods (such as the metal structures of production facilities, tools and other means of production not included in machinery). What is more, electrical equipment and material ? which sources often separate from metal products ? become



an element of investment which grows in importance with the spread of electrification. In recognition of this importance a fourth group is usually added to the first three, one which includes electrical material and electrical machinery.

We have followed this scheme, classifying products in four large categories: iron and steel products not including machinery and means of transport, machinery of all types (including parts and accessories), means of transport (excluding fixed material such as rails, sleepers, etc, which are accounted for in the first category), and lastly, electrical material and devices. Nevertheless the statistics for foreign trade of the Latin American countries and their main partners do not allow the classification of tariff headings. Quite often the description of the nature of the articles which the tariff structure offers gives rise to uncertainties over their assignation to one category or the other. Sometimes the goods under one heading belong in two categories. Such methodological problems imply a problem of greater importance; the difficulty of maintaining the same criteria of classification for all the 25 countries under examination. Strictly speaking, the figures from all the countries are not exactly comparable in any of the categories used. We have been guided by the criterion of finding a common denominator in the statistics for the G3 countries that follows as closely as possible the classification that we have just described.<sup>20</sup> In the case of the Latin American nations, it would be impossible for the reader of these pages to form an idea of the complexity of the cataloguing of metal goods. From this it follows that the only really reliable comparison between the figures of the different countries available to us is one which refers to the maximum possible degree of aggregation: the imports (exports) of all the iron, steel and electrical goods. This does not mean that the comparative analysis of the quantity of machinery, vehicles or any other category should be abandoned. What happens is that, in this case, one must

remember that the figures for some countries are somewhat overvalued or undervalued in respect to the others, since they cover a wider or narrower range of products. Here we have shied away from those stormy seas to avoid unduly heavy methodological analysis. Table 3 contains the results of comparisons made at the most aggregated level.

< Table 3 here >

The first thing that comes to our attention when looking at this table is that the total value of exports from the G3 countries virtually coincides with that of the imports of the receiving countries. A difference of only 0.8 per cent between both magnitudes cannot but surprise because it entails a virtual and unusual equivalence between thousands of pairs of transactions. It must be emphasised that this could be due to chance, given that a similar relation cannot be seen between the exports of each of the G3 countries and the imports from Latin America. The entire figure for the US exceeds by 2 per cent that registered by its customers, while in the case of Germany the opposite can be seen to a slightly larger degree (3.1 per cent), and in the case of UK by quite a larger margin (8.2 per cent). Did the Latin American countries erroneously record products produced in the US as originating from Germany and Britain? Or, on the other hand, were products manufactured in Germany and Britain attributed to the US after coming from American ports on their journey to Latin America? It is not possible to answer these questions using the foreign trade statistics themselves, but if we focus on the description and analysis of their characteristics carried out at the time by the League of Nations it is possible that, in general terms, there are more chances of the first being true than the second.<sup>21</sup> But there exist other possible causes to explain the discrepancies mentioned.

It can be affirmed, with certainty, that the British figures, in their entirety, are somewhat below the real figures, because in this country's statistics only the totals feature of all the products exported to each Latin American republic in the categories of 'machinery' and 'iron and steel and manufactures thereof'. They record only a part, albeit the biggest, of the transport equipment and electrical material exported to the majority of these countries.<sup>22</sup> With regards to Germany, the official figures shown in Table 3 are also slightly below the real ones because minor transactions were not entered individually under the corresponding statistical headings, but in the category of 'other merchandise' (waren, anderweit nicht genannt).<sup>23</sup>

With this in mind, is it acceptable that the total value of the trade of these goods declared by the exporters be practically identical to that declared by the importers? It is legitimate for the reader to pose this question. But this is not the correct way to test the quality of foreign trade statistics. It is more appropriate to compare the figures of each of the importers with their commercial partners, since amongst the importers there exist notable differences in the method of evaluation of the products they buy from abroad.<sup>24</sup>

We will review the last column (Col.12) of the Table 3.

Only in cases in which the importing countries evaluated the imported merchandise according to its free on board (f.o.b.) value can we expect the export figures, according to our calculations, to be equivalent, or almost equivalent, to those we have calculated on the import side. We judge this to be the case for Cuba, Chile, Nicaragua and the Dominican Republic, in that the differences are of 1 or 2 per cent (see col. 12). We take it as understood that no importance is to be attached to such a minor discrepancy, since it could be simply due to the merchandise being temporarily held in customs

warehouses.<sup>25</sup> As for the Latin American states which dealt in cost, insurance and freight (c.i.f.) values, it can be expected that the value of imports will supersede that of exports by a percentage situated at a minimum of 6 or 7 per cent for the Central American countries whose purchases are more concentrated with their powerful northern neighbour, and a maximum of around 12 per cent for the countries of the southern cone which are supplied, in the main, by Europe. If we start with this premise the figures corresponding to Brazil and Costa Rica tally. In respect to Ecuador, a certain doubt may be entertained given that, still following the c.i.f. system of valuation, it seems that in an unknown number of cases freight and insurance were discounted.<sup>26</sup> And what will occur with the rest of the countries in order for us to make comparisons? Let's look at the discrepancies in the same order as they appear in Table 3. The correspondence that can be seen in the case of Argentina, and the same goes for Colombia, is not real, only apparent. Both countries use the c.i.f. system of valuation which means that the figures registered for imports are too low. The Argentinean disparity is easy to explain. As the Argentinean authorities themselves acknowledged, the values assigned to imports were based on official values of obsolete units that haven't been sufficiently adjusted for the inflation of the First World War.<sup>27</sup> Statistics in Guatemala were also affected by this same problem, possibly even more acutely than in Argentina, since the Argentineans were probably more interested in knowing with a greater degree of accuracy the value of purchases from abroad than in Guatemala. The huge difference recorded in Bolivia is due, with all certainty, to the industrialised nations not registering the Andean country as a destination for all the products produced and exported by them but which in fact did end up there after a long and costly journey by land. We may conjecture that the opposite happened in other places, namely; Colombia, Haiti, Mexico and also Peru. It appears that in these four countries the trade

statistics themselves undervalued imports by an order of magnitude of around 10 per cent.<sup>28</sup> Finally there remains to explain the most spectacular discrepancy, that of El Salvador. Discounting the differential between the c.i.f. values (the El-Salvadorian accounts) and the f.o.b. values (the G3 country accounts), the El-Salvadorian figures are still 30 per cent higher than those registered by their suppliers. We haven't been able to find any reason to account for this discrepancy other than the faulty elaboration of statistics on the part of the El-Salvadorian authorities.<sup>29</sup>

Let us sum up. The values of the G3 countries are shown to be very consistent when compared with those of the Latin American countries. Only in the case of Bolivia does it seem clear that the G3 statistics undervalued the quantity of exports. Everything points to the same thing having happened in Paraguay<sup>30</sup>, but with no other country in the region. On the other hand, there is nothing which allows us to suspect that the data from the G3 countries exaggerates the magnitude of exports to certain countries, except Panama. Due to the exceptional circumstances in Panama owing to transportation by the canal and the existence of adjacent territory under North American control, it is feared that the official value of exports from the US to Panama far exceeds the value of what the Panamanian economy really imported (outside the canal zone). Lastly, the fact that exports and imports are practically the same in a significant number of cases (7 Latin American countries out of a total of 15 compared) supports the notion that the figures from the G3 countries are reliable. This, we repeat, is only seen not to be true in respect to the three small countries we have just mentioned, with their unusual circumstances.

### III

The conclusions drawn from the exercise of comparison described in the previous section lead on to calculating the magnitude of total imports of capital goods by Latin American countries, based on the foreign trade statistics of the G3 countries. Given the proven consistency of these figures and the prime importance of the G3 countries in the supply of the said class of goods to all the countries in the region, there can be few doubts as to the soundness of the estimates.

Table 4 presents the results of our calculations ? a homogeneous estimate of capital goods imported by Latin American countries. For all of them, except when the contrary is noted (see table notes), the figures are derived directly by multiplying the value of exports from the G3 countries (col. 10, table 3) by the inverse of the value (in percent) corresponding to the importance of the imports from the G3 countries in the total imports (see table1). That is to say, the figures in table 4 result from a direct extrapolation of the magnitude of the G3 exports, according to our calculations, but corrected by their importance on total imports.

On scanning this table some aspects immediately spring to our attention. One of them is the extremely diverse importance of the economies of the region. Argentina stands out as taking up a third of the purchases in the whole region. It is followed by Brazil, quite a distance behind, which absorbs a fifth of the total and then Mexico and Cuba, each with slightly more than 10 per cent of the total. Almost three quarters of the imports of capital goods are concentrated in these four countries. Far behind them is a group of five economies, whose imports represent between three and six per cent of the

total: Chile (5.9), Colombia (4.4), Venezuela (3.5), Peru (3.3) and Uruguay (2.9). The imports of the 11 remaining nations do not reach the significance of 1 per cent of the total, or to put it another way, at the most they represent only 1/36th of Argentinean imports.

< Table 4 here >

Obviously these enormous disparities are related to the very different territorial and demographic sizes of the Latin American nations as is shown in table 4. While the population of some countries does not reach half a million inhabitants, others have more than 10 million and there is even one giant (Brazil) with 30 million people. If we study the imports per capita (col. 3) the results take on a different perspective. But the dispersion of positions continues to be very high. Between the first country (Argentina) and the last (Haiti) the ratio of imports to inhabitants is more than 18:1. If we establish the comparison between the second (Cuba) and the second last (Ecuador) the ratio is still more than 10:1. As is obvious in graph 1, the order is perfectly delimited. It is headed by Argentina and Cuba. Uruguay occupies third place, further from the two richest countries than the fourth, Chile. Next, and still above the regional average, are, almost neck and neck, Panama and Venezuela. The levels of imports for the remaining 14 nations are below the regional average. Costa Rica and the Dominican Republic are about 20 per cent under the average, while Mexico reaches exactly 2/3. Close behind and all virtually on the same level, are the other large economies of the region; Colombia, Brazil and Peru. On the smooth downward slope which carries on from this point, at 50 per cent of the regional average, are most of the small Central American economies; Honduras, Guatemala, El Salvador and Nicaragua. At the end, stretching

from a level of 40 per cent of the average down to a woeful 15 per cent are Paraguay, Bolivia, Ecuador and Haiti.

< Graph 1 here >

The table and graph mentioned reveal some surprising facts and are full of extremely interesting information. That Cuba rivals for first place and almost equals Argentina is, without doubt, a fact that stands out and which has not been sufficiently highlighted in the historiography.<sup>31</sup> It is also of special interest that almost all the other large sized economies do not reach the Latin American average. On the other hand, the identities of the exceptions to this tendency ? Chile and the emergent Venezuela ? would probably come as no surprise to anyone familiar with the economic history of the subcontinent. By the same token, the excellent position of Uruguay is acceptable. Without detracting any value from the empirical evidence we are presenting, there is neither any surprise in the lagging behind of the bulk of the small Central American countries, as well as in the fact that the bottom places are taken by the two land-locked countries and Haiti. What could be surprising is that Ecuador appears in this last group, and that amongst the countries that developed relatively well are the Dominican Republic and, slightly more predictably, Costa Rica.<sup>32</sup> Apart from this, Panama, an unknown quantity until now, has at last found its place in the Latin American puzzle, and is much more prominent than economic historians had previously thought. Here is to be found precisely the principal value of this quantitative exercise: it draws an overall map of the Latin American economy in the middle of the 1920s which identifies in a precise manner the relative position occupied by each and every one of its components.



Is it valid to draw conclusions about capital formation from the above picture? The evidence that has been forwarded above is a reasonable approximation, but could be easily improved by limiting the quantitative elaboration of the compiled data to the tariff headings referring to machinery. The new aggregation provides an excellent indicator of the current investment made by the American republics (see table 5). It is worth pointing out that the products included did not manage to represent, in 1925, 30 per cent of metal and electrical goods.<sup>33</sup> The distribution by country is essentially the same as that relative to the whole of these goods, although we can observe some differences not wholly devoid of interest. Argentina and Brazil take up slightly less than half of the machinery imports owing to the share of the former being no more than 26.8 per cent (it must be remembered that the figure for total capital goods reached 33), a difference not compensated by the larger importance of the colossus of the subcontinent which just reached a quota of 22 per cent. Mexico and Cuba, like Brazil, now have a slightly larger share. The top four economies take up almost three quarters of the means of production imported by Latin America, as happened with all the capital goods. Chile, Venezuela and Peru all have a higher quota, whilst Colombia and Uruguay have less. The remaining economies have as minor a share of the acquisition of machinery as they do of the wider range of products analysed.

Matching the imports with population (right-hand column of table 5) gives a very different picture from the previous one ? which will not be wondered at after having taken into account the differing sizes of the countries and also their very unequal stages of development. What should claim our attention immediately are the similarities and differences between the equivalent series of numbers in the preceding table. Graph 2

facilitates such a comparison by pairing the relative level of each country in both types of goods.

< Graph 2 here >

The graph illustrates a wealth of changes in the relative positions. In fact, only the two last countries maintain their positions; Ecuador and Haiti respectively in second last and last position (Haiti even more so than before). At the top, Argentina and Cuba swap places, as do Uruguay and Chile. The Caribbean island not only overtakes Argentina, but does so comfortably. Venezuela goes up to a level clearly above the regional average, while Panama slips several positions to well below. The other big economies suffer a different fate; Mexico, Peru, and to a lesser degree Brazil, climb, although they are still far off the regional average. Colombia, on the other hand, falls. Costa Rica and the Dominican Republic are displaced by the thrust of these big economies. The other Central American economies, with the exception of Nicaragua, are positioned at the end group with their very low volume of machinery purchases. Surprisingly, Bolivia and Paraguay go up by simply maintaining their modest relative levels of imports.

Up to now the empirical evidence presented has referred, as we have indicated, to only one year, 1925. The relative national levels of machinery and other capital goods purchasing which we have established rest on this slim chronological base, as well as the conjectures and interpretations we have developed from the statistical material. It is always risky to draw major conclusions from a time period limited to one year. It is even more so when analysing investments, which are of a very volatile character, especially in developing economies. The risk is certainly mitigated when long-term or

structural factors are involved, such as the levels of economic or industrial development, which are only partially affected by temporary factors. But to what proportion do the figures in tables 5 and 6 vary if they refer to a wider time period? It is possible, and even probable, that the relative positions of the countries will be significantly altered if the analysis includes another year. With the intention of dispelling these doubts, the empirical base has been extended to the previous year, 1924. Table 6 compares the results from both years.

< Table 6 here >

In general the changes are not dramatic, but they are substantial for more than half of the countries. They are hardly, or not at all, relevant for Argentina, Costa Rica, Chile, Guatemala, Mexico, Nicaragua, Paraguay or Peru. But the relative position of seven economies notably improves when one takes into account the average of 1924 and 1925, owing to, it seems the second year being characterised by a greater reduction in investment. An extreme case is that of the Dominican Republic where the average supersedes by 27.4 per cent the 1925 level. Also very notable are the upward corrections of Ecuador (19.7) and Honduras (17.8) and the lower, although still significant, corrections of Panama (14.1), El Salvador (13.1), Cuba (8.8) and Bolivia (8.5). On the other hand, regarding the average of the two years, the position got worse in Venezuela (16.1), Haiti (15.9), Uruguay (9.5), Brazil (7.3) and Colombia (6.4). Summing up, it is undeniable that in order to obtain a more reliable picture of the magnitudes of importation of capital goods and investment reached by the Latin American republics in the middle of the 1920s, one must look at the data for 1924-5, rather than only the last of these two years.

Further evidence of the unbiased character of 1925 benchmark could be found in Hofman's gross total fixed investment series.<sup>34</sup> For Argentina, and following him, 1925 is a normal year in the middle of the 1920s upward investment trend. The absolute value of 1925 is very similar to 1924 and 1926. The recent Alan Taylor's figures confirm that nothing exceptional happens around 1925.<sup>35</sup> Both Venezuela and Colombia have a growing trend during the decade, and 1925 was, just as for Argentina, a normal year. Chile has a more fluctuating pattern with a less clear trend, but even so, 1925 is an average year. For Brazil, on the contrary, 1925 is a booming year, only second to 1929. Mexico's situation is similar to Brazil, with 1925 as the best year of the 1920s. So, according to Hofman's estimates, we should be aware of the risk of overassessing capital goods imports for Brazil and Mexico with our 1925 benchmark.

#### IV

Having arrived at this point, the reader will have been assailed by at least two doubts of fundamental importance: to what degree can we relate the relative level of machinery imports to capital formation? And: are the relative levels observed in 1925 representative of the volume of investment reached in the middle of the 1920s in the different countries under study (in relation to the regional average)? In the rest of this section we will try to give a tentative and provisional answer to these questions by making use of the information we have collected up to now.

The first question inevitably arises from certain indicators and evaluations offered by economic historiography as to the progress achieved before the Great Depression by some Latin American countries in the process of industrialisation. From the beginning, it has to be pointed out that economic historians are still not yet able to trace a global picture of the state of Latin American industrial development between the wars. Economic historiography has managed to clear up this question in a minimal fashion for a few specific countries, but it is very far from being able to offer a panoramic and comprehensive view of the whole region. Do accessible primary sources exist that could help in this? As far as we know, there exist two collections of surveys and research which could help, carried out several years later by public institutions not related to the states of the regions; the studies by the ECLA, which we have referred to before, and the official reports written by the Tariff Commission of the U.S. Congress during the Second World War. For our interests the second collection of studies is more useful since it covers the evolution and situation of the mining and industrial sectors of every single Latin American nation.<sup>36</sup> The main inconvenience of these analyses is that they were elaborated almost two decades after the period studied here and they are centred on gathering information about economic evolution in the 1930s, and especially, about the situation during the war years. But, when studied more closely, this is not an absolute limitation, since when one of these reports states the inexistence of certain productive activities in a country we can take it for granted that the situation was the same in 1925. We cannot consider that there existed in this period deeply rooted industrial activity that disappeared or fell into decline during the 1930s and the Second World War. What tended to occur was the exact opposite; the international crisis was an opportunity for growth in Latin American industry. So we can be assured that what did not exist in 1945 had not been present two decades before.

In 1945 numerous economies in the region were still importing practically all the machinery and capital investment required for their productive sectors. This was the case for Bolivia<sup>37</sup>, Costa Rica<sup>38</sup>, Ecuador<sup>39</sup>, El Salvador<sup>40</sup>, Guatemala<sup>41</sup>, Haiti<sup>42</sup>, Honduras<sup>43</sup>, Nicaragua<sup>44</sup>, Panama<sup>45</sup>, Paraguay<sup>46</sup>, the Dominican Republic<sup>47</sup> and Venezuela<sup>48</sup>. At the end of the Second World War in all these countries the metalworking establishments consisted of small foundries, vehicle and machinery repair shops and, in the case of Costa Rica, Ecuador, Paraguay and Venezuela, small mechanical industries dedicated to the manufacture of simple tools and utensils and some machinery components. In Colombia the metallurgical industry grew out of the international crisis of 1929<sup>49</sup>, as in Peru which, following Brazil, resorted to prohibiting the importation of certain types of machinery, but without breaking its traditional dependency on abroad for almost all semi finished and finished iron and steel goods.<sup>50</sup> In Cuba, since the protectionist tariff of 1927, a metalworking industry was developed with the capacity to manufacture diverse tools and even some light machinery as well as spare parts.<sup>51</sup> Uruguay's early adoption of an industrialisation policy did not save it ? for several decades ? from continuing to buy most of the machinery used by its industry from abroad, although it did manage to produce for itself hardware items, domestic equipment and utensils, vehicle bodywork and agricultural tools and equipment.<sup>52</sup> In reality the only countries in 1925 that had anything like a developed metallurgical industry were Argentina, Chile, Brazil and Mexico.

The ECLA studies would confirm, point by point, the picture traced a few years before by the North American analysts. Even for a period as late as the 1950s this institution opted to estimate investment in capital goods based on the imports of these goods for

Bolivia, Ecuador, El Salvador, Honduras, Nicaragua, Panama and the Dominican Republic. Even in Colombia and Peru machinery and capital equipment imports still satisfied practically all apparent consumption.<sup>53</sup>

Some studies of the most industrially advanced economies by economic historians have suggested that during the period after the First World War the national metallurgical industries acquired considerable importance. That is, in Brazil in 1919 imports only covered 64 per cent of apparent consumption of metal products and 53.5 per cent of transport equipment, although reaching 96.7 per cent of mechanical capital goods and 100 per cent of electrical.<sup>54</sup> Regarding Argentina in the years 1925 to 1929, Díaz Alejandro calculates that 65 per cent of internal demand for metal was satisfied by imports, 79 per cent of machinery, vehicles and non-electrical equipment and 98 per cent of the demand for electrical machinery and artefacts.<sup>55</sup> This fragmented statistical information encourages an overly optimistic idea of the capacity of these more industrially advanced countries in 1925 for supplying themselves with the machinery they needed. The percentages for both countries appear to be excessively high in the light of the retrospective estimates made by the ECLA. The data for Brazil, just after the world war, is surely heavily influenced by the disruptions caused by the conflict. This would explain why at such a late date as 1949 the imports for transport material covered 60 per cent of internal demand, which is seven percentage points more than in 1919.<sup>56</sup> In the case of Argentina it is also noteworthy that from 1937 to 1939, after some years of accelerated substitution of imports, purchases from abroad of machinery and capital equipment still satisfied 77 per cent of apparent consumption.<sup>57</sup>

Our own data shows the existence of a basic metal transformation industry in many countries, through the exports of iron and steel ingots by the G5 countries. But precisely this information gives a good measure of the very modest dimensions of this sector. The information is eloquent: the whole of Latin America received 19.508 metric tons of foundry products, whose value was equivalent to only 0.23 per cent of imports of iron and steel finished goods and 0.1 per cent of the total of ferrous metal products. In no country were these acquisitions of primary metalworking products of any relevance.<sup>58</sup> It is true that one must take into account that in certain places in Latin America there already existed a modern iron and steel industry. But their production levels were still very low, even in countries like Argentina, Brazil and Chile, which had abundant reserves of iron ore. Indeed, according to ECLA iron and steel production started later than 1925 for all these three countries and for Colombia and Cuba.<sup>59</sup> Only in Mexico can this capacity not be ignored. Iron and steel production was situated at 61,3 thousand metric tons. Iron and steel imports amounted to 104,6 thousand metric tons<sup>60</sup>. Our best estimate of total iron and steel goods imported suggests a minimum of 250 thousand metric tons.<sup>61</sup> If all the domestic iron and steel production was to be transformed into the standard iron and steel imported good, we could estimate the degree of import substitution in Mexico as very close to 20 per cent. This ratio is likely to be a maximum as the assumptions made are over optimistic.

In short, from this scarce statistical information and the expert evaluations it can be deduced that in the middle of the 1920s Latin America covered the demand for capital equipment by importation. With the exceptions of Argentina, Brazil, Chile, Mexico and perhaps Uruguay, it would not be risking much to suppose that imports and apparent consumption were virtually the same. In the countries we have just mentioned it could



not be argued that this was exactly the case for iron and steel working nor even for non-electrical machinery, but everything points to all the electrical machinery which they equipped themselves with, as well as electrical articles and material, being imported.

So, after examining the primary and secondary literature on the subject there is a possible doubt as to the existence of a domestic industry producing machinery and capital equipment in a few countries, although it would be safe to say that in most cases it only covered a small part of internal demand. If this is the case, the interpretations based on imports (table 5) undervalue the magnitudes of investment in these countries by moderately reducing their levels in respect to the other countries that were supplied exclusively from abroad. So now it is necessary to use the data for the importation of capital goods estimated from the sales figures of the G3 countries to dispel any doubts. Looking at them carefully, it is possible to test the hypothesis of the existence of a home-grown metalworking and mechanical industry. One only has to start with the simple supposition that in its first stages of development this industry needed to import a larger amount of machinery (as well as prime materials and other inputs) than the economy was able to produce for itself and which were vital for the working and expansion of this new industry. The subsequent historical experience of the Latin American economies themselves has corroborated the universal validity of this phenomenon, as the ECLA has indicated on innumerable occasions.<sup>62</sup> Let us suppose that one of the countries under study produced a minimally significant quantity of metal goods, transport materials or even a certain number of simple machines. In this case the structure of its capital goods imports would be different from a country that did not produce these articles. The purchases of machinery and electrical equipment would have had more relative importance in the first country than the second, and also the

purchase of finished iron and steel goods and means of transport would have been lower in the first. Table 7 allows us to check this hypothesis.

< Table 7 here >

In the table there is no sign of the aforementioned structural changes. In one or two countries a slight trace of one may be glimpsed, but it is either not very clear or it contradicts the level of industrial development reached according to the knowledge provided by historiography. Cuba and Peru at first sight seem to support the hypothesis: they import relatively more machinery and fewer finished articles and means of transport (taking as a reference the relative position of the total iron and steel goods imported). Cuba also imports more electrical material than one would expect, while the opposite is the case for Peru (a circumstance which could be explained by its generally slow economic development). But such a deduction finds no support in the literature.<sup>63</sup> If we concentrate our attention on the countries where it is reasonable to expect the existence of a mechanical industry, contradictory situations of varying degrees are discovered which reduce the value of the evidence supporting the hypothetical situation. For example, in Brazil machinery imports are relatively high whilst imports of finished goods are below normal. But the high level of means of transport imports seems to negate the existence of a domestic metallurgical sector. The same thing occurs in Chile, with the difference that the relative excess of imports corresponds to finished goods. Mexico follows the same pattern as Brazil. As for Argentina and Uruguay, the table shows no indication whatsoever of any national metallurgical industry.

## V

As we said at the beginning, there are as yet no estimates of the GDP and capital formation of all the Latin American countries in 1925 available. One has to go forward two decades to get a more complete macro economic picture. Since it is so convenient to compare the quantitative work presented in these pages with other estimates it seems opportune to do so at the end of this paper, although it will be of only a portion of the Latin American nations.

The recent reconstructions of GDP per capita carried out by Maddison and Oxlad are of great range temporally and territorially ? they provide data for 13 and 11 countries respectively for 1925 ? which gives us plenty of scope for comparison with our figures.<sup>64</sup> It is even possible to include another country of great interest, Cuba, thanks to the quantification exercise performed by Bulmer-Thomas for 1928, if one accepts the inconvenience of establishing comparisons with information from this year.<sup>65</sup> Unfortunately the empirical base is much narrower in the field of capital formation: the like magnitudes are reduced to six big economies.<sup>66</sup> Table 8 contains all the values in question, together with those presented in tables 4 and 5, previous to transformation of all of them in a manner which provides direct and easy comparison.<sup>67</sup>

<Table 8 here>

The table makes for quite disconcerting reading. A priori one would have expected a greater similarity between the two last columns than between the first ones (between, on

one hand, columns 1, 3, 5 and 6, and on the other, columns 2, 4 and 7). In these one would not look for anything more than a rough similarity in orders of magnitude, given that for a certain level of income per capita it is perfectly possible for there to be fairly unequal values of investment, that is of capital goods imports per capita ? perhaps even of 1:2? But, all in all, the similarities do not predominate and what's more, they are relatively more numerous in the left-hand part of the table.

Bulmer-Thomas's relative levels of GDP per capita estimates differ widely from our data for some nations, which is not at odds with the most recent estimates (Maddison and Oxlad), so there is a difference of minor importance. This is the case for Chile, Uruguay and Venezuela. For the first two of these countries our data provides a clearly less favourable picture than that offered by Bulmer-Thomas ? always with reference to 1928 ? while the case of the last country is the reverse. In the same way the most spectacular discordance refers to Cuba; which, for Bulmer-Thomas has a level of material welfare barely superior to the Latin American average, whilst according to our figures it is at the top.<sup>68</sup> Scrutinising the two last GDP per capita estimates one can see that for most of the economies very similar figures are given. It is interesting to note that when this is not the case, generally, our estimate of relative volume of imported capital goods provides greater verisimilitude to one of the two GDP calculations. This is the case for Costa Rica ? where the Oxlad estimate appears to be manifestly exaggerated ? and for Chile ? where the figure proposed by Maddison would be excessive ? and for Venezuela ? for which the Oxlad evaluation seems to fall short. In the case of Nicaragua it would be risky to venture which is the most reasonable GDP per capita figure, given that both far exceed the relative level produced by the capital goods imports. And it has to be added that this would be a strange pattern for the small

Central American economies (Guatemala, Honduras and Nicaragua). Evaluated by their capital goods imports, these economies would be much poorer than the level adjudged by the experts according to estimates of their production. Here lies the most visible difference between our estimates and those of these authors. Curiously, there is no such difference in respect to El Salvador.<sup>69</sup> Mexico's case is interesting as our estimate is, just like the other Central American economies, much lower, but could be corrected if we complete capital goods import data with domestic iron and steel production, as mentioned earlier. The discrepancies with Bulmer-Thomas, Maddison and Oxlad are reduced to almost half their level. On the other hand, one cannot ignore Argentina, where the discrepancy is also significant. For the remaining countries there is either not too great a difference (Brazil, Colombia), or there is even a basic equivalence (Chile, El Salvador, Venezuela).

It is certainly much more difficult to reconcile our estimate of machinery imports with Hofman's estimate of investment in machinery and equipment. In fact the resulting figures from both estimates are not reconcilable, which presents a veritable enigma when one considers that essentially these are magnitudes more comparable than the previous ones.<sup>70</sup> The relative level of Argentinean capital goods imports doubles that of investment, whilst the reverse is the case in Brazil. For Mexico and Colombia the differences are less extreme, but are still large. Only in the case of Venezuela are the positions not very separate, whilst for Chile calculations produce virtually the same results.

Our discrepancies with Hofman's estimates underline a fundamental difference in methodological approach. We have been using current values and current exchange

rates, while Hofman, but also Maddison, Oxlad and Bulmer-Thomas rely extensively on constant price estimates based on distant benchmarks (1980, 1990, 1980 and 1970, respectively). In some cases the raw data is built from other price benchmarks, further complicating the comparisons. We are prevented to reach any conclusion from all these price transformations. It is quite understandable that the differences are largest with Hofman as we both are assessing investment. As we well know, the price of capital goods in Latin America was increasingly distant from the price in the world markets. Intertemporal comparisons of capital goods values becomes much more difficult once import substitution starts. Our contribution is, partly, to restore a cross section approach at current prices before import substitution made these comparisons so difficult.

To sum up, the cross-referencing of the data presented in this paper with that offered by the economic historians who have calculated the basic macromagnitudes of the Latin American nations provides a reading which opens up a promising research agenda. The empirical evidence which we have extracted from imports of capital goods has allowed the delineation of approximate levels of investment in all the Latin American countries, without exception, in the middle of the 1920s. The position of each country is realistic in the light of the knowledge accumulated by historiography. But it does not always tally with the quantifications of GDP and capital formation undertaken so far. In our opinion this accumulated knowledge is sufficiently similar to our results for them not to be rejected. Our results also challenge this knowledge to the point where it is necessary to extend the quantitative estimate over a wider period in order to categorically test the consistency of capital goods imports as an indicator of investment. Meanwhile, we have reinforced the idea of the Cuban economy being very prosperous in 1925. We have also reaffirmed the accepted perceptions of Argentina and Uruguay. We have

presented evidence that Chile must have been quite similar to Uruguay. If our estimate is to be credited, Venezuela was already enjoying a first wave of prosperity. At the end of the order comes Haiti as the poorest economy in the region, followed, at quite a distance, by Ecuador. The land-locked states, Bolivia and Paraguay, are slightly less underdeveloped, whilst the Central American economies appear appreciably below the average ? with the exception of Costa Rica. Mexico, the Dominican Republic, Brazil, Colombia and Peru make up the central nucleus, clearly below the Latin American average in per capita terms, but in the middle of the ranking.

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Table 1. Relative importance of the more industrialized countries on imports of iron and steel goods (total) in Latin America for the years 1913 and 1925 (by per cent)

	US		UK		Germany		G3		France		Belgium <sup>a</sup>		G5	
	1913	1925	1913	1925	1913	1925	1913	1925	1913	1925	1913	1925	1913	1925
Argentina	19.3	39.1	37.3	25.0	24.5	17.0	81.1	81.2	6.4	4.6	8.4	8.8	95.9	94.6
Bolivia		37.2		13.6		13.2		64.0		1.9		16.2		82.1
Brazil	21.4	37.0	26.0	19.5	23.5	24.1	70.9	80.6	11.8	3.5	11.4	5.4	94.1	89.4
Colombia		70.6		9.7		11.7		91.9		0.1		4.1		96.1
Costa Rica	68.2	72.8	12.5	8.5	10.3	13.0	91.0	94.3	1.0	0.2	0.3	0.6	92.3	95.1
Cuba	73.6	88.0	10.1	1.5	6.4	2.3	90.0	91.9	2.7	0.3	6.4	1.1	99.1	93.3
Chile	21.5	49.8	31.4	19.0	34.5	15.9	87.4	84.7	2.5	1.9	8.3	8.9	98.1	95.4
Ecuador		49.0		19.8		18.8		87.5		0.3		5.4		93.3
El Salvador	63.6	80.3	17.0	6.8	15.6	9.3	96.2	96.3	1.1	1.8	1.6	0.8	98.9	98.9
Guatemala		75.5		10.0		11.4		96.9		0.6		0.7		98.3
Haiti		57.7		11.7		12.2		81.6		10.8		0.0		92.4
Mexico	69.5	84.6	14.4	4.7	10.6	7.9	94.4	97.2	3.0	0.1	1.2	0.1	98.6	97.3
Nicaragua		83.0		7.1		7.3		97.4		0.0		0.0		97.4
Peru	50.4	55.4	20.9	20.4	15.9	11.7	87.2	87.5	2.6	0.8	8.6	3.4	98.4	91.7
Dominican Rep.		88.3		3.0		4.3		95.6		0.0		0.4		96.0
Total 8 countries	31.5	52.1	27.8	17.4	20.9	15.5	80.2	85.0	7.3	2.8	8.4	5.6	95.9	93.5
Total 15 countries		53.5		16.7		15.1		85.4		2.7		5.5		93.5

Notes:

We lack data for Honduras, Panama, Paraguay, Uruguay and Venezuela.

<sup>a</sup> Belgium-Luxembourg in 1925, results from the customs union created in 1922

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*Table 2. Relative importance of exported machinery from the large industrialized countries on machinery imports in Latin America in 1925 (in per cent)*

	<i>US</i>	<i>UK</i>	<i>Germany</i>	<i>G3</i>	<i>France</i>	<i>Belgium</i>	<i>G5</i>
Argentina	49.2	10.8	23.8	83.8	4.0	2.5	90.3
Bolivia	53.0	11.9	12.8	77.7	3.1	7.2	88.1
Brazil	25.0	28.6	28.5	82.0	3.5	0.9	86.4
Colombia	78.8	8.7	7.6	95.1	0.1	1.8	97.0
Costa Rica	71.9	13.5	8.9	94.4	0.0	0.0	94.4
Cuba	89.6	1.2	3.2	94.0	0.0	0.0	94.0
Chile	53.7	19.5	16.8	90.0	1.9	3.9	95.9
Ecuador	52.6	22.6	16.9	92.1	0.3	1.1	93.5
El Salvador	62.1	22.6	10.6	95.3	2.2	0.9	98.4
Guatemala	66.5	15.3	16.4	98.1	0.3	0.0	98.4
Haiti	78.0	11.6	5.2	94.8	0.3	0.0	95.2
Mexico	81.2	5.9	9.1	96.3	0.0	0.0	96.3
Nicaragua	84.6	6.9	5.8	97.3	0.0	0.0	97.3
Peru	56.0	23.7	10.4	90.1	0.9	1.4	92.4
Dominican Rep.	88.7	2.8	5.7	97.2	0.0	0.0	97.2
Total 15 countries	57.4	14.2	16.9	88.5	2.0	1.4	91.9
Sources: The same as table 1.							

Table 3. Comparison of values of all iron and steel products with electrical material exported by G3 and imported by Latin America in 1925, according to respective foreign trade figures (in dollars and in percentage)

	US			UK			Germany			G3		
	Export. *	Import. *	Difference (2) and (1), in %	Export. *	Import. *	Difference (5) and (4), in %	Export. *	Import. *	Difference (8) and (7), in %	Export. *	Import. *	Difference (11) and (10), in %
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Argentina	76,575,688	69,534,885	-9.2	43,227,204	46,463,921	7.5	30,780,302	32,959,345	7.1	150,583,194	148,958,151	-1.1
Bolivia	1,638,941	2,246,897	37.1	304,541	820,297	169.4	917,014	814,842	-11.1	2,860,496	3,882,036	35.7
Brazil	40,923,660	45,523,591	11.2	20,392,259	23,124,662	13.4	27,083,686	28,658,768	5.8	88,399,605	97,307,021	10.1
Colombia	17,255,579	17,065,158	-1.1	2,318,644	2,396,057	3.3	2,896,936	2,894,269	-0.1	22,471,159	22,355,484	-0.5
Costa Rica	1,537,103	1,733,323	12.8	292,295	187,659	-35.8	252,756	320,883	27.0	2,082,154	2,241,865	7.7
Cuba	49,708,508	49,293,892	-0.8	1,123,815	861,774	-23.3	1,752,156	1,394,954	-20.4	52,584,479	51,550,620	-2.0
Chile	17,563,263	18,095,546	3.0	7,317,273	6,916,147	-5.5	6,518,582	6,133,250	-5.9	31,399,118	31,144,943	-0.8
Ecuador	1,260,448	1,353,083	7.3	524,695	631,635	20.4	624,512	677,114	8.4	2,409,655	2,661,831	10.5
El Salvador	3,191,587	4,500,967	41.0	345,225	367,448	6.4	208,964	512,268	145.1	3,745,776	5,380,682	43.6
Guatemala	3,349,436	2,727,791	-18.6	436,039	447,941	2.7	689,486	550,034	-20.2	4,474,961	3,725,766	-16.7
Haiti	1,247,494	1,224,389	-1.9	248,534	202,186	-18.6	235,620	190,391	-19.2	1,731,648	1,616,966	-6.6
Honduras	1,579,699			1,134,945			84,728			2,799,372		
Mexico	52,387,752	46,707,325	-10.8	2,563,243	2,551,799	-0.4	5,146,750	4,542,604	-11.7	60,097,745	53,801,728	-10.5
Nicaragua	1,595,968	1,545,181	-3.2	120,493	131,442	9.1	114,240	136,610	19.6	1,830,701	1,813,233	-1.0
Panama	4,302,684			142,653			127,092			4,572,429		
Paraguay	224,598			57,200			193,018			474,816		
Peru	10,257,997	11,232,545	9.5	3,411,442	4,216,301	23.6	2,513,756	2,429,879	-3.3	16,183,195	17,878,725	10.5
Dominican Rep.	4,390,387	4,494,232	2.4	102,109	151,314	48.2	243,236	221,184	-9.1	4,735,732	4,866,730	2.8
Uruguay	6,589,064			3,576,126			3,189,438			13,354,628		
Venezuela	13,533,047			1,872,546			1,429,666			16,835,259		
Latin America (15)**	282,883,811	277,278,804	-2.0	82,727,811	89,470,581	8.2	79,977,996	82,436,395	3.1	445,589,618	449,185,779	0.8

Notes:

\* The exports refer to foreign trade figures for the G3 countries, while the imports correspond to the figures for the Latin American nations.

\*\* The totals correspond to the 15 countries with full information.

Sources:

See table 1.



Table 4. Total imports for metal and electrical products in 1925, estimated from G3 exports (in dollars)

			\$ per 100h.	
	Imports	Population	\$ per 100h.	LA-20 = 100
Argentina	185,447,283	10,500,000	1,766.2	289.4
Bolivia <sup>a</sup>	5,054,586	2,260,000	223.7	36.6
Brazil	109,676,929	30,330,000	361.6	59.3
Colombia	24,451,751	6,720,000	363.9	59.6
Costa Rica	2,208,010	460,000	480.0	78.7
Cuba	57,219,237	3,432,000	1,667.2	273.2
Chile	32,913,121	4,070,000	808.7	132.5
Ecuador	2,753,891	1,720,000	160.1	26.2
El Salvador	3,889,695	1,300,000	299.2	49.0
Guatemala	4,618,123	1,510,000	305.8	50.1
Haiti	2,122,118	2,260,000	93.9	15.4
Honduras <sup>b</sup>	2,909,043	850,000	342.2	56.1
Mexico	61,828,956	15,200,000	406.8	66.7
Nicaragua	1,882,573	660,000	285.2	46.7
Panama <sup>c</sup>	3,188,634	460,000	693.2	113.6
Paraguay <sup>d</sup>	2,048,670	790,000	259.3	42.5
Peru	18,495,080	5,230,000	353.6	57.9
Dominican Rep.	4,953,695	1,050,000	471.8	77.3
Uruguay <sup>e</sup>	16,507,574	1,570,000	1,051.4	172.3
Venezuela <sup>f</sup>	19,713,418	2,950,000	668.3	109.5
Latin America (20)	561,882,388	92,072,000	610.3	100

Sources:

Imports: see table 1 and text; Population: <http://oxlad.qeh.ox.ac.uk>

Notes:

<sup>a</sup> A correction factor of 1.131 has been applied, resulting from a division of the fob value of total imports of metal products (3,235,030 \$ which converts to the total of registered imports 3,882,036 after adding 20%) and the aggregates of the G3 exports of aforementioned goods (2.860.496 \$), according to our calculations.

<sup>b</sup> The average of the four Central American countries of which we know (Costa Rica, El Salvador, Guatemala and Nicaragua) has been applied as an extrapolation factor; 0.962.

<sup>c</sup> We have taken the figure for iron and steel imports calculated by the Société des Nations, *Mémoire sur le commerce international... 1912-1926*, III, p. 214, headings 'Iron and steel manufactures', 'Electrical Machines and apparatus', 'Machinery, other' and 'Vehicles', to which has been added the electrical material exports of G3 (752.634 \$, according to our calculations).

<sup>d</sup> Value taken from *ibid*, p. 214. Referring to the headings 'Structural Iron, etc.', 'Machinery', 'Other iron manufactures' and 'Vehicles'.

<sup>e</sup> The average of Argentina and Brazil (1.236) is applied as an extrapolation factor.

<sup>f</sup> The average of the region (1.171) is applied as an extrapolation factor.

Table 5. Total machinery imports of the Latin American countries in 1925. Estimation based on G3 exports (in dollars)

		\$ per 100h	
	Imports	\$ per 100h	LA-20=100
Argentina	41,300,150	393.3	238.1
Bolivia <sup>a</sup>	1,641,626	72.6	44.0
Brazil	33,813,840	111.5	67.5
Colombia	5,819,070	86.6	52.4
Costa Rica	532,017	115.7	70.0
Cuba	16,931,146	493.3	298.6
Chile	11,628,319	285.7	173.0
Ecuador	752,341	43.7	26.5
El Salvador	857,299	65.9	39.9
Guatemala	1,047,371	69.4	42.0
Haiti	358,416	15.9	9.6
Honduras <sup>b</sup>	446,705	52.6	31.8
Mexico	19,792,783	130.2	78.8
Nicaragua	583,837	88.5	53.6
Panama <sup>c</sup>	536,000	116.5	70.5
Paraguay <sup>d</sup>	569,244	72.1	43.6
Peru	6,256,249	119.6	72.4
Dominican Rep.	1,213,530	115.6	70.0
Uruguay <sup>e</sup>	3,639,892	231.8	140.3
Venezuela <sup>f</sup>	6,436,680	218.2	132.1
Latin America(20)	154,156,515	165.2	100

Sources:  
See table 4.

Notes:

<sup>a</sup> See note from table 4.

<sup>b</sup> The average of the four Central American countries of which we know (Costa Rica, El Salvador, Guatemala and Nicaragua) has been applied as an extrapolation factor; 0.963.

<sup>c</sup> The figure for machinery imports (machinery and electrical equipment and other machinery) calculated by the Société des Nations, *Mémoire sur le commerce international... 1912-1926*, III, p. 214 (see note C of table 4) is used.

<sup>d</sup> Value corresponding to the year 1926, taken by the League of Nations, *op. cit.* refers to the heading "Machinery".

<sup>e</sup> The average of Argentina and Brazil (1.2063) is applied as an extrapolation factor.

<sup>f</sup> The average of the region (1.13) is applied as an extrapolation factor

Table 6. Relative levels of machinery imports *per capita* ( Latin America = 100 )

	1924	1925	average
Argentina	251.0	238.1	244.6
Bolivia	52.1	44.0	48.0
Brazil	58.3	67.5	62.9
Colombia	46.1	52.4	49.3
Costa Rica	75.0	70.0	72.5
Cuba	356.2	298.6	327.4
Chile	168.5	173.0	170.7
Ecuador	39.5	26.5	33.0
El Salvador	51.9	39.9	45.9
Guatemala	45.9	42.0	44.0
Haiti	7.0	9.6	8.3
Honduras	45.6	31.8	38.7
Mexico	78.7	78.8	78.8
Nicaragua	49.8	53.6	51.7
Panama	93.8	70.5	82.2
Paraguay	41.8	43.6	42.7
Peru	75.3	72.4	73.9
Dominican Rep.	122.7	70.0	96.3
Uruguay	116.1	140.3	128.2
Venezuela	95.4	132.1	113.7
Latin America (20)	100	100	100

Sources:  
same as table 1.

*Table 7. Relative levels of capital goods imports in 1925 estimated  
( Latin America = 100 )*

	<i>Machinery</i>	<i>Finished Goods</i>	<i>Means of transport</i>	<i>Total iron and steel goods</i>	<i>Electrical material</i>
Argentina	238.1	338.2	291.5	290.6	291.7
Bolivia	44.0	30.8	38.1	37.5	33.5
Brazil	67.5	45.7	71.7	60.0	54.5
Colombia	52.4	76.6	45.3	61.7	31.5
Costa Rica	70.0	88.5	67.7	78.8	84.3
Cuba	298.6	264.0	248.2	270.5	379.2
Chile	173.0	152.2	116.6	147.8	181.7
Ecuador	26.5	31.8	14.8	26.6	26.9
El Salvador	39.9	48.8	58.7	49.8	41.6
Guatemala	42.0	45.7	63.8	50.6	50.2
Haiti	9.6	20.2	13.5	16.0	7.4
Honduras	31.8	44.8	99.5	57.5	39.8
México	78.8	55.8	69.0	66.9	72.1
Nicaragua	53.6	52.6	29.1	47.3	43.4
Panama	70.5	130.2	50.1	92.8	--
Paraguay	43.6	46.0	42.3	45.1	--
Peru	72.4	55.9	48.9	59.0	50.9
Dominican Rep.	70.0	71.0	101.5	80.2	45.0
Uruguay	140.3	182.9	188.1	172.8	180.7
Venezuela	132.1	115.4	86.0	113.4	60.1
Latin America(20 countries)	100	100	100	100	100 <sup>a</sup>

Note:

<sup>a</sup> average of 18 countries (not including Panama or Paraguay)

Table 8. Levels of some macromagnitudes in 1925, in values per inhabitant, and in relation to the average of the countries indicated

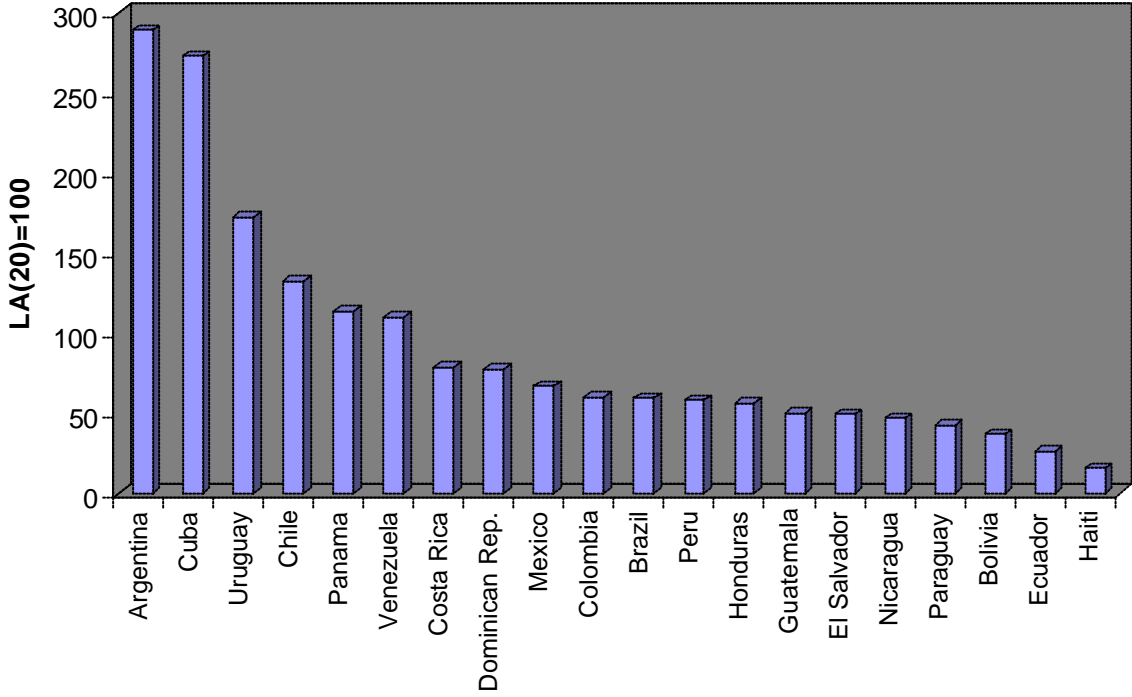
	LA-14 = 100		LA-13 = 100		LA-11 = 100			LA-6 = 100	
	GDP, in 1928	Capital goods	GDP	Capital goods	GDP	Capital goods	Investment in machinery	Machinery	
	Bulmer-Thomas	Tafunell & Carreras	Maddison (2003)	Tafunell & Carreras	Maddison (2003)	OXLAD	Tafunell & Carreras	Hofman	Tafunell & Carreras
Argentina	216.3	276.4	221.4	304.1	219.9	222.3	292.9	129.4	237.7
Bolivia									
Brazil	60.6	56.6	56.9	61.4	56.5	56.0	60.0	113.6	66.4
Colombia	59.8	56.9	70.9	58.8	70.4	75.7	60.3	65.4	49.1
Costa Rica	83.0	75.1	94.0	81.5	93.4	193.1	79.6		
Cuba	112.9	260.9							
Chile	189.8	126.6	162.4	136.8	161.4	136.0	134.1	168.9	169.6
Ecuador									
El Salvador	45.8	46.8	52.2	50.8	51.9	54.3	49.6		
Guatemala	73.9	47.9	82.5	46.6	81.9	83.2	50.7		
Haiti									
Honduras	84.5	53.6	75.1	58.1	74.6	75.6	56.8		
Mexico <sup>a</sup>	95.5	63.7	107.8	66.2	107.1	113.9	67.5	50.5	74.4
Nicaragua	71.6	44.6	82.4	48.4	81.9	65.3	47.2		
Panama									
Paraguay									
Peru	61.7	55.3	65.3	62.9					
Dominican Rep.									
Uruguay	224.2	164.5	180.1	182.8					
Venezuela	74.6	104.6	117.5	107.5	116.8	80.5	110.8	109.9	123.2
Latin America	100	100	100	100	100	100	100	100	100

Sources: Bulmer-Thomas, *The economic history of Latin America...*; Maddison, *The world economy...*; OXLAD, <http://oxlad.geh.ox.ac.uk>; Hofman, *The economic development of Latin America*. Tafunell & Carreras, see text.

Notes:

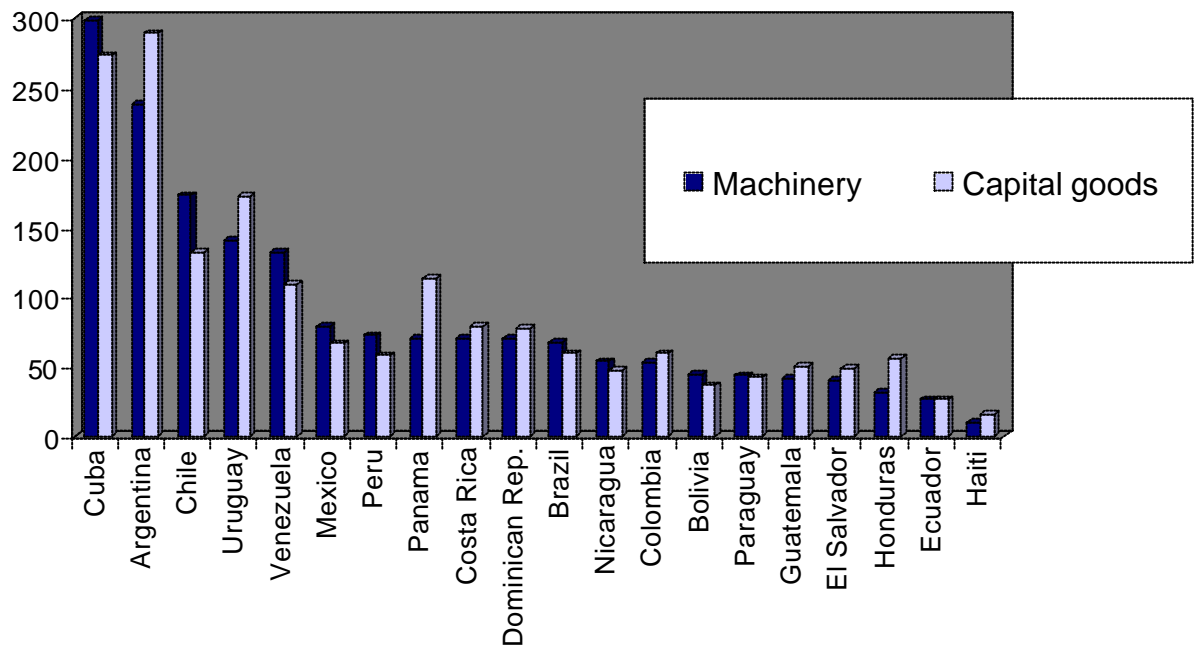
(a) An alternative estimate of ours will increase Mexico's indices by a 20 per cent to take into account iron and steel domestic production. See text.

**Graph 1. Capital goods per capita imports relative to Latin America average**



Source: Table 4

**Graph 2. Machinery and capital goods per capita imports in 1925 (Latin America=100)**



Source: Tables 4 and 5

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## NOTES:

<sup>1</sup> This article is part of the research project *Importaciones y modernización económica en América Latina, 1890-1960*, funded by the Spanish *Ministerio de Ciencia y Tecnología* (BEC2003-0190). We are grateful to our research team colleagues César Yáñez, Mar Rubio and Mauricio Folchi. We acknowledge Frank Notten's careful research assistance and the detailed comments received from André Hofman, Sandra Kuntz, Colin Lewis, Graciela Márquez and Paolo Riguzzi in occasion of presentations at the Asociación Argentina de Historia Económica, at the Asociación Mexicana de Historia Económica and at the Economic History Society conferences.

<sup>2</sup> See the cases of individual nations analysed in Cárdenas, E, Ocampo, J.A., and Thorp, R., eds., *An Economic History...*, 1.4

<sup>3</sup> Maddison, A., *The World Economy...* For the previous period there does not exist, for now, a better study for the year 1913 than Bulmer-Thomas, V., *The Economic History of Latin America...*

<sup>4</sup> United Nations, Department of Economic Affairs, New York, 1951.

<sup>5</sup> Series of studies carried out between 1951 and 1961, entitled *Análisis y Proyecciones del desarrollo económico. El desarrollo económico de...*

<sup>6</sup> The countries studied were: Argentina, Bolivia, Brasil, Colombia, Ecuador, El Salvador, Guatemala, Honduras, Panamá and Perú. See Naciones Unidas. CEPAL, *Cepalindex. Documentos...* C. Yáñez and X. Tafunell have catalogued the statistical material on imports and national accounts compiled by ECLA, although never published, they show that the methodology of the works of 'Analysis and projections' were applied in every country. In the ECLA headquarters exist, in addition, mimeographed documents similar to the publications 'Analysis and projections' for Cuba, Chile, México and Nicaragua. See, Yáñez, C. and Tafunell, X., Informe sobre la recuperación del patrimonio documental estadístico histórico de la CEPAL. Las series de larga duración sobre las principales variables macroeconómicas de América Latina y el Caribe, September 2003, available at:

<http://www.eclac.cl/cgi-bin/getProd.asp?xml=/publicaciones/xml/4/15284/P15284.xml&xsl=/deype/tpl/p9f.xsl&base=/deype/tpl/top-bottom.xsl>

<sup>7</sup> Hofman, A. A. *The Economic Development of Latin America...*

<sup>8</sup> Fishlow, A., 'Origins and Consequences of Import Substitution...'; Villela, A. & Suzigan, W., 'Government policy'; Suzigan, W., *Industria brasileira...*



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<sup>9</sup> Haber, S., 'It wasn't all Prebisch's fault...'

<sup>10</sup> For more details, see: Carreras, A., Yañez, C., Hofman, A., Tafunell, X., Fólchi, M. and Rubio, M., 'Importaciones y modernización económica en América Latina durante la primera mitad del siglo XX. Las claves de un programa de investigación', in *Actas del Segundo Congreso Nacional de Historia Económica*, Asociación Mexicana de Historia Económica, Mexico D.F., October 2004 (on CD).

<sup>11</sup> Clear examples of this confusion can be found in instruments, utensils, tools and other metal artefacts, or in articles of hardware .

<sup>12</sup> Data on the commerce of these types of products has also been collected but we can not yet offer results. It has to be pointed out that electrical material includes cable, which means that a substantial portion of finished copper is included in this category. Iron and steel finished goods also include articles made of tin and other alloys.

<sup>13</sup> Calculated from the combined imports of the Latin American countries, except Honduras, Panama and Paraguay. Costa Rica, with 13%, is the only economy in which incoming finished goods made of nonferrous metal amount for more than 10% of imports of iron and steel articles .

<sup>14</sup> For total imports for the years 1913, 1929, 1938 and 1950, see Pan American Union, *The Foreign Trade of Latin America....*

<sup>15</sup> We have not been able to locate statistics for Honduras and Panama for the year 1925. Those for Paraguay are so patchy as to be practically unusable. Statistics for Uruguay do not provide information for country of origin by product, whilst those for Venezuela are presented in a block by customs, which results in extremely labourious work for determining the figures of the total of the articles under study imported from each country. As for the year 1913, the gaps in statistics for foreign trade are more numerous due to being more difficult to locate, and even, in the case of some small nations, to the fact that they were not published.

<sup>16</sup> In fact, everything points to both countries being as dependent on imports from the most advanced economies as the rest of the region. What happened was that since there was no direct trade between these economies and Bolivia and Paraguay, a part of the traded products was assigned to intermediary states, especially Chile for the former and Argentina for the latter.

<sup>17</sup> One must not overlook the exceptional character of both countries from the geographical point of view in the American continent. Access from the exterior for merchandise was extremely costly, especially in the case of Bolivia, due to its orographic conditions.

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<sup>18</sup> See Federico, G. and Tena, A. 'On the accuracy of foreign trade...', and the cited bibliography.

<sup>19</sup> One of these countries is the US -- the largest supplier -- which has halted us for the moment in the process of comparing quantities. Not only do the North American statistics employ different units of capacity and volume, but on occasions they simply note the number of units exported (as in the case of cars and other means of transport). Here we have refused to estimate the average weight of such units since this would introduce margins of error that could be confused with disparities between the figures from the exporting country and the importing country.

<sup>20</sup> The restriction comes from the British statistics which, as will be explained, only offer data for exports to all the Latin American countries in the categories 'iron and steel and manufactures thereof' and 'machinery'. Fixed material for transport (rails, ties, sleepers etc) falls under the first heading. 'Machinery' includes equipment for the generation, transmission and transformation of electricity (as well as a part of electrical material, impossible to exactly define, and electric motors for trains and trams). On the other hand the commercial statistics for Germany and the US provide very detailed and systematic information for all the countries. Because of this we have adopted the classification forced on us by the British statistics. The only problem to report is that some of the North American headings for agricultural machinery also include hand tools and utensils.

<sup>21</sup> 15 of the 20 Latin American countries registered the country of consignment as country of origin of the products they imported. See Société des Nations, *Mémoire sur le commerce...*

<sup>22</sup> As mentioned in note 20. Apparently the British statistics only show what was exported under all headings for Argentina, Brazil and Chile.

<sup>23</sup> Specifically, exports with a total value of less than 5000 marks under any of the statistical headings. Given this structure and bearing in mind what exports below this level represented in the U. S. statistics, we would hazard a guess and say that the under-evaluation of the German figures is of hardly any relevance.

<sup>24</sup> One would have to resort to an overall view if it were discovered, or there were a founded suspicion, that a large movement in trade was not registered in the statistics. Because of this, national differences would be evened out due to a confusion between country of consignment and country of destination or origin. But before resorting to the hypothesis of a regional redistribution of articles imported from the centre one has to discount the possibility that the discrepancies between the figures given by exporters

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and importers simply originate from different accounting methods -- or incomplete accounting -- of commercial exchanges.

<sup>25</sup> According to the previously cited study by the League of Nations, the merchandise imported to the entrepôts tended to represent very low percentages, around 1%, in Latin American countries. This could explain the discrepancies observed in the three first countries mentioned. In the case of the Dominican Republic the difference, on the other hand, is probably due to the statistics not distinguishing between products from the US or Puerto Rico.

<sup>26</sup> See U.S. Department of Commerce, *Commerce Yearbook 1926*, II, p. 211.

<sup>27</sup> The official Argentinean organisation in charge of compiling trade figures developed an alternative evaluation system, limited to a reduced number of products with the aim of obtaining "true" import figures. The same thing occurred in Uruguay.

<sup>28</sup> As has been mentioned, Colombian imports are expressed as c.i.f. values, as are those from Haiti. On the other hand, Mexican imports are expressed as f.o.b. values, whilst Peruvian imports add 20% to f.o.b. values. In the case of the Central American country, according to the experts, the statistics of this time are faulty. See Kuntz, S., 'El comercio México-Estados Unidos...', and, by the same author, 'Nuevas series del comercio exterior...'. We can conject that they did not register all entries of stock in the other three countries. An alternative explanation, especially in the case of Haiti, would be that in their trade statistics some of the products under study are not assignable to identified headings, but put together in a generic category (other articles).

<sup>29</sup> The statistics included in the report presented to Parliament by the Ministry of taxation, do not offer the importation values of each type of product; they only show the value (and quantity) of the products imported from each country. Thus, it is not possible to verify whether the sum of imports from different countries of origin corresponds with total imports. But the difference can not be attributed to an individual mistake, given that there are imbalances in almost all the headings and in respect to the three countries of the centre.

<sup>30</sup> See above.

<sup>31</sup> The most recent rigorous study of Cuban industry and economy between the wars completely ignores the very high position of the island in the ranking of the Latin American economies, despite one of the great merits of this work being a new estimate of the Cuban GDP far above the levels of previous estimates. See Antonio Santamaría, *Sin azúcar no hay país...*

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<sup>32</sup> See Bulmer-Thomas, V., *The Economic History of Latin America...*, and Thorp, R., *Progreso, pobreza y exclusion...*, pp. 90-2.

<sup>33</sup> To be exact, 27,4%. According to our calculations, the percentage was practically the same as in 1913.

<sup>34</sup> Hofman, A., *The Economic Development of Latin America*, p.188.

<sup>35</sup> Taylor, A., 'Capital accumulation', p.180.

<sup>36</sup> We make reference to the reports compiled by the United States Tariff Commission entitled *Mining and manufacturing industries in...*, published in 1945. The references cited below correspond to the monograph on the country mentioned.

<sup>37</sup> United States Tariff Commission, *Mining and manufacturing industries in Bolivia...*, p. 13.

<sup>38</sup> United States Tariff Commission, *Mining and manufacturing industries in Costa Rica...*, pp. 6-7.

<sup>39</sup> United States Tariff Commission, *Mining and manufacturing industries in Ecuador...*, p. 9.

<sup>40</sup> United States Tariff Commission, *Mining and manufacturing industries in El Salvador...*, pp. 5 y 7.

<sup>41</sup> United States Tariff Commission, *Mining and manufacturing industries in Guatemala...*, pp. 5 y 8.

<sup>42</sup> United States Tariff Commission, *Mining and manufacturing industries in Haiti...*, p. 8.

<sup>43</sup> United States Tariff Commission, *Mining and manufacturing industries in Honduras...*, p. 6.

<sup>44</sup> United States Tariff Commission, *Mining and manufacturing industries in Nicaragua...*, p. 8.

<sup>45</sup> United States Tariff Commission, *Mining and manufacturing industries in Panama...*, p. 9.

<sup>46</sup> United States Tariff Commission, *Mining and manufacturing industries in Paraguay...*, p. 6.

<sup>47</sup> United States Tariff Commission, *Mining and manufacturing industries in the Dominican Republic...*, p. 8.

<sup>48</sup> United States Tariff Commission, *Mining and manufacturing industries in Venezuela...*, p. 40.

<sup>49</sup> United States Tariff Commission, *Mining and manufacturing industries in Colombia...*, pp. 40-1.

<sup>50</sup> United States Tariff Commission, *Mining and manufacturing industries in Peru...*, pp. 8 y 10.

<sup>51</sup> United States Tariff Commission, *Mining and manufacturing industries in Cuba...*, pp. 3-5 y 9.

<sup>52</sup> United States Tariff Commission, *Mining and manufacturing industries in Uruguay...*, pp. 7-11, 23-32.

<sup>53</sup> See Naciones Unidas, *Análisis y proyecciones del desarrollo económico. III: El desarrollo económico de Colombia*, p. 10, and Naciones Unidas, *Análisis y proyecciones del desarrollo económico. VI: El desarrollo industrial del Perú*, p. 141.

<sup>54</sup> See Fishlow, 'Origins and consequences of import substitution...'.

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<sup>55</sup> Díaz Alejandro, C.F., *Ensayos sobre la historia económica argentina*, p. 209. It is interesting to note the almost total inexistence of industry capable of producing electrical equipment and material, despite Argentina being the Latin American nation with the most extensive electrification. See Boix, E., *Los artículos para la electricidad... 1921*, and, especially the series of national studies on 'electrical goods' compiled by the US Department of Commerce, in particular, *Electrical goods in Argentina, Uruguay, and Brazil...; Electrical goods in Cuba...; and Electrical goods in Bolivia and Chile....*

<sup>56</sup> Naciones Unidas, *Análisis y proyecciones del desarrollo económico. II: El desarrollo económico de Brasil*, p. 71.

<sup>57</sup> Naciones Unidas, *Análisis y proyecciones del desarrollo económico. V: el desarrollo económico de la Argentina*, I, p. 164.

<sup>58</sup> Argentina, with 9,857 metric tons, Brazil (3,946) and Chile (2,458) were the countries which imported the most. The acquisitions of the rest were clearly below 1000 metric tons. Only Panama stands out, albeit modestly, with 474 metric tons, due to its obvious role as an intermediary. In percentage terms, the greatest importance of purchase of foundry products in respect to finished goods was in Panama (0.99 %), Chile (0.43 %), Argentina (0.32 %), Brasil (0.27 %) y Colombia (0.24 %).

<sup>59</sup> Naciones Unidas. Comisión Económica para América Latina, Estudio de la industria siderúrgica..., pp.94-6.

<sup>60</sup> *Ibid.*, p.96.

<sup>61</sup> Our own estimate, from México, Anuario Estadístico... This is a lower bound since foreign trade statistics in Mexico did not count the weight of vehicles and other means of transport.

<sup>62</sup> The collection of studies cited is littered with references to this interaction, which is the subject of detailed examination, generally of a prospective nature. In fact the ECLA gives great importance to this question by judging it as a potentially serious threat to the industrial development of the economies in the area. The pressure it introduced on the balance of payments converted the growing necessity of importing capital goods into a suffocating external restriction on growth.

<sup>63</sup> As well as the primary sources previously cited, see A. Santamaría, *Sin azúcar no hay país...*, and Thorp, R. & Bertram, G., *Peru 1890-1977. Growth and policy in an open economy...*, ch. 6 and app. 4.

<sup>64</sup> Madisson, A., *The world economy...* Oxlad, <http://oxlad.qeh.ox.ac.uk>

<sup>65</sup> Bulmer-Thomas, V., *The economic history of Latin America...*, app.3.

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<sup>66</sup>The series on formation and capital stock calculated by Hofman, *The Economic Development of Latin America ...*

<sup>67</sup> All the magnitudes refer to their per capita value and are expressed from here on as an index number in respect to the per capita value of the group as a whole. Investment in machinery (and equipment) per capita has been calculated using the data for the international GDP per capita in dollars in 1980 and the percentage of investment in this type of goods in respect to GDP (tables B.4 and D.6, in the appendices).

<sup>68</sup> The Maddison estimate placed Cuba in 1929 (starting point of the series) at an even lower ranking, under the regional average.

<sup>69</sup>We must remember, in passing, that there is a shadow of doubt cast over the El-Salvadorian figures for capital goods imports, deduced, as for almost all the countries, from the G3 statistics, due to the fact that they were much lower than those registered by the El-Salvadorian statistics. The table now commented on reaffirms *a posteriori* the validity of the figures we have estimated for this country.

<sup>70</sup> The picture would barely be altered if the Maddison and Oxlad data were restricted to the six nations studied by Hofman and expressed in relation to the average of these six countries.