PRICE, PURCHASING POWER AND REAL PRODUCT COMPARISONS IN LATIN AMERICA

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The paper begins with a discussion of the concepts used and the scope of their application. Then the purchasing power parity rates for LAFTA countries in 1968 are presented and analyzed. With the aid of such rates the real gross domestic products of these countries in 1968 are estimated. Among other conclusions, it is found that these differ quite importantly from GDP calculations using foreign exchange rates, even within the LAFTA area. Finally, the levels of consumer prices in the region in 1968 are compared, and these are contrasted with the results of a similar survey undertaken in 1960.

In this article purchasing power parity rates for Latin America are presented and discussed, their use being illustrated by the derivation and analysis of real gross domestic product estimates (Section II). Cross-country indices of consumer prices for Latin America are also calculated and explored in the paper (Section III), which begins with an introductory section on the nature and scope of the study (Section I).

SECTION I

Nature of the Paper

Purchasing power parity or implicit rates, rather than exchange rates, are the appropriate conversion factors to use in studies involving value comparisons.[1] Thus, the purchasing power parity rates presented in this essay should be useful when comparing value figures involving Latin American nations.

As an illustration of the usefulness of the purchasing power parity (PPP) rates, real gross domestic product estimates for Latin American countries are derived in this paper. These are contrasted with the gross domestic products estimated and converted in the usual fashion, which does not involve deflation across space.[2]

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[1]This is shown to be the case in Joseph Grunwald and Jorge Salazar, "Economic Integration, Rates of Exchange, and Value Comparisons in Latin America", in Donald Daly, editor, *International Comparisons of Prices and Output*, New York, National Bureau of Economic Research, 1972.

[2]The term real, as used in this essay, refers to estimates adjusted for the price change across space and time. Current price gross domestic product would involve no deflation at all, while constant price GDP figures only reflect price deflation across time.

Using the prices collected for the calculation of the PPP rates, some price comparisons are also undertaken in the paper. These suggest the cost-of-living patterns prevalent in Latin America, while serving, too, as very rough indications of potential trade flows among these nations, under the assumption of increased trade liberalization among them.

Scope of the Paper

Only the countries forming the Latin American Free Trade Area (LAFTA) are considered in this paper. In order to collect the information required for the estimations and comparisons attempted, comprehensive country-specific surveys were necessary. It would have been impossible to cover all of Latin America with resources at hand.[3]

The price data utilized in this paper cover private consumer goods exclusively. Nevertheless, because of the importance of private consumption within the overall gross domestic product, the PPP rates and real product estimates obtained in this paper will probably not differ much from those that would have resulted if the other expenditure sectors had been included as well.

Another limitation of the paper is that generally only one city (the capital) in each country was included in the price collection. This was also determined by financial constraints. It is our belief, nonetheless, that the purchasing power parity corresponding to the whole country should in general be quite close to those based on the most important city. Eventually, the PPP rates will be adjusted to reflect national levels. At that juncture this hypothesis will be tested.

The estimations generated in this project cover different levels of disaggregation within the structure of the gross domestic product (expenditure side). In this paper, only the overall results for private consumption will be dealt with. In the end, highly disaggregated estimates will be presented, with over 100 subcategories in private consumption alone.

The index formulation utilized in the paper is the geometric version of the Walsh index, with the average value shares corresponding to LAFTA. This index satisfies the circularity and country reversal tests, although it does not comply with the factor reversal test. However, circularity is crucial for multilateral comparisons, while factor reversibility is certainly not as important a quality, and in any case most indices proposed for the measurement of price change fail to comply with it. Finally, other advantages of the index formulation utilized are the sounder consumer theory assumptions on which expenditure weights are based, as opposed to quantity weights, and the superior properties of geometric averages.[4]

The statistical expression of the index is:

$$\prod_{j=1}^{n}\left(\frac{P_{jk}}{P_{ji}}\right)^{V_{jy}} \quad \text{where } V_{jy}=\frac{\left(\prod_{i=1}^{s} V_{ji}\right)^{1/s}}{\sum_{j=1}^{n}\left[\left(\prod_{i=1}^{s} V_{ji}\right)^{1/s}\right]}$$

[3]LAFTA includes all of the Latin countries in South America plus Mexico.

[4]On these tests and properties see Richard Ruggles, "Price Indices and International Price Comparisons," in *Ten Economic Studies in the Tradition of Irving Fisher*, New York, 1967, page 174.

In these formulae, j represents goods (from 1 to n) while k and i represent countries (from 1 to s). The P's and V's refer to prices and value shares respectively, with y representing the average of the countries.

If further details or a fuller methodological treatment is desired, the Grunwald–Salazar paper cited above should be consulted.

Section II

Purchasing power parity rates are those equalizing the purchasing power of the currencies involved. Such purchasing power is meant to apply to all the transactions included in the gross domestic product account. Thus, in addition to private consumption, the remaining expenditure categories should be included, to wit: capital formation, public consumption and foreign trade.[5] The reader should keep in mind that the purchasing power parity rates presented below are based only on private consumption expenditures, and also that they reflect final market prices rather than factor costs.

When comparing countries with wide differences in levels of living, these rates have been found to be radically different from exchange rates. But in comparisons among the countries forming the developing world or for nations within homogeneous regional units, the divergence is not so large, although it is clearly significant.[6]

This should not be surprising, given the fact that exchange rates are influenced by all kinds of international economic transactions while PPP rates are determined basically by internal flows, although some external ones are taken into account.[7] Notwithstanding this, some economists still contend that the movements of the PPP rates over time constitute reasonably accurate proxies of the change in equilibrium exchange rates.[8] Although this is a controversial point, it should at least be clear that for comparisons of production, expenditures, factor payments, and other values of an essentially internal nature, it is the PPP rates, rather than exchange rates, that should be used.

The Purchasing Power Parity Rates for LAFTA Countries

In Table 1 the set of PPP rates for LAFTA countries are presented. The rates are only calculated among the Latin American countries and no attempt is made to estimate indirectly the rates corresponding to the United States or to other advanced countries, because of the essentially regional character of this paper.

Let us first compare the PPP rates with both the official and free exchange rates. The exchange rates among the LAFTA countries will be those implicit in their respective exchange rates with respect to the U.S. dollar.

[5]On this point consult Milton Gilbert and Irving Kravis, *An International Comparison of National Products and the Purchasing Power of Currencies*, Paris, 1954. Yet, it is important to consider that private consumption represents, as an average, over 75 percent of total expenditures on the gross domestic product in LAFTA countries.

[6]See Stanley N. Braithwaite, "Real Income Levels in Latin America", in *Review of Income and Wealth*, June 1968.

[7]On this point consult Joseph Grunwald and Jorge Salazar, *op. cit.*

[8]See, for example, Leland Yeager, "A Reconsideration of the Purchasing Power Doctrine," *Journal of Political Economy*, December 1958.

TABLE 1

PURCHASING POWER PARITY FOR EACH LAFTA COUNTRY IN MAY 1968*

	For One Mexican Peso	For One Peruvian Sol
Argentina	24.16	8.54
Bolivia	0.85	0.30
Brazil	0.24	0.08
Chile	0.55	0.19
Colombia	0.72	0.25
Ecuador	1.07	0.38
Mexico	1.00	0.35
Paraguay	7.75	2.74
Peru	2.83	1.00
Uruguay	12.02	4.25
Venezuela	0.43	0.15

*The expenditure weights used in the calculation of these rates were formed by combining the unpublished 1960 quantity weights used by the UN Economic Commission for Latin America (ECLA) in their study, with the 1968 prices collected by us. See UN, ECLA, *A Measurement of Price Levels and the Purchasing Power of Currencies in Latin America*, Santiago, Chile, 1963.

The official and free exchange rates are shown in Tables 2 and 3 with the Mexican peso and the Peruvian sol as alternative bases. In examining and comparing these sets of rates below, the former will be mostly used because of its stability, convertibility and uncontrolled nature.

TABLE 2

OFFICIAL EXCHANGE RATES FOR EACH LAFTA COUNTRY IN MAY 1968*

	For One Mexican Peso	For One Peruvian Sol
Argentina	28.00	9.04
Bolivia	0.95	0.31
Brazil	0.26	0.08
Chile	0.53	0.17
Colombia	1.30	0.42
Ecuador	1.45	0.47
Mexico	1.00	0.32
Paraguay	10.08	3.26
Peru	3.10	1.00
Uruguay	20.00	6.46
Venezuela	0.36	0.12

*Computed from the official exchange rates reported by International Monetary Fund, *International Financial Statistics*, Washington, D.C., 1969.

Comparing the PPP rates with the official exchange rates some similarities are found. Nevertheless, the differences, although small in absolute terms in certain cases, are generally important percentage-wise (see Table 4). Brazil, Peru

TABLE 3

FREE EXCHANGE RATES FOR EACH LAFTA COUNTRY AS OF MAY 1968*

	For One Mexican Peso	For One Peruvian Sol
Argentina	28.00	7.69
Bolivia	0.95	0.26
Brazil	0.30	0.08
Chile	0.73	0.20
Colombia	1.30	0.36
Ecuador	1.78	0.49
Mexico	1.00	0.27
Paraguay	10.08	2.77
Peru	3.64	1.00
Uruguay	20.00	5.49
Venezuela	0.36	0.10

*Computed from data presented by International Monetary Fund, *op. cit.*, and from reports of gray market transactions in the various countries.

TABLE 4

DEGREE OF UNDER (−) OR OVERVALUATION (+) OF THE OFFICIAL AND FREE RATES OF EXCHANGE AS COMPARED TO THE PPP RATES, FOR EACH LAFTA COUNTRY IN MAY 1968*

	Official	Free
	%	%
Argentina	16 (−)	16 (−)
Bolivia	12 (−)	12 (−)
Brazil	8 (−)	25 (−)
Chile	4 (+)	33 (−)
Colombia	81 (−)	81 (−)
Ecuador	36 (−)	66 (−)
Paraguay	30 (−)	30 (−)
Peru	10 (−)	29 (−)
Uruguay	66 (−)	66 (−)
Venezuela	16 (+)	16 (+)

*The Mexican peso is taken as the currency denominator. Percentages are computed from previous tables. The PPP rates are taken as the base in the computation of percentage deviations. The concepts of under- and overvaluation are used here as a convenient expression of the relation of these rates to the PPP rate, and not in the usual international trade sense implying balance of payments disequilibria.

and Chile are exceptions to this rule with deviations of 10 percent or under.[9] In all other countries the discrepancy between the PPP rates and the official exchange rates is over 10 percent reaching close to 100 percent in some cases (e.g. Colombia).

[9]If Peru is taken as a base, then it is possible to obtain a reading on the Mexican discrepancy. The Mexican peso seems to be overvalued by just under 10 percent. In calculating percentage deviations the PPP rates are taken as the base.

Comparing now the PPP rates with the free rates, it is found that the discrepancies are even larger, in no case being less than 10 percent (Mexico not excepted). It is also interesting to note that, with the exclusion of Venezuela and Mexico, all countries appear to have undervalued[10] currencies if the PPP rate is taken as the norm. This result also holds, with the additional exception of Chile, if the official exchange rate is compared to the parity rate, although the degree of undervaluation is much less.

Depending on which type of exchange rate is chosen for comparison with the PPP rate, the countries with the smallest deviations vary. When the PPP rate is compared with the official exchange rate, Chile, Brazil and Peru have the narrowest discrepancies; if the free exchange rate is used, it is for Bolivia, Argentina and Venezuela that the rates are closer. On the other hand, Colombia, Uruguay and Ecuador show the widest gaps under both circumstances.

In those cases in which free rates of exchange differing from official rates can be actually discerned, it is the former that are usually closer to the shadow prices of foreign exchange.[11] Thus, of the two sets of exchange rates, the free rates generally reflect economic conditions more faithfully. In fact, the larger discrepancies found between free exchange rates and PPP rates illustrate that the latter cannot be used as an indication of the over or undervaluation of the exchange rates in the international trade sense.[12]

No particular relationship seems to exist within LAFTA between the level of economic development and the degree of under or overvaluation of the exchange rates with respect to the PPP rates. Countries with extremely high or low per capita income show overvaluation or slight undervaluation of their currencies in some cases (Venezuela and Bolivia) and extreme undervaluations in others (Uruguay and Ecuador). This contradicts, at least for the group of countries considered, a hypothesis expounded by Balassa stating that the ratio of the purchasing power parity to the exchange rate (or the degree of under or overvaluation) is an increasing function of income levels.[13]

Comparing the Results of the ECLA and ECIEL Surveys

Most currencies have experienced significant changes in their PPP rates between the dates of the ECLA survey (June 1960) and the ECIEL survey (May 1968). As a result of inflationary processes of considerable magnitude, Brazil, Uruguay, Chile and Argentina have seen the purchasing power of their currencies depreciate enormously when compared with the Mexican peso (the currency taken as common denominator). On the other hand, certain other currencies have strengthened, in terms of purchasing power, relative to the peso; most importantly the Venezuelan bolivar, the Ecuadorean sucre and the Paraguayan

[10]Under and overvaluation are used at this point as convenient terms for expressing the relation of the official and free exchange rates to the PPP rates, and not in the usual international trade sense implying a balance-of-payments disequilibrium.

[11]See Joseph Grunwald and Jorge Salazar, *op. cit.*, p. 238.

[12]It is interesting to consider, though, that the strongest currencies in LAFTA are the ones consistently overvalued in terms of the PPP rates: the Mexican peso and the Venezuelan bolivar.

[13]See Bela Balassa, "The Purchasing-Power Parity Doctrine: A Reappraisal", *Journal of Political Economy*, December 1958, pp. 585 and 586.

guarani. Yet, the currency appreciations have not been nearly as marked as the depreciations. All these changes are portrayed in Table 5 below, which indicates that the Mexican peso has appreciated relative to six LAFTA currencies and depreciated relative to four of them.

TABLE 5

PERCENTAGE CHANGES IN THE PURCHASING POWER OF LAFTA CURRENCIES BETWEEN JUNE 1960 AND MAY 1968, WITH THE MEXICAN PESO AS THE BASE*

Argentina	(−) 296
Bolivia	(+) 3
Brazil	(−) 2,300
Chile	(−) 400
Colombia	(−) 24
Ecuador	(+) 20
Paraguay	(+) 14
Peru	(−) 43
Uruguay	(−) 1,400
Venezuela	(+) 23

*Figures computed using data from UN, Economic Commission for Latin America, *op. cit.*, p. 186 as well as Table 1 above.
− Means depreciation.
+ Means appreciation.

It is also quite enlightening to compare the degree of over or undervaluation of the rates of exchange with respect to the PPP rates in 1960 and 1968. The former, as computed from the results of the ECLA survey, appears in Table 6.[14]

One result becomes immediately apparent by just glancing at the respective tables: the discrepancies between the rates were much lower in 1960. The ECLA

TABLE 6

DEGREE OF UNDER (−) OR OVERVALUATION (+) OF THE FREE RATES OF EXCHANGE AS COMPARED TO THE PPP RATES, FOR EACH LAFTA COUNTRY IN JUNE 1960*

Argentina	9 (−)
Bolivia	8 (−)
Brazil	7 (−)
Chile	27 (+)
Colombia	5 (+)
Ecuador	8 (−)
Paraguay	9 (−)
Peru	11 (−)
Uruguay	16 (−)
Venezuela	52 (+)

* See Table 4 for explanation and *caveats*. The percentages were computed from data appearing in UN, ECLA, *op. cit.*, pp. 186, 194 and 195.

[14]Again, not in the international trade sense.

survey only considered the free rates of exchange, but even if the definitions of these rates in the two studies do not seem to coincide entirely, the discrepancies found in the ECIEL survey are much higher even in terms of official rates of exchange.[15]

Only in the case of Venezuela does it appear that a narrowing in the divergence between rates of exchange and PPP rates has taken place since 1960. In contrast, a particularly large widening in the degree of undervaluation seems to have taken place in the cases of Colombia, Ecuador, Paraguay and Uruguay, as can be seen from a comparison of Tables 4 and 6. Hence, the free rates of exchange, which were relatively close to PPP rates in 1960, now appear to be quite out of line. This may partly explain why in the ECLA study it was implied that the PPP rates were indicative of the equilibrium exchange rates of these economies. If the divergencies had been as wide as in 1968, it would have been clear that such a normative proposition does not follow.

In fact, the difference between 1960 and 1968 may just reflect a trend prevalent in many LAFTA countries intended to cure the overvaluation (in the international trade sense) of their currencies. In the process, the rift between PPP rates and exchange rates has widened.

Real Product Estimates for LAFTA Countries

Ideally real production estimates should be constructed from independent and disaggregated price and quantity information. However, for many expenditure categories it is quite difficult to assemble the quantity data required.[16] Because of such obstacles it has become acceptable to use expenditure or value figures in combination with corresponding price deflators, assuming they are calculated from independent price data. Such disaggregated quantities or deflated values are then weighted and aggregated to add up to total production in real terms.

At the present stage in our project even second-best calculations of real production through disaggregated deflation are not feasible. Yet, in order to present some rough estimations of the real gross domestic products of LAFTA countries, a short-cut procedure will be used here.[17] It consists of using the overall PPP rates to convert the conventional gross domestic product estimates into real terms.[18] Given that the PPP rates presented above are only based on private consumption, the results presented here must be considered tentative.

Let us now examine the conventional current price GDP estimates for each of the LAFTA countries in 1968 before converting them into real terms. These are shown in Table 7, using again the Mexican peso as common denominator and

[15]It seems that in certain cases the ECLA free rates may be closer to our official rather than our free rates.

[16]The calculation of real product from the expenditure rather than the product side is assumed here.

[17]Surprisingly, in most applications found in the literature the rough method has been found to be prevalent. Moreover, the user usually does not seem to be aware of its limitations.

[18]In essence, this involves adjusting GDP in 1968 prices by the *relative* purchasing power of the currencies in which they are expressed. This implies the selection of the currency of a particular country as a base.

TABLE 7

TOTAL AND PER CAPITA GROSS DOMESTIC PRODUCT FOR EACH LAFTA COUNTRY IN 1968* (in Mexican pesos, converted by the use of official exchange rates)

	Total GDP	Per Capita GDP	Rank
	(In millions)		
Argentina	220,035	9,317	(2)
Bolivia	10,398	2,222	(11)
Brazil	381,807	4,328	(7)
Chile	83,413	8,920	(3)
Colombia	74,142	3,740	(8)
Ecuador	18,819	3,304	(9)
Mexico	339,145	7,175	(4)
Paraguay	6,490	2,909	(10)
Peru	59,871	4,688	(6)
Uruguay	19,135	6,790	(5)
Venezuela.	124,211	12,824	(1)

*Gross domestic product estimates were taken from UN, *Yearbook of National Account Statistics*, New York, several years.

utilizing official exchange rates for conversion purposes.[19] In the same table the GDP estimates are also presented in per capita terms, by taking into account the 1968 population estimates presented in the *United Nations Demographic Yearbook* (New York, 1968). It is clear from the table that Venezuela has the highest GDP per capita within LAFTA, followed by Argentina and Chile. In the low end of the spectrum we find Ecuador, Paraguay and Bolivia, in that order from top to bottom.

In Table 8 alternative GDP figures are presented for those countries for which free exchange rates were different from official ones in 1968; in these cases

TABLE 8

TOTAL AND PER CAPITA GROSS DOMESTIC PRODUCT FOR SOME LAFTA COUNTRIES IN 1968 (in Mexican pesos, converted by the use of free exchange rates)*

	Total GDP	Per Capita GDP
	(In millions)	
Brazil	330,900	3,751
Chile	60,560	6,476
Ecuador	15,330	2,692
Peru	50,989	3,992

*These are the countries in which important discrepancies between free and official exchange rates were found. Gross domestic product estimates were taken from UN, *op. cit.*

[19]The prevailing exchange rate (both official and free) of the Mexican peso with respect to the dollar was then, and still is, 12.50 pesos for 1 dollar. The corresponding PPP rate was extrapolated by ECLA to be 7.19 pesos to the dollar in June 1968.

the free rates have been used to express GDP in terms of Mexican pesos. As a result the Chilean estimate is noticeably affected, falling below Uruguay in per capita terms. Other figures are substantially altered as well, to the extent that the rankings change significantly.

Before proceeding with the presentation of tentative estimates of the GDP of LAFTA countries in real terms, it must be noted that the range of per capita income levels within the area is quite wide (see Tables 7 and 8) with Venezuela apparently having a level of development of almost six times the Bolivian one. The corresponding real GDP estimates are presented in Table 9 both in global

TABLE 9

TOTAL AND PER CAPITA GROSS DOMESTIC PRODUCT ESTIMATES IN REAL TERMS FOR EACH LAFTA COUNTRY IN 1968 (in Mexican pesos)*

	Total GDP	Per Capita GDP	Rank
	(In millions)		
Argentina	255,008	10,798	(2)
Bolivia	11,621	2,483	(11)
Brazil	413,625	4,689	(8)
Chile	80,380	8,596	(4)
Colombia	133,867	6,752	(6)
Ecuador	25,503	4,478	(9)
Mexico	339,145	7,175	(5)
Paraguay	8,442	3,784	(10)
Peru	65,583	5,135	(7)
Uruguay	31,839	11,298	(1)
Venezuela	103,991	10,736	(3)

*Original GDP estimates, as in Tables 7 and 8, taken from UN, *op. cit.*

and per capita terms. They are also expressed in Mexican pesos. Comparing Table 9 with the two previous tables, substantial and surprising changes in the standings become apparent. Uruguay appears to really have the highest gross domestic production per head in LAFTA, very closely followed by Argentina and Venezuela.[20] Afterwards there is a wide gap and Chile follows. On the other hand, no changes in rankings take place at the lower income levels, with Ecuador, Paraguay and Bolivia still maintaining their previous positions. Apart from the rank variations at the top, another radical change involves Colombia, which in real terms stands ahead of Brazil and Peru.

These changes in rankings are obviously accompanied by important modifications in the per capita GDP figures and in the differences in levels of living among the countries involved, as can be seen by comparing Tables 7, 8 and 9. In fact, in some cases substantial changes in the figures have not been accompanied by alterations in the rankings. As an illustration take the cases of Ecuador, Paraguay and Bolivia, the only countries whose rankings remain unchanged

[20]However, the real GDP per capita of these three countries may be too close for ranking, considering the tentative nature of these estimates.

after expressing per capita GDP in real terms. First of all, the differences in per capita GDP between these countries and Mexico (the base country) are narrowed significantly. With Mexico as the base, the per capita GDP's of Ecuador and Paraguay increase over 30 percent when converted into real terms. In the case of Bolivia the increment is much smaller, but still approximately 10 percent. Second, the changes in the differences in GDP per capita between particular countries and the base country are paralleled by the narrowing or widening of such differences among all the other countries. For example, the difference in per capita GDP between Bolivia and Paraguay is significantly larger in real terms.

At this juncture some comments are warranted about the standards of living implied by the GDP estimates presented above. Taking the traditional GDP per capita figures first, and considering that, officially, 12.5 Mexican pesos equal one dollar, the levels of development of the LAFTA countries generally appear to be much lower than those corresponding to the U.S. or Europe. Only one country, Venezuela, has a per capita GDP of over $1,000 a year.[21] On the other hand, the GDP per capita of Bolivia does not reach $200, while the Paraguayan and Ecuadorean estimates are between $200 and $300.

However, the same statistics expressed in real terms suggest an entirely different picture. As previously mentioned, the PPP rate between the Mexican peso and the U.S. dollar has been estimated to be 7.19 pesos to one dollar.[22] If this rate is used to convert the real GDP per capita figures presented in Table 9 to dollars, some estimates come out to be over $1,000 a year. The countries with such relatively high production levels per capita in 1968 were Uruguay, Argentina, Venezuela and Chile. In fact, the real GDP per capita of the first three countries hovers around $1,500.[23] On the other hand, Colombia and Mexico especially show real GDP per capita levels that are quite close of $1,000 a year. As to the countries with the lowest development level, the real GDP per capita of Paraguay was above $500 in 1968 and that of Ecuador around $600. Bolivia, which ranks last in living standards within LAFTA, had a GDP per capita in excess of $300 in real terms.

In general, the income and production gap between the advanced economies and the LAFTA countries is substantially closed if the purchasing power of the various currencies is considered. Yet, the differences are still quite large, especially with respect to the U.S. These adjustments also suggest that the development level of some Latin American countries is much higher than generally thought, and that it seems inappropriate to apply to these countries the terms underdeveloped or developing, in the same sense that it is supposed to depict the economic situation prevailing in most of Africa and Asia and in other Latin American nations.

[21]All these figures refer, of course, to dollars of 1968.

[22]See footnote 19 above.

[23]This and other results and conclusions that follow must be partly qualified, because the purchasing power parities used in expressing *per capita* GDP in real terms are based on LAFTA expenditure weights. This produces a significant overstatement of the estimates in comparisons with countries outside the area. Previous work by Braithwaite suggests that the degree of overestimation involved is about 15 percent. See Stanley Braithwaite, *op. cit.*, page 129.

SECTION III

In this section the prices gathered in the survey will be used to calculate consumer price indices across space. These prices were collected at the retail level with taxes included and were converted into a common currency by the use of official exchange rates.[24] Only private goods are included in these consumer price index computations, the results of which are presented in Table 10. Public consumption has traditionally been a problematical sector, because the goods and services provided by the government do not generally have price tags, and were not taken into consideration.

Consumer Prices within LAFTA in 1968

In Table 10, a vector of index numbers is presented with Mexico as the base (equal to 1.00). This role is specially suitable to Mexico because its stable currency facilitates the time comparisons attempted below. However, Mexico appears to be a country with relatively high prices; thus, as an alternative, another set of index numbers with Peru as a base is also included in Table 10.

TABLE 10

CONSUMER PRICE INDICES FOR LAFTA COUNTRIES IN MAY 1968*

	Mexico = 1.00	Rank	Peru = 1.00	Rank
Argentina	0.88	(5)	0.96	(5)
Bolivia	0.90	(6)	0.98	(6)
Brazil	0.93	(8)	1.02	(8)
Chile	1.03	(10)	1.12	(10)
Colombia	0.79	(4)	0.87	(4)
Ecuador	0.73	(2)	0.80	(2)
Mexico	1.00	(9)	1.10	(9)
Paraguay	0.76	(3)	0.84	(3)
Peru	0.91	(7)	1.00	(7)
Uruguay	0.60	(1)	0.66	(1)
Venezuela	1.18	(11)	1.30	(11)

*Prices were converted to a common currency by means of the official exchange rates in Table 2. For details on the expenditure weights used see Table 1.

As would be expected, Venezuela shows the highest prices in LAFTA, with Chile and Mexico following. With Peru equal to 1.00, the Venezuelan consumer price level is 1.30, or 30 percent higher than the Peruvian one. The prices for Chile and Mexico are, respectively, 12 and 10 percent higher than consumer prices in the base country.

The Uruguayan index is 0.66 with Peru equal to 1.00. Uruguay is clearly the country with the lowest prices in LAFTA, its price level being approximately half the Venezuelan one. Ecuador and Paraguay follow, having the lowest prices

[24]For a fuller discussion of these prices and a justification of the use of official exchange rates in the comparisons see Joseph Grunwald and Jorge Salazar, *op. cit.*, pp. 249–251 and 266–268.

outside of Uruguay. With Peru as 1.00, Ecuador's consumer price index is 0.80 and Paraguay's 0.84.

As can be seen, the range of price variation within LAFTA is substantial. It is important to note, though, that the range has been considerably reduced since 1960. At that time, Venezuelan prices were almost two and a half times those of Uruguay.[25]

An alternative measure of dispersion, the coefficient of variation, also shows a much smaller spread of consumer prices in the present study than in the 1960 ECLA survey. Specifically, the coefficient of variation was 0.33 in 1960 and 0.17 in the 1968 study. It should be noted, though, that much of this reduction can be explained by the fact that, since 1960, Venezuelan prices have sharply fallen into line with those in the rest of LAFTA.

Apart from Uruguay and Venezuela, the LAFTA price levels seem to be decomposable into three country clusters. Ecuador, Paraguay and Colombia, with very similar price levels, form the lower cluster. The middle cluster comprises Argentina, Bolivia, Peru and Brazil, while the higher cluster is composed of Chile and Mexico.

It is apparent that there is no overall relationship between level of development and price level. Uruguay, Argentina and Venezuela top the LAFTA countries in per capita GDP (both before and after converting the estimates into real terms), while their positions in terms of price relatives range from highest to lowest, with Argentina being in the middle of the standings.

Changes in Living Costs Between 1960 and 1968

Of the countries with high prices only Mexico is a bit of a surprise. It had been known for years that Venezuelan prices were above those of the other LAFTA countries. Chile had the second highest price level within LAFTA in the 1960 ECLA survey, although its prices were not known to be high long before then.[26] Mexican prices have risen faster than the LAFTA average during the past 8 years, to a great extent, it seems, because the Mexican currency was not devalued over this period, in contrast to the others in LAFTA.

As to the countries with low prices, Uruguay occupied the same place in the rankings in 1960, although not by such a wide margin as in 1968, while Paraguay had a similar position in the ECLA survey. These countries have traditionally been among those with lowest prices in the LAFTA group. Thus, the recent results can easily be explained in terms of previous patterns. However, Ecuador's position does signify a change from the previous survey, in which this country's prices were close to the LAFTA median. Thus, it seems that Ecuadorean prices have risen much less than the LAFTA average during the 8 years reviewed here.

The price level difference between Venezuela and Uruguay was quite large in 1968, as pointed out above. Such a large divergence is understandable, as these countries represent the opposite extremes in the scale of consumer prices within LAFTA. However, there are also important differences among the previously noted price tiers. The countries in the highest price group (Mexico and Chile) have consumer prices that are, as an average, more than 30 percent above

[25]See UN, Economic Commission for Latin America, *op. cit.*, Santiago, Chile, 1963, p. 191.
[26]*Ibid.*

those in the low tier group (Ecuador, Paraguay and Colombia). Even between the countries in the middle price tier and those in the high and low tiers there are significant consumer price differences, ranging between 10 and 20 percent.

It is interesting to note that in 1960 these tiers were not evident. At that time it also appeared that only Chile and Venezuela were extreme deviants in price behavior, both being at the high end of the scale. The rest of the countries seemed to be basically divided into two groups, with the exceptions of Uruguay (low) and Colombia (high). So, the smaller price dispersion in 1968 may be the end result of two opposite trends which have been effective since 1960: while the opposite extremes appear to be mostly coming together, the rest of the countries seem to be moving away from each other.

Yet, in spite of all this varied price behavior, the similarities in the price levels among the LAFTA countries are quite striking, given their relatively weak trade connections as well as their diverse rates of inflation and exchange rate policies.[27] It must be deduced that these similarities have stemmed mainly from the influence of the strong international economic relations that each LAFTA country had with Western Europe, and especially with the United States, during the fifties and the sixties.

Potential Labor Migration

The study of prospective migration within LAFTA is an important application of these consumer price comparisons. The homogeneous basket of consumer goods that was priced in the different countries can be considered representative of the consumption patterns of middle income families in LAFTA. Thus, after abstracting from a host of other purely economic (e.g. moving costs) and institutional (e.g. government regulations) factors, these comparisons could suggest potential migration patterns for specific kinds of workers and employees *given certain levels of money wages.*

In fact, one of the implications of the results presented in Table 10 is that, *ceteris paribus*, and for similar money wage levels, there would be important incentives for labor migration within LAFTA. Of course, these indications are only based on consumption patterns of middle class workers, and bundles of goods for other kinds of members of the working force may provide dissimilar conclusions. Still, there is some evidence indicating that consumer price differences are rather impervious to minor variations in the baskets of goods and services involved.[28] Thus, the results derived here would probably hold for a wide class spectrum of workers.

Actually, money wages are quite varied throughout Latin America and it is possible for high money wages to coincide with high living costs and *vice versa*, each offsetting the other. Still, it seems very unlikely that this would completely

[27]There are forces inherent in trade, technological transfers, and other similar inter-country connections that work towards price equalization. These tendencies come forth as a result of both direct or bilateral relations among countries, as well as from their indirect or multilateral connections (arising from the influence of common trading partners). The consumer price levels in LAFTA countries are evidently an illustration of the effects of the latter.

[28]This implication can be extracted from results obtained by Richard and Nancy Ruggles and reported to the Seventh ECIEL Seminar in Mexico City, December, 1966 under the title of "La Comparación Interlatinoamericana de Precios y Poderes Adquisitivos", mimeo.

and exactly compensate for the discrepancies in living costs apparent in this paper. In fact, there are cases in which money wage differentials overcompensate cost-of-living differences. This happens, for example, in Venezuela and Colombia, with labor actually flowing to the former, which has high consumer prices but even higher money wages.

To sum up, if national restrictions did not discourage it, labor migration would be quite prevalent among the countries studied, even without assuming the establishment of a common market in the area. In fact, under existing restrictions, important labor flows are already occurring, especially among neighboring countries.[29] Yet, the phenomenon remains to a great extent unexplored because of statistical limitations and the illegality that in part characterizes it.

APPENDIX I

LIST OF LATIN AMERICAN RESEARCH INSTITUTIONS PARTICIPATING IN THE PRESENT STUDY

Argentina

Fundación de Investigaciones Económicas Latinoamericanas (FIEL).

Bolivia

Instituto de Investigaciones Económicas—Universidad Mayor de San Andrés.

Brazil

Instituto Brasileiro de Economia—Fundaçao Getúlio Vargas.

Chile

Instituto de Economia y Planificación—Universidad de Chile.

Colombia

Centro de Estudios sobre Desarrollo Económico (CEDE)—Universidad de los Andes.

Ecuador

Instituto Nacional de Estadistica.

Mexico

Centro de Estudios Económicos y Demográficos—El Colegio de México.

Paraguay

Centro Paraguayo de Estudios de Desarrollo Económico y Social (CEPADES).

Peru

Centro de Investigaciones Sociales, Económicas, Politicas y Antropológicas (CISEPA)—Universidad Católica del Perú.

[29]Colombians migrate to Venezuela and Bolivians and Paraguayans to Argentina, for example.

Uruguay

Instituto de Estadistica—Universidad de la República del Uruguay.

Venezuela

Banco Central de Venezuela.

Centro de Desarrollo (CENDES)—Universidad Central de Venezuela.