INTERNATIONAL TRADE, GOVERNMENT, AND INCOME DISTRIBUTION IN PERU SINCE 1870*

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Whether and how the international trade and investments of less-developed countries affect their patterns of income distribution has long been a matter of interest and debate. Classical economic theory has tended to be optimistic on this count based on the assumption that when poor, heavily populated countries specialize in and export the labor-intensive goods in which they are expected to have an advantage, they will grow fast and improve their income distribution as well. But while trade's positive impact on distribution may be the natural expectation when a country's exports are mainly labor-intensive manufactures, no such generalization is warranted when primary products dominate the export mix, even though one might still expect some loose tendency toward labor intensity. The distribution of rents associated with an export-specific input or inputs may be very concentrated (often the case with mineral exports) or relatively egalitarian (as with exports produced by small family farms), but political factors also affect who gets them. Other, less-direct effects may also be important, including the type of linkages from the export sector, the demands created by the income they generate, and the direction of government expenditure of the fiscal revenues resulting from the trade.

Marxist, world-system, and dependency paradigms generally portray the distributional impact of trade (like its impact on growth) in a much less favorable light.[1] These approaches emphasize the exploitation of labor in poor countries by the international trading system with the collaboration of a local "comprador" group. They also stress the role of a small but dominant elite based on the export-import sector that controls a large share of the country's wealth, both in absolute terms and relative to the weak manufacturing class (which in center countries is the dominant one).[2]

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The empirical record has not yet settled or even clarified these issues much because reasonably satisfactory data on income distribution are at best recent phenomena in developing countries and at worst still rather far in the future. John Fei, Gustav Ranis, and Shirley Kuo made an interesting case arguing that the outward orientation of Taiwanese economic policy contributed to the impressive equality achieved in that country.[3] Several studies have shown manufactured exports to be more labor-intensive on average than manufactured import substitutes.[4] In his cross-country analysis, Christian Morrisson reports that labor intensity of exports is clearly correlated with equality, when labor intensity is proxied jointly by the share of agricultural or food products from small and medium-sized holdings in total exports and by the share of manufactures in nonagricultural exports.[5] These valuable efforts notwithstanding, the issue will evidently remain open for some time, given the difficulties of undertaking adequate statistical tests of how inequality, a dependent variable usually not too well measured, relates to trade level and pattern, one of many probably important sets of independent variables.[6] Although cross-country studies will be essential to probing this issue successfully, the difficulty of knowing when one has duly accounted for country-specific factors will remain a problem. Over-time analyses of individual countries will eventually become feasible after decent data on inequality have been available for a few decades, but many of the possible determinants of inequality are structural features that change slowly, a fact that limits what can be learned in this way. Simulation exercises using detailed country models may also provide hints or even conclusions, but the daunting task of constructing models that are detailed but still realistic cannot be disregarded.[7]

This study takes a different approach from those described above in considering the long-run record of Peru, a country whose economy was relatively open until recently. Shane Hunt performed an unusually interesting set of income calculations for a much earlier period (the 1870s) that permit distribution comparisons with the reasonably satisfactory data on recent decades.[8]

Peru's unimpressive longer-run growth record has kept it among Latin America's poorest countries. Rosemary Thorp and Geoffrey Bertram believe that per capita income grew at "probably little more than one percent a year over 1890–1975."[9] This weak performance has continued since the end of World War II. Between 1960 and 1985, gross national product (GNP) per capita grew at about 0.75 percent per year, probably the slowest rate of all the large Latin American countries. After rising by a healthy 45.5 percent or 2.7 percent per year between 1960 and 1974, GNP per capita fell by 19 percent between 1974 and 1985.[10] Peruvian income has fluctuated sharply, both before and after World War II, according to the fate of the country's exports.

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TABLE 1 Unweighted Average Percentage Share of Household Income, by Quintiles, of Selected Groups of Market-Oriented Countries

Group	Low Income Countries[a]	Lower Middle Income[b]	Upper Middle Income[c]	Industrial Market Economies[d]	Peru 1972
Lowest quintile	5.71 (6.30)	4.70	3.95	6.60	1.9
Second quintile	9.46 (9.66)	8.67	8.55	11.96	5.1
Third quintile	13.66 (13.59)	13.62	13.44	17.00	11.0
Fourth quintile	20.10 (19.44)	20.63	21.33	23.63	21.0
Top quintile	51.07 (51.01)	52.38	52.74	40.77	61.0
Top decile	36.41 (36.88)	36.90	35.85	25.20	42.9
Bottom 40%	15.17 (15.96)	13.37	12.50	18.56	7.0
Third and fourth quintile	33.76 (33.03)	34.25	34.76	40.63	32.0

Note: This table analyzes countries for which data are presented in *World Bank, World Development Report, 1984,* t. 28, pp. 272–73, except as noted.
[a] Includes Bangladesh, Nepal, India, Tanzania, Sri Lanka, Kenya, and Sierra Leone. I excluded the figures for Malawi on the suspicion that they may be seriously inaccurate. They showed an unusually high share for the bottom quintile of 10.4 percent. Figures including Malawi are presented in parentheses.
[b] Includes Sudan, Indonesia, Thailand, the Philippines, Costa Rica, and Turkey.
[c] Includes Malaysia, South Korea, Panama, Chile, Brazil, Mexico, Argentina, Venezuela, Israel, Hong Kong, and Trinidad and Tobago.
[d] Includes Iceland, Spain, Italy, New Zealand, the United Kingdom, Austria, Japan, Belgium, Finland, the Netherlands, Australia, Canada, France, Germany, Denmark, the United States, Sweden, Norway, and Switzerland.

Even in a developing world where income inequality is the norm, Peru stands out. Most international comparisons, while imprecise, leave little doubt that Peru, along with several other Latin American countries (Brazil, Mexico, and sometimes Colombia), ranks among the world's extreme cases in inequality.[11] Compared with other countries in the same lower-middle-income range, available figures for 1972 indicate that the bottom fifth of Peru's families were receiving less than half of that group's average share (1.9 percent vs. 4.7 percent) and the bottom 40 percent of families just over half the average (7.0 percent vs. 13.4 percent). The top decile in Peru received 42.9 percent compared with the average of 36.9 percent (see table 1). These statistics suggest that Peru's income distribution is more unusual for the low share of income going to the bottom 40 percent of families than for the high share going to the top 10 percent. A striking feature is the very low share of gross domestic product (GDP) coming from traditional highland agriculture, where a large share of the bottom 40 percent of families is found. Thus an understanding of the country's income distribution requires a careful look at this sector, its relationships with other sectors, and how foreign trade affects them.

Another significant aspect of Peru's economy has been its relatively

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open character, at least until the 1960s. As of 1957–1959, when the average level of tariffs in Argentina, Brazil, and Chile ranged from 100 to 140 percent and that in Mexico and Colombia from 50 to 60 percent, tariffs averaged 25 percent in Peru.[12] As a result, trade has loomed larger in Peru's economy than in most other developing countries. During the 1950s, for example, no other medium or large Latin American country except Venezuela with its oil achieved ratios of exports to GDP or imports to GDP as high as those in Peru.[13] The average ratio of exports to GDP for the other five middle-sized countries (Argentina, Colombia, Chile, Venezuela, and Ecuador, with Venezuela's high figure greatly raising the average) was 16.8 percent, compared with Peru's 19.1 percent.[14] Even the small countries of Latin America were no more trade-oriented during that decade than was Peru. As with virtually all developing countries, Peru's export structure has historically been weighted toward primary products. Import-substituting industrialization began later than in most of the larger Latin American countries and has not proceeded as far. Peru did not follow the general Latin trend toward import substitution in the 1930s and the early postwar years. Only with the Industrial Development Loan of 1958 did the country embark on an explicit and systematic program of import substitution.[15]

The primary-export model thus "fits" most of Peru's economic history. Foreign investment has had relatively easy access and has played a large and at times even dominant role. This assessment does not imply, however, that Peru was ever close to being a completely open economy. Tariffs, nontariff barriers such as government and private monopolies, and other impediments to trade were always present to a greater or lesser degree. Tariffs and export taxes represented important sources of fiscal revenue. Carlos Alberto Boloña has observed that "the principal motive for tariff increases during 1885–1935 was the need for fiscal revenue in economic crises."[16] From the 1930s on, protection indeed became the chief motive, but Boloña's estimates show a sharp decline in the average effective tariff rate between 1933 and the mid-1950s, to a very low 15 percent.[17]

It is natural to wonder whether these two prominent features of independent Peru's economic history—its relative openness and its high level of income inequality—have been causally connected. Marxist and dependency theory would suggest such a relationship, whereas neoclassical economic theory offers no general prediction on this score because the distributional effects of trade would depend on the labor intensity of the export and import-substitute items and on the distribution of the associated capital income, two factors that could vary markedly from product to product. A considerable body of recent literature on the newly industrializing countries has argued that the outward orientation shared by most of them (for example, Taiwan and Korea) has positively affected income distribution,[18] as would be expected when the export sector is labor-intensive. But while developing countries that, like these,

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become manufactured goods exporters are likely to achieve their comparative advantage in labor-intensive goods, no such general expectation extends to primary exporters like Peru. It should also be noted that Peru's openness resulted less from a conscious development strategy than did these recent cases. Rather, a main point of attraction for the Peruvian state was the amount of public revenues associated with trade.

Until 1960 the two main categories of exports were agricultural products (sugar and cotton), coming primarily from modern operations on the coast, and minerals. Fish products boomed dramatically in the 1960s and accounted for one-third of export revenues in 1970 before slipping back. Manufactures, which represented only 1 percent of total exports in 1970, became a significant share by 1987 at 14 percent.[19] Not since the guano era of the nineteenth century have Peru's exports been dominated by one product, and throughout the twentieth century, it has been rare for a single item to account for more than a third of the total.

Variation across the major exports in labor intensity and in organization of production would suggest different impacts on income distribution, effects that one would hope to detect in the statistical record on income distribution. Unlike Colombia, Costa Rica, and several African and Asian countries, Peru has never had an important peasant export crop—one produced by small farmers on their own land and generating income mainly for them. Cotton, which is produced by many medium-sized farms as well as large ones, came the closest and at its peak created many jobs for lower-skilled workers. At the other end of the spectrum, petroleum creates few such jobs. Although the income-distribution effects of the production of import substitutes are as important in the overall trade-distribution relationship, such an assessment will not be attempted here, partly because the domestic sectors whose size would vary inversely with the level of exports and imports are not easy to identify. Another reason is that the character of the export sector may play a bigger role in determining income distribution than the character of the import-substituting sector because much more variance probably occurs across countries in the production conditions of exports than in those of import substitutes.

The evidence to be discussed below suggests three propositions. First, despite the relative importance of exports and import substitutes in GDP, it is unlikely that the production conditions in these sectors have been a dominant determinant of income distribution through what may be called the Hecksher-Ohlin effect (that is, through the sectors' factor proportions). If their linkage effects have somehow magnified the more direct effects (for example, because labor-intensive exports or import substitutes are linked to labor intensity in commerce, transportation, and related sectors), this conclusion could be altered. It is more likely, however, that even when these indirect effects are taken into account, trade's

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total (direct plus indirect) effects on distribution have been modest in scope.

Second, Peru's traditional export-based system has frequently been characterized as a rentier economy, with high-rent exports providing easy income to the lucky beneficiaries (the guano era most obviously fits this mold). Where a small elite has a near monopoly of power, such easy rents are likely to accrue mainly to that elite through one mechanism or another. When rents accrue to physical assets (like land and mineral resources) whose ownership is more concentrated in high-income groups than is income, trade that raises those rents would be expected to worsen distribution even if the high rents themselves did not induce the rich to use their extra-economic power to pry such resources away from the less affluent. When their power is wielded to that end, the income-concentrating effects of trade could be the greater. Because high rents are more likely to characterize export activities than domestic-oriented activities, a high level of trade may be expected to promote inequality through that mechanism. One impact of a high level of imports on distribution could be to curtail the degree of monopoly rents in the production of importables. But until recently in Peru, the domestic production of many importables was mainly small-scale, so that the income-distribution effects of rising imports were at least as likely to have been negative as positive. In particular, the capacity to import food products may have reduced the apparent importance of achieving high productivity in sierra agriculture and thereby have contributed to the continued poverty in that sector due to government inattention.

Third, government expenditures financed by revenues derived from trade appear to have been the most likely source of trade-based benefits to poor groups. This mechanism might have played a bigger role in the nineteenth-century guano episode but for some bad luck, and it did come into play in the twentieth century.

POSSIBLE LINKS FROM EXPORTS TO INCOME DISTRIBUTION

Analysis of contemporary Peru is unlikely by itself to provide the key insights into any possible relationship between the country's primary-export model and its extreme income inequality. Empirical work on income distribution in less-developed countries has demonstrated the heavy weight of inertia: levels of inequality are usually propagated rather faithfully from one period to the next. Peru's distribution appears to have been quite unequal as far back as can be shown by any serious evidence available. It is thus probable that the essential explanation of today's inequality lies in structures and trends dating far back in time.

Over about the last 150 years, the Peruvian economy has passed through several major export cycles. The so-called guano age extended

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from the 1830s to the War of the Pacific (1879–1881), in which Chile defeated Peru and the export economy was nearly demolished. The next cycle extended (depending on whether the focus is on export quantum or earnings) from the 1880s or 1890s to the 1930s, while the third covered the period from sometime in the 1940s to the end of the world-commodity price boom in 1974.[20] Long-run average export growth has been moderate: the quantum index rose by an average of 3.8 percent per year between 1830 and 1972. Bertram and Thorp estimate that between 1900 and 1959, undeflated-dollar export earnings rose 4.5 percent per year, or 3 percent per capita, and that per capita import-purchasing power grew at a little under 1 percent. Hunt's estimate, however, is higher.[21] During the boom phases, the export quantum index or value index or both rose at about 7 percent (in the first two booms) and 10 percent (in the third one).

The Guano Episode

Peru's nineteenth-century guano episode represented, in Jonathan Levin's judgment, a classic case of growth opportunity lost when revenues generated through the export of a natural resource endowment either accrued to foreigners or were eaten up in luxury imports by the local elite. Clearly (although this was not Levin's main point), the distribution effects of such a process would have been regressive. The necessary antidote to such a situation was careful government emphasis on breaking the "enclave" character of this export sector and creating linkages with the domestic economy. According to Levin's version, although the Peruvian government collected lots of taxes during the guano period, they were channeled mainly to well-off bondholders, bureaucrats, and pensioners who proceeded to buy imports in quantity, with little productive government expenditure being undertaken.[22] Hunt's subtler version of the guano episode suggests that the failure of this export to produce either substantial growth or significant benefits for the lower-income groups originated elsewhere.[23]

The "guano age" began soon after independence in 1826, and for four decades (1840–1879), Peru was virtually a world monopolist in this product. Guano was responsible for an overall export quantum growth averaging 4.8 percent per year from 1840 through 1878, and in 1854, it represented 74 percent of total Peruvian exports.[24] Labor input was minuscule, accounting for probably less than 4 percent of total costs and probably less than 1 percent of total sales revenue, while government profit was a high share of gross sales revenue, something exceeding 60 percent after a couple of poor early contracts.[25] A great opportunity for development had clearly been created, given that this surplus constituted a substantial share of the gross national product.

Guano transformed the Peruvian fiscal system, accounting for 75

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percent of government revenues by 1861–1866. Those revenues expanded fivefold between 1846 and peaked in 1872–73. One beneficial effect of the bonanza was the abolition of the unpopular Indian head tax in 1855. This relief corresponded to 7 or 8 percent of guano income. Meanwhile, government expenditures rose by a factor of eight[26] and included repayment of old public debts, both foreign and internal, and manumission payments to former slaveholders. Presuming that many of these claims would not have been honored under other conditions, Hunt estimates the distribution of the lowered taxes and increased expenditures resulting from the guano income as follows: reducing the tax burdens of the poor, 7 percent; expanding the civilian bureaucracy, 29 percent; expanding the military bureaucracy, 24.5 percent; making transfer payments to foreigners, 8 percent; making transfer payments to Peruvians, 11.5 percent; and investing in railroads, 20 percent.[27] But the implications of these flows for income distribution are less clear than earlier writers suggested. Only one-eighth of the guano income ended up as transfer payments to Peruvians (most of whom were probably fairly wealthy), while the poor benefited from a reduced tax burden. Hunt judges that the civil service did not expand greatly in either numbers or real income and that the expansion of military wage payments mainly reflected an increase in the number of men in arms rather than higher real wages for the officer class.[28] Meanwhile, more than one-third of the total increment consisted of substantial expenditures on public works, education, and health. These expenditures represented, according to Hunt, the "first steps toward using the public purse as an instrument for fomenting economic development."[29] Although the education and health expenditures probably did not extend far down into the income distribution, the railroad construction could with luck have benefited the Indians in the sierra. Unfortunately, these expenditures seem to have had few growth effects.

The guano episode probably produced other, less-direct effects on income distribution. How much growth it generated is unclear. Directly and indirectly, guano income did finance private capital formation in other sectors, but pending new evidence to the contrary, it seems unlikely that this use accounted for more than a modest share of the guano surplus or that its distributional consequences were particularly positive. On another front, Hunt concludes that the high returned value from guano exports must have created a substantial increase in demand for domestic goods and services and that real wages in Lima may have risen as much as 50 percent between 1855 and 1869. But the spread effects on other wages were probably limited (the available evidence suggests little migration between low-wage and high-wage areas during the nineteenth century), and there may have been considerable unemployment in Lima during the period, perhaps related to a decline in industrial employment of nearly 40 percent in the district of Lima from 1857 to 1876.[30] The flood of imports

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threatened the small-scale producers of import substitutes and precipitated a struggle over tariff policy. When 1849's last gasp of protectionism was swept away in 1851 despite artisan protest, Peru became an unambiguously rentier system. Although Shane Hunt and other scholars have tended to conclude that the direction of government expenditures of guano income was not regressive, Hunt judges that this bowing to comparative advantage probably worsened income distribution by hobbling the development of import-substituting industries (which were broadsided by the high exchange rate) while failing to provide for employment opportunities in the export sector. The weakness of the nonexport economy possibly contributed to the disastrously low rate of return from the railroad investments.[31] Guano income and the proceeds of two huge bond issues floated in London in 1870 and 1872 went into these investments, as Peru gambled that railroad-induced economic expansion would raise government revenues sufficiently to maintain fiscal solvency.

The steps that would have led to a better distribution of the profits from the guano windfall—such as strengthening domestic agriculture and industry and investing in human capital at the lower end of the income hierarchy—would almost certainly have improved Peru's growth performance in the longer run also. Instead, bad distribution, slow growth, and severe instability came in one package. How much better a government with a different political base might have done, faced with this set of conditions, is an open and intriguing question.

After Guano: Features of the Second Export Boom

After the collapse of the guano economy and the disintegration capped by the War of the Pacific, Peru made a concerted but unsuccessful attempt to attract foreign investment and lending once again. Left then to their own devices, Peruvian and immigrant capitalists successfully mobilized local resources, which permitted the simultaneous development of new export sectors and a rapidly expanding urban manufacturing and utilities sector. The effects of growth were widespread: silver, gold, and copper mines were dispersed through the sierra, production of coffee and cocaine was located in the central and northern *montaña*, and rubber boomed in the Amazon Basin. Integration among the country's growth poles was increasing.[32]

During this export boom from the reconstruction of the 1880s until 1930, the quantum and dollar value of exports grew at about 7 percent per year and diversification was high, with no product accounting for more than a third of total earnings (see table 2). Regional dispersion diminished, however. By World War I, the export economy was increasingly concentrated on the coast (where sugar, cotton, and petroleum production were expanding), while most of the established export industries of

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TABLE 2 *Composition of Exports by Value, 1890–1980, in Percentage Shares*

Year	Sugar	Cotton	Wool[a] & Coffee	Silver	Copper	Rubber	Petroleum & Products	Lead & Zinc	Iron	Fish Products
1890	28	9	15	33	1	13				
1895	35	7	15	26	1	14				
1900	32	7	7	22	18	13				
1905	32	7	8	6	10	16				
1910	20	14	7	10	18	18	2			
1915	26	11	5	5	17	5	10			
1920	42	30	2	5	7	1	5			
1925	11	32	4	10	8	1	24			
1930[b]	11	18	3	4	10		30			
1930[c]	⟨-28.5-⟩[d]		3.3	⟨-20.1-⟩[d]			29.7	6.8		
1935	8.2	26.2	3.0	17.7			37.8	2.2		
1940	⟨-28.2-⟩[d]		5.2	22.3			24.8	3.1		
1945	⟨-52.9-⟩[d]		3.3	9.6			12.5	7.4		0.9
1950	14.5	36.0	4.6	9.4			13.1	11.7		2.9
1955	13.8	25.4	5.1	16.9			8.2	14.8	3.0	4.4
1960	11.1	17.0	5.9	27.5			4.1	8.9	7.6	11.5
1965	5.6	13.1	5.7	24.0			1.4	11.1	7.0	27.8
1970	6.3	5.1	4.6	31.5			0.7	7.8	6.3	32.2
1974	10.2	6.5	3.5	33.7			0.2	14.9	4.0	15.6
1980	0.3	1.8	3.6[e]	27.3			20.2	15.2	2.4	8.0
1984	1.4	0.6	4.0[e]	21.3			19.6	18.2	1.8	5.8

Sources: Thorp and Bertram, *Peru, 1890–1977*, pp. 40, 153, and 208. With respect to the data for 1890–1930, these authors note that "The percentage shares are only very approximate, since some exports were valued fob, some cif—it often being unclear what the practice was" (p. 40). Such problems presumably underlie the discrepancy between the 1930a and 1930b figures for the share of silver and copper. Figures for cotton and sugar for the years 1955–1974 come from *International Financial Statistics*. Figures for 1980 and 1984 are from Banco Central de Reserva del Perú, *Memoria 1985*, 139–40.

[a] Includes alpaca wool only until 1930b.
[b] See sources for the explanation of the difference between the two rows for 1930.
[c] See sources for the explanation of the difference between the two rows for 1930.
[d] This figure represents the sum of the two columns spanned because separate data are not available.
[e] Coffee only.

the sierra and selva (rubber, silver, wool, coffee, and cocaine) headed into relative decline, with only copper (whose production was concentrated regionally) retaining its dynamism.[33]

Exports constituted about 20 percent of the gross national product in the early years of this century, according to Boloña's estimates.[34] In terms of employment, cotton and sugar exports accounted for 30,000 to 35,000 workers (assuming that 80 to 90 percent of output was exported at this time), while mining accounted for 20,000 to 25,000, and rubber and wool for perhaps another 30,000 full-time equivalent jobs,[35] giving a total

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(full-time equivalent) employment of 80,000 to 120,000, or 5 to 8 percent of the labor force. If the ratio of value added in exports to the gross national product was around 15 percent (assuming that value added was 70 to 80 percent of gross value of export production), then the average labor productivity in this mix of activities was probably two to three times that of the economy as a whole. The export mix was far from being labor-intensive in this relative sense, although it was certainly less capital-intensive than if its composition had been more heavily weighted toward products like copper and petroleum or the technologies used had been modern when judged on a world scale.[36]

Mode of production and labor intensity varied considerably across the major exports, reflecting the technological options available for each product and probably also the type of producer. The latter may in turn be affected by changing trade opportunities if the appearance of rents in a given sector enabled the powerful to increase the share of relevant resources in their own hands. Some products allow less flexibility in terms of the organization of production than others. The cases of sugar, wool, and cotton are of interest here. Sugar production occurred on large haciendas using a wage labor force. Cotton was produced on farms of varying size, with both seasonal wage labor and share-cropping arrangements being important. Wool for export came from sierra herders of modest means.

By the 1880s, when the guano era had ended and the budding nitrate region had been lost to the Chileans, sugar had become the mainstay of the export sector (table 2). Between 1830 and 1860, output growth had been constrained by a lack of markets and a shortage of labor. Slave labor was available but in limited supply until emancipation in 1854, after which a somewhat expandable supply was found in Chinese coolies. Landowners financed the purchase of coolie contracts through payments received for manumission of slaves, from concentrations of wealth created by the guano boom, and through loans from recently created banks. These borrowed funds also made available new machinery, new buildings, and new consumption standards, and a more scientific agriculture emerged in Peru.

Although a shortage of captive labor remained a binding constraint even with the importation of coolies, these workers toiled under conditions closely resembling those of the black slaves who preceded them.[37] Haciendas strove to avoid paying the higher wages of a free labor market and opposed the formation of a yeoman class on unused land. Coastal Peru thus remained relatively underpopulated and produced little food. Although sugar created a considerable number of jobs, the landowners managed to capture most of the income generated.[38] Producers also benefited from financial transfers.

The dominant role of large-scale mechanized sugar enterprises,

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organized along capitalist lines and employing wage labor on a regular basis, has been attributed to the absence of seasonality in production and the existence of economies of scale.[39] In Cuba and Brazil, sugar harvesting was seasonal and cane growing remained in the hands of relatively small-scale independent growers while large central mills handled the processing. Although some interest emerged in establishing such a system of *colonos* and *centrales* at the turn of the century in Peru, this option was allegedly "swamped by the advantages of large-scale cultivation."[40] But this issue deserves a second look. Large agricultural units benefit less frequently from economies of scale in production than from advantages in the areas of credit, marketing, and political influence. If a permanent labor force is taken as a reflection of the advantages of large-scale production, it is strange that in the earlier years of the sugar era, a large proportion of workers were temporary migrants, hired for three months or more through the system of *enganche* (entrapment, literally "the hook") and that a permanent and stable labor force evolved only gradually, with enganche not being discontinued until the end of the 1950s.[41] An alternative system of small owners and centrales, even if potentially as productive as the large enterprises, would have made it more difficult for the powerful families to monopolize the surplus. The failure of such a system to develop may have been due more to the distribution of power than to economics. In any event, sugar contributed little to the growth of modern-sector employment or to the wage bill during the first four decades of the twentieth century.

The fact that sugar is an export may have contributed to the concentration of income from the sugar industry through mechanisms other than the attractiveness of higher rents to the already powerful. Under the greater price fluctuations that characterize export products, adequate capital and credit facilities probably helped the larger estates to survive the difficult times and to finance purchase of land from those less well-placed.[42] Access to credit depended substantially on political connections.[43]

The large size of sugar enterprises no doubt contributed to capital intensity and to the rapid increase in labor productivity between 1895 and 1930 (perhaps 3 percent per year or more), as output quintupled[44] and employment probably rose by somewhat less than 50 percent.[45] Ironically, the "shortage of labor" produced by ending the trade in indentured Chinese labor in the 1870s (only partially alleviated by increased use of temporary migrants from the sierra) was paramount among the factors inducing the Peruvian planters to increase their yields while cutting costs. They sought to do so via technical innovations like steam plows and light railways for carrying cane to the mill and via reorganization of the relations of production. This "shortage" might have evaporated if potential immigrants had had the option of becoming small owner-operators; in other words, the shortage may have been due not to labor-market conditions but to patterns of landownership.

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In contrast to sugar, cotton production was a seasonal activity. To assure an adequate supply of labor, *hacendados* found it convenient to divide up a large part of their land among small tenant cultivators on a fifty-fifty crop-sharing basis and to rely on migration from the sierra for additional seasonal labor requirements. Cotton thus generated a new class of tenant peasantry, while landowners lived on their share rentals and profits from the compulsory handling of cash crops produced by their tenants. Although large numbers of small peasants worked their own farms, the sector was dominated by large owners who controlled the best cotton land and had preferential access to irrigation water in many areas. Concentration rose during the first two decades of the twentieth century because much of the additional land sown to the crop was reclaimed from desert, swamp, or scrub areas that those large owners already controlled or acquired.

From 1900 to 1940, cotton output increased eight- or ninefold,[46] and the sector generated a large number of jobs. During the 1930s, the 100,000 or more cotton workers accounted for half of Hunt's estimate of employment in capitalist agriculture and mining.[47] The cotton sector's centrality to the coastal economy was evident, with the buying power of a large part of the population depending closely on the value of the cotton crop. Its greater labor intensity assured a more favorable impact on income distribution than in the case of sugar, due both to direct job creation and to the greater obstacles to monopolization of the surplus by the large landowners, as reflected in the prevalence of share-cropping and small farms.

Wool, being a labor-intensive and a "high linkage" export, is of special interest. The Indian herders of the Peruvian sierra have always produced high-grade wools from the native cameloids (especially alpaca), whereas the lower-quality sheep wool has been the main product of the large livestock haciendas to the south.[48] With wool-sector land fully occupied, when production became increasingly profitable in the 1890s, the large-scale operators sought with some success to expand by displacing the small herders from grazing land. But by the 1900s, a wave of peasant revolts swept the area. As physical expansion became more difficult, several of the large-scale operators began to search for ways to increase productivity by introducing such modern techniques as fencing, selective breeding, and disease eradication. But the Indians typically resisted these changes because they required enclosures and implied the exclusion of small-scale producers from the grazing rights within the haciendas to which they were entitled under the traditional labor-service system.[49] In any case, the wool market collapsed in 1920, before most of the proposed projects could bear fruit.

Until 1900, mining comprised a large number of small-scale operations spread throughout the sierra that concentrated on producing

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precious metals, especially silver. It was quickly displaced by copper, however, which dominated mining for the next thirty years. Local mine-owners, previously involved in expanding silver and gold mining, initiated the development of copper in the 1890s and then sold out to foreign mining companies early in the twentieth century. U.S. capital soon dominated Peruvian mining. With these trends in product composition and ownership came a pronounced increase in the regional concentration of mining activity. The complex new production units tended to take over neighboring small and medium properties and peasant communities.[50]

It is not clear how the ownership concentration and the heavy foreign domination of Peru's mining sector affected the pattern of income distribution and employment. Both these features tend to be associated with capital intensity, and hence with limited job creation and high concentration of income generated (although not necessarily of national income, given the fact that some capital income goes abroad). But positive spillover effects may have been greater than often painted. Norman Long and Bryan Roberts have concluded that significant regional growth and diversification occurred in the central highlands of Peru, a region linked during this century to the international economy mainly by large-scale foreign mining enterprise. Although the mining complex appeared at first glance to have few dynamic linkages to the rest of the area's economy, in fact small-scale but significant accumulation processes developed out of its exchanges with the peasant economies.[51]

Perhaps more significantly, these analysts interpret the relative absence of agricultural haciendas based on sharecropping or servile labor as a reflection of the colonial state's desire to protect the subsistence base of temporary migrant labor and to guarantee the survival of communal lands and a certain autonomy for village institutions. The alternative wage-labor opportunities outside the villages reduced the viability of the agricultural estate based on sharecropping or servile labor, a common feature in areas less closely linked to the mining economy. Nevertheless, the limited regional dispersion of mining by the early decades of the twentieth century meant that these beneficial spillover effects did not affect a very significant share of the agricultural population.

THE EX POST EVIDENCE ON INCOME DISTRIBUTION

The fragmentary evidence reviewed below is broadly consistent with the hypothesis that Peru's traditional export booms worsened income distribution, although it falls far short of confirming that proposition. Hunt's evidence for 1876–77, a period near the end of the guano-based boom, suggests a high level of inequality, probably not much different from that of the 1960s or 1970s. At the same time, a fairly widespread impression exists that inequality rose during the two export growth cycles

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TABLE 3 *Hunt's Estimates of Peruvian National Income for 1876–1877, Annual Figures in Thousands of Soles at Current Prices*

Category	Labor Force Amount	(%)	Income Amount	(%)	Average Income
Income of laborers					
Farmers (both sexes)	513,277	(39.22)	74,981	(31.84)	146
Male laborers	276,447	(21.12)	40,384	(17.15)	146
Low-paying female occupations[a]	166,785	(12.75)	16,204	(6.88)	97
Female spinners	167,778	(12.82)	9,899	(4.20)	59
Business and artisan income					
Taxpayers (patentees)	13,670	(1.04)	16,725	(7.10)	1223
Poorer artisans exempt from paying taxes					
Lima	5,620	(0.43)	4,676	(1.99)	832
Provinces	70,757	(5.40)	19,025	(8.08)	269
Government salaries	9,728	(0.74)	9,436	(4.01)	970
Other earned income	84,432	(6.45)	26,343	(11.19)	312
Rural rent			10,683	(4.54)	
Urban rent			5,662	(2.40)	
Return to agricultural capital			1,500	(0.64)	
Totals	1,308,494	(100.00)	235,518	(100.00)	180
Nonfarm[b]	795,217	(60.78)	160,537	(68.16)	202
Ratio of farm to nonfarm	.645	.645	.467	.467	.723

Source: For Hunt's estimates, see "Growth and Guano in Nineteenth-Century Peru," in *Latin American Economies: Growth and the Export Sector, 1880–1930*, edited by Roberto Cortés Conde and Shane J. Hunt (New York: Holmes and Meier, 1985), p. 95.

[a] Includes day laborers, shepherds, domestic servants, cooks, washerwomen, and dressmakers.
[b] Includes return to agricultural capital and rural rent on the grounds that the great bulk of this income would not accrue to farm families. Also includes all male laborers.

of this century. This combination of clues would suggest a reduction of inequality during the recession after the guano period and perhaps during the 1930s and 1940s interval between the two export growth cycles of the twentieth century, although in the latter instance, the available empirical evidence does not support such a proposition.

Income Distribution in the 1870s Compared with the Current Pattern

Hunt's estimates of national income and the shares of various economic groups for 1876–77 (reproduced in table 3) make it possible to test for changes in the relative income of selected high-income groups and

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of persons engaged in farming between that year and the recent period. One interesting comparison involves the top 1 percent of earners. Over the last twenty-five years or so, the income share of this group appears to have been fairly systematically around 20 to 25 percent.[52] A literal reading of Hunt's figures for 1876–77 would suggest a markedly lower share, perhaps 15 percent or so,[53] making it highly probable that an increase occurred over the century since 1876–77. It seems very likely, however, that Hunt's methodology led to conservative estimates of capital income and business income. Except for egregious cases, the figures were based on the assumption that taxpayers did no "cheating," so their reported income was their true income. It may also be that in attributing to all farmers the wages of *jornaleros* (in various regions of the country), multiplied by 260 workdays per year, Hunt overstated farmer income.[54] Adjustments designed to provide an upper-limit estimate of inequality among the groups distinguished in 1876–77 show that the top 1 percent could have been getting a higher percent of national income than that estimated by Richard Webb for 1961.[55] Using what seem to me conservative estimates of underreporting, the top 1 percent of all earners would probably have received somewhere in the neighborhood of 25 percent of national income (see the figures in table 4 under the heading "Intermediate Inequality").[56]

Another comparison of interest involves most of the top decile. The four highest categories of per capita income in Hunt's estimates constitute 8.66 percent of the labor force. If they had 95 percent of capital income together with their earned income, their share of total income (based on the unadjusted Hunt figures) would be 40.4 percent. The income of those actually in the top 8.7 percent would have been somewhat higher, and after allowing for the presumed underreporting of capital incomes in Hunt's data, probably considerably higher. Under the assumptions of my intermediate inequality estimate (in table 4), their share would have been something over 43.5 percent, perhaps 45 percent. In 1981 the top 10 percent had 41 to 49 percent of the income, according to my estimates,[57] which would have given the top 8.7 percent 38 to 46 percent. As with the top 1 percent, this group's 1876 share could have been either a little higher or a little lower than in recent decades.

At the very low end of the income spectrum in contemporary Peru are the sierra farmers. Hunt's category called "farmers" accounted for 39.2 percent of the labor force in 1876–77, whereas in 1981, the "independent workers" in agriculture accounted for only 26.5 percent.[58] In 1981 the average reported income of this group (24,000 *soles* per month) equaled 41 percent of the national average (38,000 soles) and 34 percent of the average for all other categories taken together. Hunt's 1876 estimates and my "intermediate inequality" estimates imply ratios of farmers' income to the national average of .67 and .81 respectively, and farmer-nonfarmer

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TABLE 4 Alternate Estimates of Peruvian National Income for 1876–1877, Annual Figures in Thousands of Soles at Current Prices

	Intermediate Inequality			*High Inequality*	
Category	*Income*	*Percent of Income*	*Average Income*	*Income*	*Percent of Income*
Income of laborers					
Farmers (both sexes)	59,976	24.17	127	59,976	19.41
Male laborers	40,304	16.24	146	40,304	13.05
Low-paying female occupations[a]	16,204	6.53	97	16,204	5.25
Female spinners	9,899	3.99	59	9,899	3.20
Business and artisan income					
Taxpayers (patentees)	25,087	10.11	1835	50,175	16.24
Poorer artisans exempt from paying taxes					
Lima	4,676	1.88	832	4,676	1.51
Provinces	19,025	7.66	269	19,025	6.16
Government salaries	9,436	3.80	970	9,436	3.05
Other earned income	26,343	10.61	312	26,343	8.53
Rural rent	21,366	8.61		42,732	13.83
Urban rent	11,324	4.56		22,648	7.33
Return to agricultural capital	4,500	1.81		7,500	2.43
Totals	248,140	100.00	190	308,918	100.00
Nonfarm[b]	188,164		237	248,942	
Ratio of farm to nonfarm	.319		.536	.241	

Source: For an explanation of these estimates, see the text.

[a] Includes day laborers, shepherds, domestic servants, cooks, washerwomen, and dressmakers.

[b] Includes return to agricultural capital and rural rent on the grounds that the great bulk of this income would not accrue to farm families. Also includes all male laborers.

ratios of .54 and .72, which would suggest a decline in the relative position of this group over time. A more appropriate comparison, however, would be between the 1981 farmers and the bottom two-thirds of the 1876 farmer category because each of these two groups would then correspond roughly to that quarter of the labor force at or near the bottom of the income distribution. Were one to assume a comparable income variance

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among farmers in 1876 as observed in 1981, then the ratio of the income of this bottom two-thirds of farmers to the income of all others in 1876 would be as low as the farmer-nonfarmer income ratio in 1981.

Only limited credibility can be placed in such fragile figures as we have for 1876, but pending the availability of better data, they suggest that overall inequality is not too different now from what it was at that time. The situation may be a little more unequal if Hunt's figures are close to accurate, or perhaps a little less unequal if his capital income estimates are seriously downward biased. Certainly one cannot presume that a net worsening (or a net improvement) occurred over the hundred years that followed.

Income Distribution during the Export Boom of 1890–1930

Most students of the export boom between 1890 and 1930 (or the longer period up to 1940 analyzed by Hunt) have surmised that the character of economic change led to increased income inequalities. The partially overlapping modern and urban sectors were expanding but still small, and the focus of the export sector was increasingly the coast, with its above-average income. Due to lack of detailed national accounts estimates, one can only guess at the increase in per capita income that took place. Population growth averaged around 2 percent.[59] If the gross domestic product grew at 3.5 to 4.5 percent over the period (consistent with Boloña's indirect estimates, which seem as good as any for this period),[60] then per capita incomes would have increased by 1.5 to 2.5 percent and income per employed person somewhat faster as the participation rate fell. Given a modest increase in the modern-sector share of the labor force from 8 to 13 percent (consistent with available evidence),[61] and an average earnings ratio between the modern sector and the rural traditional sector (excluding profits) of three to one in 1940,[62] it would appear that incomes must have been rising in both the rural traditional and the urban traditional sectors, as well as in the modern sector. If Hunt's assertion that modern-sector earnings grew very slowly (if at all) is right, it would seem to imply that overall economic growth was quite slow (that is, below the 3.5 to 4.5 percent range suggested by Boloña's figures), or that the traditional sector was doing nearly as well as the modern sector, a result that Hunt and others are inclined to reject. A best guess (compromise) would seem to be that overall growth was slow, perhaps 3 to 3.5 percent per year, that modern sector incomes were growing slowly rather than remaining constant, as Hunt suggests for 1914–1940,[63] and that traditional-sector incomes were also growing slowly, perhaps at about the same rate as those in the modern sector.

Although this picture does not quite conform to Hunt's suggestion that "average income levels for the economy as a whole probably in-

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creased without any change in real incomes within either capitalist or traditional sector,"[64] a suggestion that would imply a declining income share for those persons still in the traditional sector by the end of the period, some trends nonetheless suggest worsening distribution. Profits from exports were on the rise (although a decreasing share was accruing to nationals); and the demand for certain skills was probably rising fairly rapidly, leading to a wage rise for the higher-income employees in the modern sector, which in turn accentuated the inequality in the distribution of modern-sector labor income. The differential between white-collar and blue-collar incomes remained large. Most persons whose incomes rose as they moved into the expanding modern sector were probably already above the median income.[65] The accelerating rate of population growth and the still extremely uneven access to education could have helped to accentuate inequality. Even so, if modern-sector incomes did in fact grow slowly, then a frequent source of increasing inequality in other countries was missing from the Peruvian picture. And the increase in export-sector employment, buoyed by the rapid increase in the number of cotton workers, should at least have given a push to the emerging middle-income group occupied in the modern sector. The reason that this desirable trend would not itself contribute to a decrease in inequality as conventionally measured (by the Gini coefficient) was the still small share of employment found in the modern sector.

A key question from the present perspective of trade-distribution links is whether income distribution would have evolved much differently had capitalist expansion had less to do with exports and more to do with local products. The empirical record is much too sparse to throw any light on this question.

The 1930s and 1940s Interlude

The export-led growth of the first three decades of the twentieth century was followed by nearly two decades of export stagnation, as first the Great Depression and then World War II wracked the Western world. Nevertheless, average GDP growth of about 3.5 percent was probably not much below the (estimated) rate for the previous period of export boom. The ratio of exports to GNP fell to 15.6 percent by the period 1945–1949. In several other Latin countries, this ratio fell below 10 percent.

Peruvian politics after 1930 reflected the growing influence of new social groups commonly identified as "middle class." For the first time in Peruvian history, policies of state economic intervention became coupled with exchange and import controls to extract surplus from export sectors for the benefit of urban groups. Food prices were politically sensitive, price controls were introduced, and tariffs on food imports were reduced or eliminated. The state also took steps to encourage the development of

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local enterprise in a variety of fields.[66] But the conditions were unpropitious for testing a new growth strategy, which explains in part the modest restructuring of the economy that occurred, the poor record of the unorthodox policies in the 1940s, and the resulting crisis in balance of payments and inflation. This combination brought the military back into power, supported by the traditional ruling class, and swung policy again toward outward orientation and liberalism.

Did the different pattern and (probably) slower rate of economic growth during this interlude lead to a narrowing of income differentials? Did the availability of more land for food crops (especially during the 1930s) and the attempts to keep food prices low or the expansion of government spending (in the 1940s) have positive distributional effects? The issue is complicated by the fact that although the export boom as a whole was over by the 1930s, the biggest employment generator among the exports—cotton—hit its peak at this time. As a result, employment in the modern sector grew more rapidly in the 1930s than in the 1920s, the last decade of the export boom.[67] And most modern-sector real wages performed more positively (or less negatively) over the 1930s than between 1914 and 1930, although this outcome may have resulted more from price movements than from anything else. For the period from 1930 to the late 1940s as a whole, real wages just about held their own in most of the lower-paying occupations (or industries), while showing modest gains in higher-paid ones and only in some Lima manufacturing industries ending the period as much as 25 percent above their 1930 levels. Workers in cotton, sugar, and mining were no better off, with miners appearing to have lost some ground, suggesting that their tie to the generally stagnant export sector may have constituted a drag. If one assumes that both price policy and expanding public expenditure helped mainly the middle-income groups, it is hard to identify any reason to suspect that the bottom 50 percent benefited much from this turn toward somewhat greater autonomy. Cotton's expansion may have benefited this group, but if so, the explanation lies with continued growth of an export industry that was out of phase with the export sector as a whole. A plausible guess might be that the middle-income groups (modern-sector workers and employees) gained at the expense of the richer and perhaps also the poorer during this period in Peru.

The Export Boom of the 1950s and 1960s

Thorp and Bertram note that "the re-orientation of the Peruvian economy in the years following the Depression was slight by comparison with other Latin American countries, while at the end of the 1940s Peru was unique in Latin America for the enthusiasm with which export-led growth, economic liberalism, and the general reintegration of Peru with the

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U.S. economy, were welcomed and encouraged by policy measures."[68] By the 1950s, policy-directed import-substituting industrialization had become the order of the day in most Latin countries, but by then, Peru was off on another splurge of export-led growth. The outward-oriented growth of the 1950s and 1960s was moderately fast, although the accelerating growth of the Peruvian population left a per capita income growth of just over 2 percent per year, not exciting for a "boom." The small expansion of the modern sector as a share of the labor force, coupled with rapid increases in modern-sector incomes, led Webb to conclude that the period was one of increasing inequality due to this exclusionary pattern of modern-sector growth, in contrast to the first four decades of the century as described by Hunt.

The period encompassed a good part of, but did not coincide with, a long cycle (roughly three decades from 1945 to 1975) of rising real wages for the groups of mainly modern-sector workers for which data are available. For most of these groups, real wages seem to have about doubled over these thirty years, for an average annual increase of 2 to 2.5 percent, about the same rate as per capita national income. Increases were comparable for the better-off and the not-so-well-off groups except that the two important agricultural groups, cotton and sugar workers, gained less: 72 percent for cotton workers from 1940 to 1975 and 47 percent for sugar workers. Although these groups gained strongly in the late 1940s and early 1950s as production of cotton and sugar for export boomed, their wages stagnated during the next two decades. Apart from the evidence of atypically large improvements in sugar and cotton wages in the early years, the employment and distributional effects of this export-led growth must be sought less directly. One indication comes from the degree of employment creation in the export sector. As the boom got under way in the early 1950s, the export mix was still fairly labor-intensive. The increase in sugar and cotton production reflected a renewed government push to expand the irrigated land on the coast. After rapid early expansion, cotton production tailed off due to price declines; sugar, however, held on into the early 1960s. But by 1970, with dollar earnings from exports up more than fivefold and export quantum up by a factor of 3.8,[69] their combined share was only about 11 percent of total export value. Meanwhile, fish products were carrying the day along with copper, the other major growth sector (see table 2).

With cotton's share peaking during the early part of this export boom, the export sector's contribution to working-class employment and income was probably greatest at that time. It would appear, however, that a fair amount of mechanization occurred after the 1940s,[70] leading to a substantial decline in the labor intensity of the cotton sector. In the early 1940s, a possibly generous estimate for employment in the production of all exports would be in the range of 290,000 to 340,000 workers,[71] 9.3 to

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10.9 percent of the labor force. Exports accounted for about 20 percent of GNP, and value added in their production say 14 or 15 percent. By 1972, with cotton's contribution to the total figure greatly shrunken, my guess would be that total export employment ranged between 200,000 and 245,000 workers (of which sugar and cotton now accounted for only about 57,000), or 5 to 6.5 percent of the labor force.[72] Meanwhile, exports equaled about 15 percent of current-price GNP, and the value added in their production perhaps about 10 percent. The decreasing relative labor intensity of exports during this boom (at least in the latter part of it) did not bode well for distributional effects. It was also a major factor in the slow growth of total modern-sector employment, one to which Webb has attributed a worsening of overall distribution during the period from 1950 to 1966.

In summary, one may surmise that inequality fell somewhat after the guano boom, although on the basis of no more evidence than the fact that guano income was quite concentrated. Weak evidence exists of a mild worsening during the early-twentieth-century boom, when the share of the top decile or so probably rose with the expansion of modern-sector employment and the increasing rents to export-sector capital. During the interlude from 1930 to the late 1940s, some redistribution may have taken place from the highest-income group to the expanding middle group (perhaps the second and third deciles). Beyond that level, it is hard to speculate. Finally, during the boom from the 1950s to the mid-1960s, the gains may have been concentrated in the modern sector, leading to a worsening of distribution.

TRADE, GOVERNMENT, AND INCOME DISTRIBUTION

During most of Peru's history as an independent nation, the small elite that ran the country continued to view the masses as a group more to be exploited than to be helped, and the elite consequently directed few expenditures their way. Perhaps worse yet, the government showed little inclination to invest in sectors like small manufacturing and agriculture in the sierra, which neither belonged to the elite nor were viewed as offering the economic potential of mining and coastal agriculture.

Although it was not in the nature of Peru's nineteenth-century governing elite to redistribute by means of the budget, the taxability of traded goods was relevant then, as now. Guano was a low-cost natural-resource export that produced very high rents. Such exports, and international trade more generally, tend to generate the high rents that provide a good base for taxation. When the opportunity is seized, the public sector may become the main link between trade and income distribution. In the case of guano, the public-sector link might have produced somewhat inadvertently a favorable (or less unfavorable) distributional effect

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had the railroad expenditures turned out better than they did. In the twentieth century, public expenditures have been increasingly developmental and welfare-spreading over time, albeit mainly to middle-income groups rather than to the poor.

When the collapse of guano revenues in the 1870s obliged Peru to begin constructing a modern tax system, it relied mainly on customs duties supplemented by a few internal excises. The country has continued to depend heavily on trade-related taxes during most of the twentieth century, with half or more of revenues typically associated directly with international trade (including personal and profit taxes on incomes earned from that trade).[73] Tax incidence by income groups is harder to gauge. Hunt suspected, based on very rough calculations, that the system had become more progressive over the first half of the twentieth century. Whether or not this guess was true, Webb's more detailed but still rough estimates for the 1960s implied a strong progressivity, with the top-income quartile in 1961 paying about 85 percent of all taxes, and the other three quartiles (in descending order) paying 10.3 percent, 3.6 percent, and 0.9 percent.[74] The estimated tax burden rose from 4 percent for the lowest income quartile to 17 percent for the highest, burdens that increased somewhat over the 1960s.

The redistributive potential of the budget depends on its size, which was small through the 1940s[75] (when expenditures were around 10 percent of GNP) and most of the 1950s (when they were still well below the "normal" level of other countries at Peru's level of income per capita).[76] By 1960–1965, the ratio of expenditure to GDP had jumped to 17 percent including transfers, or around 12 percent excluding them. The composition of public expenditures has also changed radically over the course of the twentieth century. In 1900 education, health, and development accounted for only 5.6 percent of expenditures and an almost invisible 0.5 percent of GNP; by 1965 they made up 52.6 percent of government expenditures and about 9 percent of GNP.[77] During the 1920s and 1930s, education's share of government expenditures seems to have been stable at slightly above 10 percent, implying that it was a little over 1 percent of GNP until it began to rise in the late 1940s to reach about 5 percent over the 1960s and the 1970s. The dramatic increase in expenditures since the 1940s reflected the pressures on the Peruvian government to allocate a greater share of political and economic output to groups newly arrived in the political arena. Although such pressure might have been present latently, it would presumably have borne less fruit in the form of public expenditures had the trade sector not produced the corresponding revenues. Yet the importance of trade in Peru apparently did not produce even a normal level of government revenues and expenditures during the early part of the century, and thus the fact that the revenues were trade-based did not lead in this case to the high public-sector revenues and expenditures that international comparisons might have suggested.[78]

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OVERVIEW

Peru's traditionally heavy participation in the international economy as an exporter of primary products has been matched by an equally stubborn pattern of income equality. The main implication of the last one hundred years' experience is that a Peruvian-type primary export model is consistent with extreme levels of inequality, and thus such a strategy cannot be counted on to reduce significantly the income gap between rich and poor.

Paucity of data make it impossible to test statistically for causal links between the patterns of trade and distribution or to probe the more detailed proposition that each major export boom coincided with worsening inequalities, which then receded somewhat during the interludes between the booms. Because distribution appears to have differed little between 1876 and a century later, at least as far as the shares of the top few percentiles and the bottom few deciles go, the conclusion that distribution worsened on balance over the first sixty or seventy years of this hundred years would imply that it most probably improved in the late nineteenth century after the end of the guano period.

During the twentieth century, no clear ties between distribution and the international trade cycles can be demonstrated. This outcome may simply reflect the sparseness of the data. It is also possible that although no clearly demonstrable overall worsening or improvement may have occurred, significant shifts have nonetheless taken place, in particular an increasing share for those deciles (the second and third from the top, more or less) who over time became the rising middle-income group (including the better-paid manual workers). The income share of this group has probably tended to rise as it distances itself socially and economically from the low-income working class, and an important aspect of Peru's twentieth-century political evolution has been this group's gradual wresting of power from the narrow traditional elite. Just how the country's international trade links affected that process is hard to trace. It seems likely that the outward orientation did raise the government's share of GNP (although the case is not ironclad because that share was low by international standards), and it is evident that from at least the 1920s on, the pattern of government expenditure worked substantially to the benefit of this middle-income group. If trade has had a major effect on distribution in Peru, it is perhaps as likely to have come via this mechanism as via the factor intensities of traded goods or the ownership distribution of capital used in producing those goods.

At the same time, the higher average labor productivity for exports than nonexports (sometimes reflecting high rents), the evidently high concentration of income generated by some of them, and the general tendency for the rich to monopolize the most productive assets suggest

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mechanisms whereby heavy involvement in trade could have accentuated income concentration at the top. Also possibly significant is the fact that the success of mineral and coastal agricultural exports has reduced the pressure for the country to raise the productivity of (and hence the income from) very poor Indian highland agriculture. Because this sector has not been called upon to provide the bulk of exports and can even be relieved to some extent of the food supply function by imports, the Peruvian state has traditionally neglected it.

Thus the die for Peru's income distribution pattern seems to have been cast long ago, even though in the nineteenth century the model was not totally inegalitarian, as evidenced by the abolition of the Indian head tax and the railroad construction boom based on guano income. In the twentieth century, especially the last few decades, government policy has been decreasingly elite-serving. The fiscal process appears to have become more or less progressive. Agrarian reform finally occurred, and education has grown very fast. The manufacturing sector became important under import substitution and more recently under export promotion. But all these new developments seem mainly to have had the potential to redistribute within the modern sector. The twentieth-century increase in the rate of population growth in Peru has probably worked to maintain high levels of income inequality, both by contributing to a high supply of labor relative to demand and through the faster vegetative growth of population in the poorer regions of the country. And the central factor in Peruvian poverty—the low productivity of the sierra agricultural population—has simply not received serious attention.

NOTES

1. See, for example, Richard Rubinson, "The World Economy and the Distribution of Income within States: A Cross-National Study," *American Sociological Review* 41 (Aug. 1976):638–59.
2. Samir Amin, *Accumulation on a World Scale*, vol. 1 (New York: Monthly Review Press, 1974); Celso Furtado, *Economic Development of Latin America* (Cambridge: Cambridge University Press, 1972); and Norman Girvan, "The Development of Dependency Economics in the Caribbean and Latin America," *Social and Economic Studies* 22 (1973):1–33.
3. John C. H. Fei, Gustav Ranis, and Shirley W. Y. Kuo, *Growth with Equity: The Taiwan Case* (Oxford: Oxford University Press, 1979).
4. See, for example, the country studies included in *Trade and Employment in Developing Countries*, vol. 1, *Individual Studies*, edited by Anne O. Krueger, Hal B. Lary, Terry Monson, and Narongchai Akrasanee (Chicago: University of Chicago Press for the National Bureau of Economic Research, 1981).
5. Christian Morrisson, "Domestic Income Distribution and the Structure of Foreign Trade," mimeo, 1985.
6. Morrisson's independent variables included per capita income, rate of secondary school enrollment, and share of exports in GDP as well as the export structure variables cited above. The question inevitably arises as to whether his equations omitted important determinants of the level of inequality.
7. Two interesting and ambitious attempts along these lines are Irma Adelman and

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Sherman Robinson, *Income Distribution Policy in Developing Countries* (Stanford, Calif.: Stanford University Press, 1978); and Gian S. Sahota and Carlos A. Rocca, *Income Distribution: Theory, Modeling, and Case Study of Brazil* (Ames: Iowa State University Press, 1985).

8. Shane J. Hunt, "Growth and Guano in Nineteenth-Century Peru," in *Latin American Economies: Growth and the Export Sector, 1880–1930*, edited by Roberto Cortés Conde and Shane J. Hunt (New York: Holmes and Meier, 1985), 265.
9. Rosemary Thorp and Geoffrey Bertram, *Peru, 1890–1977* (New York: Columbia University Press, 1978), 321.
10. These figures were taken from the Banco Central de Reserva del Perú, *Memoria 1985* (p. 114). They differ somewhat from those of the World Bank in *World Tables: The Third Edition*.
11. See, for example, Shail Jain, *Size Distribution of Income: A Compilation of Data* (Washington, D.C.: World Bank, 1975).
12. Santiago Macario, "Protectionism and Industrialization in Latin America," *Economic Bulletin for Latin America* 9, no. 1 (Mar. 1964):75, t. 5.
13. Large Latin American countries are defined here as those having over five million people in 1960.
14. Based on figures taken from World Bank, *World Tables, 1980* and *World Tables: The Third Edition*, vol. 1, *Economic Data*, 1984.
15. Daniel M. Schydlowsky, "The Tragedy of Lost Opportunity in Peru," in *Latin American Political Economy: Financial Crisis and Political Change*, edited by Jonathan Hartlyn and Samuel A. Morley (Boulder, Colo.: Westview, 1986), 220.
16. Carlos Alberto Boloña, "Tariff Policies in Peru, 1880–1980," Ph.D. diss., St. Anthony's College, Oxford, 1981, 134.
17. Ibid., 232.
18. For example, see Gary Fields, "Employment, Income Distribution, and Economic Growth in Seven Small Open Economies," *Economic Journal* 94, no. 1 (Mar. 1984): 74–83.
19. World Bank, *World Development Report 1986*, 198.
20. See Thorp and Bertram, *Peru, 1890–1977*, 4. For a detailed treatment of trade and economic change in the nineteenth century, see also Heraclio Bonilla, *Un siglo a la deriva* (Lima: Instituto de Estudios Peruanos, 1980).
21. As noted by Thorp and Bertram, *Peru, 1890–1977*, p. 353, n. 3.
22. Jonathan V. Levin, *The Export Economies: Their Pattern of Development in Historical Perspective* (Cambridge, Mass.: Harvard University Press, 1960), 112–20.
23. Hunt, "Growth and Guano," 257. Other important analyses of the impacts of the guano episode are Juan Maiguashca, "A Reinterpretation of the Guano Age, 1840–1880," Ph.D. diss., University of Oxford, 1967; and Heraclio Bonilla, *Guano y burguesía en el Perú* (Lima: Instituto de Estudios Peruanos, 1974).
24. Hunt, "Growth and Guano," 258.
25. Ibid., 270.
26. Ibid., 274.
27. Ibid., 275.
28. Ibid., 277.
29. Ibid.
30. Ibid., 304.
31. Ibid., 286.
32. Thorp and Bertram, *Peru, 1890–1977*, 23–25.
33. Ibid., 38–40.
34. Carlos Alberto Boloña, "Tariff Policies in Peru," 70.
35. As of the mid-1890s, Peru's labor force numbered some 1.53 million, interpolating between the number from the 1876 census and a 1908 figure of 1.71 million based on Hunt's estimate of growth at 1.15 percent per year between 1908 and 1940. See Shane Hunt, *Real Wages and Economic Growth in Peru, 1900–1940*, Discussion Paper no. 25 (Boston: Boston University, Center for Latin American Development Studies, 1977), 13.
36. High labor productivity does not necessarily imply high capital intensity because total

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factor productivity in the export items was probably somewhat above the economywide average due to high levels of rents or efficiency. But with labor productivity this far above the national average, it would be very unlikely that the export mix was labor-intensive in the sense of its labor-capital ratio.

37. Hunt, "Growth and Guano," 266.
38. A detailed picture of the functioning of the sugar estates is presented in Peter Klaren, *Formación de las haciendas azucareras y los orígenes del APRA*, 2nd ed. (Lima: Instituto de Estudios Peruanos, 1976).
39. See, for example, Thorp and Bertram, *Peru, 1890–1977*, 41.
40. Ibid., p. 359, n. 1.
41. Ibid., p. 359, n. 2.
42. Ibid., 41.
43. Management of the family hacienda was traditionally left to the least-able son, whose brothers would move into politics and the liberal professions in order to contribute wherever possible to that key attribute of the successful hacienda, a nearly limitless access to credit. When a financial crisis in the last half of the 1870s was followed by the physical destruction of the War of the Pacific, perhaps only a third of the sugar loans were recovered via liquidation. Various financial institutions collapsed as a result, and losses to individuals were widespread. See A. Garland, *Estudio económico: la industria azucarera en el Perú (1550–1895)* (Lima: Imprenta del Estado, 1895), 12.
44. Thorp and Bertram, *Peru, 1890–1977*, 340–41.
45. Unless Garland's 1895 figure as cited in Thorp and Bertram (p. 48) was seriously overestimated relative to Hunt's data for 1912 and subsequent years. See Hunt, *Real Wages*, t. 8.
46. This estimate was made by using data from Thorp and Bertram, *Peru, 1890–1977*, pp. 177, 340–41, and by relating the average for 1940–44 and 1935–39 to that for 1901–3.
47. Hunt, *Real Wages*, t. 10.
48. Thorp and Bertram, *Peru, 1890–1977*, 62–63.
49. Ibid., 63.
50. Heraclio Bonilla, "The New Profile of Peruvian History," *LARR* 16, no. 3 (1981):220.
51. Norman Long and Bryan Roberts, *Miners, Peasants, and Entrepreneurs* (New York: Cambridge University Press, 1984), 1.
52. Webb estimated for 1961 that the top 1 percent in the income hierarchy received about 25 percent of the national income; he assigned nearly 80 percent of all capital income and "almost all property income" to that group. See Richard C. Webb, *Government Policy and the Distribution of Income in Peru, 1963–1973* (Cambridge, Mass.: Harvard University Press, 1977), 8. The 1981 population census, no doubt understating capital incomes rather seriously, produced a figure of about 15 percent (imprecise because of the open-ended top income category); the true figure was presumably well above this level.
53. In estimating the income share of the richest percentile in 1876, three of Hunt's categories are relevant: taxpayers, 1.04 percent of the labor force with 7.1 percent of national income, using his figures (for which I suggest some adjustments herein); government employees, 0.74 percent of the labor force with 4 percent of national income; and the capital income categories not allocable, with the information available, to any group of the labor force, amounting to 7.6 percent of national income (see table 3). If the taxpayers were the top 1 percent in income level and had all of the capital income, their share would be 14.7 percent. In fact, some other persons must have had incomes greater than those of some taxpayers, putting them in that top 1 percent, including some government workers and some professionals (who are not distinguished in Hunt's calculations) as well as others. Thus on the one hand, the income share, before inclusion of capital income, would exceed the 7.1 percent accruing to the taxpayers. On the other hand, some (although perhaps not much) capital income would go to lower groups. These two biases might offset each other, neither being likely to exceed 2 percent of national income.
54. It is true that for some other groups to which the *jornalero* wage was applied an underestimate may have resulted. See Hunt, "Growth and Guano," 289–90.
55. In this estimate, I have adjusted farmer incomes down by 20 percent (assuming the

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same average income for farmers as for other groups in Hunt's category "farmers"), tripled taxpayer income, quadrupled rural and urban rent, and quintupled returns to agricultural capital. The national income estimate is now higher by 31.2 percent (see table 4, "High Inequality"). The 1 percent who were taxpayers would then be earning 16.2 percent of national income; unallocated capital income would be 23.6 percent of total income, so if one attributes to them even half of that capital income, their share would exceed 25 percent.

56. Underreporting is assumed to be one-third for taxpayers, one-half for rental income, and two-thirds for income from agricultural capital; and the downward adjustment of farmer incomes by 20 percent is retained as in the "high inequality" case. National income would then be about the same as Hunt's estimate: the taxpaying 1 percent would have been earning 10.8 percent of income, capital income would have been 16.0 percent, and the (somewhat differently constituted) top 1 percent would be estimated to have received about 25 percent of all income.
57. See Albert Berry, "Foreign Trade and Income Distribution in Peru," mimeo, 1986, t. 6.
58. See Instituto Nacional de Estadística, *Censos Nacionales VIII de Población III de Vivienda, 12 de julio de 1981*, vol. B, tomo 1 (Lima: Instituto Nacional de Estadística, 1984), p. 297.
59. See Hunt, *Real Wages*, 3.
60. Boloña's figures and an assumed growth of 2.5 percent over 1900–1904 imply an average of 4.1 percent over the thirty-year period. See Boloña, "Tariff Policies," 70.
61. This estimate is based on the modern-sector employment figures presented by Hunt together with estimates of the total labor force based on his Table 3 and interpolations. See Hunt, *Real Wages*, t. 10, t. 3.
62. A comparison of incomes across such different settings is inevitably open to question. The behavior of modern-sector recruits suggests an income and welfare gap for a given level of skills, but its dimensions could be debated. See Hunt *Real Wages*, 21–22.
63. Ibid., t. 20.
64. Ibid., p. 28.
65. As of 1940 or so, wages in mining, while not high, were well above average labor earnings in the Peruvian economy as a whole (probably a little less than twice as high). Those in the sugar industry roughly equaled the average economywide, although they were well above the blue-collar average and far above the norm for agriculture. Cotton wages were somewhat but not greatly below those of sugar. Overall, it would seem that these sectors exerted upward pressure within the labor markets where they operated. Their competitiveness was not based on paying less than going wages, although the sugar industry was notorious for its efforts to get cheap labor and its initial inability to attract Indian labor from the sierra. Use of the enganche notwithstanding, the sugar workers on the coast undoubtedly enjoyed higher levels of income in material terms than they would have obtained in the traditional sector. Whether living standards were better is less clear and partly a matter of definition. Still, it is of interest that many of those who escaped the clutches of their labor contractors chose not to return to the sierra but merely went to work for a different sugar hacienda. See Hunt, *Real Wages*, 21.
66. Thorp and Bertram, *Peru, 1890–1977*, 148.
67. The 1920s fell within the eleven-year dictatorship of Augusto Leguía, a time of grandiose economic plans, extravagant government spending, and occasional harsh repression justified in the name of economic progress. But employment in commodity production expanded little, and total employment expansion relied on the tertiary sectors, whereas its principal sources in the 1930s were to be cotton and mining.
68. Thorp and Bertram, *Peru, 1890–1977*, 147.
69. These data refer to daily market wages and understate (sometimes greatly) the incomes of members of co-operatives after the agrarian reform.
70. Thorp and Bertram note a study by CONESTCAR (Convenio de Cooperación Técnica, Estadística y Cartográfica), *Aspectos económicos an el cultivo del algodón en el Perú* (Lima: Ministerio de Agricultura, 1965). It found that the wage bill made up only a third of total costs whereas in the 1930s, this ratio had been nearer 50 percent even though wages were at that time substantially lower (as were modern input costs in all probability). See Thorp and Bertram, *Peru, 1890–1977*, 402.
71. Figures on cotton employment are hard to interpret due to the mixture of paid workers

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(braceros), share-tenants (*yanaconas*), and others as well as the combination of seasonal and more permanent work.

72. A decline in the labor intensity of coastal agriculture is reflected in the 10 percent reduction in total agricultural employment over the intercensal period between 1961 and 1972.
73. Shane Hunt, "Distribution, Growth, and Economic Behavior in Peru," in *Government and Economic Development*, edited by Gustav Ranis (New Haven, Conn.: Yale University Press, 1971), 408.
74. This interpretation is based on applying Webb's tax incidence ratios (from his Table 4.2) to his income distribution figures (his Table 2.1). See Webb, *Government Policy*, pp. 2, 47.
75. Prior to this period, it was probably even lower. Boloña, whose ratio for the 1940s is a little higher than Hunt's, puts it at 8.6 percent for 1900–1909 and 7.8 percent for 1910–1919. See Boloña, "Tariff Policies," 349.
76. This judgment was made by Hunt, using figures from Jeffrey Williamson, "Public Expenditure and Revenue: An International Comparison," *Manchester School* 29, no. 1 (Jan. 1961). See Hunt, "Distribution, Growth, and Economic Behavior," 391. Such comparisons are, of course, hazardous.
77. Hunt, "Distribution, Growth, and Economic Behavior," 398.
78. Gillis et al. have noted that more open economies are easier to tax than less open ones. They also observed that countries having a relatively large production of oil and minerals, and hence a high share of resources in exports, possess considerably greater taxable capacity than other countries at similar levels of per capita income and openness. See Malcolm Gillis, Dwight Perkins, Michael Roemer, and Donald Snodgrass, *Economics of Development* (New York: Norton, 1985), 289–91. As of the late 1970s (to which their data refer), Peru appeared to have a lower than average tax ratio given its openness (measured by the ratio of exports to GDP) and its export structure. If this finding is and has been true of Peru, it would be helpful to know whether Peruvian openness has not had the generally expected positive effect on the tax share of GDP or whether other factors have outweighed that positive effect.

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