

# CEPAL

## Review

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## Review

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## Prebisch and the relation between agriculture and industry

*Carlos Cattaneo\**

This article focuses on one of the lesser-known facets of the vast and fruitful work of Raúl Prebisch in the field of Latin American economics: i.e., the work he did in the early 1950s on training in agricultural development plans and projects, at a time when this activity had barely begun in the countries of the region, at least on an organic and systematic basis.

This analysis of Prebisch's ideas in this field is based fundamentally on the cycle of five lectures which he gave in October 1951 as part of a course organized by the Latin American Training Centre on Agricultural Plans and Projects and Related Matters. These lectures have the great merit of showing us some basic concepts in Prebisch's thinking (such as his integrative concept of the economic development process of the region), analysed from the agricultural standpoint, as his lectures were directed to a public made up mainly of professionals connected with this sector, especially those discharging public functions in it.

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## I The conceptual framework: development and undeveloped countries

In his first lecture in this cycle,<sup>1</sup> Prebisch defined undeveloped countries as those having the following characteristics:

i) a high proportion of their economically active population worked in agriculture and other branches of primary production. Prebisch considered this to be the most outstanding characteristic of such countries;

ii) this population employed in primary activities used primitive techniques inferior to those of the developed countries, and

iii) their population growth rate was high.

Prebisch established a relation between the first two aspects by postulating that a high proportion of the active population was employed in primary activities precisely because the techniques used were primitive. He also stressed that these characteristics were not incompatible with a high degree of development of certain primary activities, such as those oriented towards exports, in view of the special interest of the developed countries in such branches. The developed countries had made a significant contribution to the spread of technology to those activities, because they provided food and raw materials for their own development. In areas of production directed almost exclusively to the domestic market, however, the situation was different, although each country had its own special characteristics deriving from its natural resources, climate and other aspects.

Proceeding to the analysis of what constituted a development process, he defined it as "the gradual spread of modern production technology to primary production and all the other branches of the economy in order to increase productivity and hence raise the per capita income of the population" (Lecture No. 1, p. 4). The consequences of that process were the same

<sup>1</sup> Raúl Prebisch, "Problemas del desarrollo económico en América Latina", Lecture No. 1, Latin American Training Centre on Agricultural Plans and Projects and Related Matters, Santiago, Chile, 23 October 1951, *mimeo*.

as those observed in all the central countries: a gradual reduction in the proportion of the active population working in primary production (although Prebisch stressed that this phenomenon also took place in industrial production, since part of the population employed in such activities moved over to the services sector). That reduction was due to the increase in productivity resulting from the spread of technology, which meant that fewer workers were needed in order to produce the same amount of goods (both agricultural and industrial). The process had different features, depending on whether it concerned an undeveloped country or a developed country: whereas in the former the active population displaced by the increase in productivity moved from one sector of the economy to another, in the latter these moves were within sectors.

Obviously, this kind of definition raised doubts regarding the precise limits for considering a country developed or undeveloped. Even in the Latin America of those days, countries such as Argentina and Uruguay were on a similar level to countries such as the United States or Canada in terms of the percentages of their active population employed in primary and industrial activities. This situation was also observed in other countries which might very superficially be considered "agricultural", such as Australia, New Zealand and Denmark. Did this mean —asked Prebisch— that the development process had already ended in those countries? Obviously not! In those countries (and this was a point of fundamental importance in his analysis) there was a sufficiently wide margin for improving productivity in agriculture and transferring the "surplus" active population to industry or services. Prebisch posited that when this transfer of population took place *between* sectors, then the country in question was still undeveloped, whereas if it took place *within* sectors, then the country involved was a developed country.<sup>2</sup> Consequently, and by quite a wide margin, the Latin American countries (including Argentina and Uruguay) were still in the first-named category.

<sup>2</sup> "A country ceases to be undeveloped when agriculture and other branches of primary production are no longer able to provide appreciable numbers of workers for transfer to industry and other activities" (Lecture No. 1, p. 5).

In short, the transition from one state to another depended on the generation of increases in productivity in each sector and the existence of displacements of workers within the sectors. In order to back up these assertions, Prebisch presented in his lectures some figures for various of the cases analysed. He showed how in the United States the proportion of the active population employed in agriculture had gone down from 72.5% in 1820 to 21.1% in 1940, with the surplus personnel from agriculture being transferred to industry and, in particular, services; thus, the percentage of the population employed in industry rose from 12.1% in 1820 to 30% in 1940, while in services the percentage rose from 15.4% to 48.8% between the same years.<sup>3</sup> He also highlighted the cases of New Zealand and Denmark, which in mid-century showed values similar to those of the United States.<sup>4</sup>

Prebisch then went on to analyse the causes of the decline in the population employed in primary activities in proportion as technology was introduced into them. He stressed in particular two factors: i) the changes that higher income caused in the population's demand, connected with the low income-elasticity of food (Engel's Law) and ii) the changes that technology brought with it in the use of foodstuffs and raw materials (lower proportions of these in the final product, replacement of natural raw materials by synthetic products, and greater efficiency in their use through integral utilization of by-products).

In addition to these elements, which Prebisch

<sup>3</sup> Prebisch said that the fact that the shift of population from agriculture was to services rather than industry was due to an inherent characteristic of economic development, which required a larger amount of services (commerce, transport, State activities, etc.) as the process was intensified. He also warned, however, of an aspect which was to be observed in the undeveloped countries: i.e., the existence of a wide range of services of very low productivity (Lecture No. 1, p. 6). Later, in the second lecture which he gave on this course, he mentioned this as an additional factor tending —through the downward pressure it exerted on wages, which was transferred to prices— to cause a deterioration in the terms of trade which adversely affected the countries producing primary commodities (Lecture No. 2, p. 6).

<sup>4</sup> In 1945, 23% of the economically active population of New Zealand worked in agriculture, 30.6% in industry and 46.2% in services. In the case of Denmark, the 1940 figures were 29% for agriculture, 32.6% for industry and 38.5% for services (Lecture No. 1, p. 7).

described in an extremely detailed manner, there was another factor of great importance in his analysis: the fact that in industrial demand, the proportion accounted for by raw materials did not grow as fast as the value of the product. Thus, he said, "as production technology advances it is not possible for the same proportion of people previously employed in the primary production sectors to continue working in them, because changes in demand and in the type of products mean that relative demand for primary commodities will account for a progressively smaller share of the total demand of the community. Thus, it is absolutely inevitable that there should be a decline in the population employed in primary production as production technology advances" (Lecture No. 1, pp. 8-9).

From this fact, Prebisch drew one of the most important arguments for defending the need to industrialize the countries of the region, when he raised the question of where there could be industrial growth to absorb this displaced primary population. From his analytical standpoint, it was not reasonable to locate still more industry in the developed countries, since in practice the latter lacked an essential condition for making this feasible: the mobility of the human factor was hampered both by the restrictions that those countries imposed on such movement and by another series of characteristics (including those of a cultural nature to which Prebisch gave some prominence) which made labour mobility impossible in practice. Prebisch noted that, on the contrary, the process had taken place in the opposite

manner: the population displaced from primary production by technical progress had not moved to the industrial centres, but instead the machinery from those centres had tended to come to places where there were "people displaced by technical progress: that is to say, this process entails the industrialization of the periphery, as a most essential condition for the progress of agricultural technology" (Lecture No. 1, pp. 9-10). Indeed, Prebisch's analysis even went so far as to question the need to extend technology to agriculture unless there were at the same time a process of industrialization of the countries of the region: "... to a large extent, there would be no point in extending technology to primary production, since if the people thus displaced from their jobs cannot emigrate and it is not possible to bring machinery in to industrialize their countries, then what will they do? What point would there be in technical progress in agriculture if the people displaced by this progress could not find jobs in other productive activities? There would be little or no sense in this" (Lecture No. 1, p. 10).

Hence, for Prebisch, the industrialization of the periphery does not represent a choice, but a necessity imposed by the growth process itself: "There is no longer any question as to whether or not it is necessary to create industries when a country develops. It would appear to be totally inevitable that technical progress itself will make it necessary to create industries in order to absorb the people that cannot find jobs in agriculture and primary production ..." (Lecture No. 1, p. 9).

## II

### The relation between agriculture and industry within the context of a development process

In the second lecture of the course,<sup>5</sup> Prebisch tackled the subject of the relation between agri-

culture and the other sectors of the economy in the development process. To begin with, he did so through questions which he put to his students as a stimulant. These questions were the following:

— Why has agriculture developed relatively slowly in some countries compared with industry?

<sup>5</sup> Raúl Prebisch, "Problemas del desarrollo económico en América Latina", Lecture No. 2, Latin American Training Centre on Agricultural Plans and Projects and Related Matters, Santiago, Chile, 24 October 1951, *mimeo*.

— Why is it that industry is usually prosperous, but not agriculture?

— Why is it that in some countries traditional agriculture producing for domestic consumption has grown slowly whereas other new products for domestic consumption or certain export items have grown rapidly?

While it was not his intention to try to arrive at definitive conclusions which would solve these complex matters, Prebisch tried to set forth what he called an "analytical methodology" aimed at separating and suitably appraising the various elements that came together in inter-sectoral relations. He considered that the lack of a proper objective diagnosis of the situation—due precisely to the lack of a suitably rigorous method of analysing the problems—was a fundamental shortcoming which must be overcome.

Taking up the thread of his previous lecture, Prebisch started out from the following concept: the proportions of foodstuffs and industrial products which enter into overall consumption depend on the level of income and the preferences of consumers. Consequently, if the level of income in a country remains constant and there is merely an increase in population, even if the per capita food consumption is very low compared with a recommended diet or with the potential resources of the country, the consumption of food will not increase. He drew a first conclusion from this: if there has been no increase in average per capita income, it can reasonably be assumed that the stagnation in food consumption is due to general factors *other* than those concerning agricultural production.

In order to demonstrate this assertion, he formulated a hypothesis in which he isolated the foreign trade variable by assuming it to be constant and limited his analysis to only two sectors: agriculture and industry. He also assumed that there were no limitations on the mobility of labour from one sector of production to another. Thus, he posited that the lack of congruence between the growth of industry and that of agriculture was due to two types of factors: i) those connected with the *demand* for agricultural products, foodstuffs and raw materials, and ii) those concerning *agricultural production* and the degree to which such production responds to the stimuli of industry and other sectors. Among these factors, he primarily stressed all those relating to

technical progress in agriculture, dealing with the question of land tenure last of all.

This sequence showed the order of priorities which Prebisch assigned to the factors limiting agricultural development and also the sequence which he recommended for a proper study of the topic. Briefly, his approach was along the following lines: first of all, the demand for agricultural products should be studied, and if the limitations were not found to be in this area, the analysis should move to the question of supply, observing whether or not there was technical progress in agriculture, and if there were, looking into the structural factors involved, among which land tenure was one of the most important.

From this starting point, in order to verify the fulfilment of his hypothesis Prebisch embarked upon the analysis of various cases which showed how these factors worked in different situations. The elements he took into account were:

a) *Absorption of labour by industry*

In this respect he posited three situations:

- i) industry was not even capable of absorbing natural population growth;
- ii) industry absorbed only the extra labour due to natural population growth;
- iii) industry absorbed not only the labour produced by natural population growth but also that which was surplus to the requirements of the primary sector.

b) *The absence or existence of technical progress in industry*

Bringing all these elements together (table 1) generated six different situations with different effects on agricultural development. Of the six situations presented, only three represented a stimulus for agriculture (cases 3, 5 and 6). In the other situations (cases 1, 2 and 4) either the extra labour due to the natural population growth was not absorbed, or else it was absorbed, but without simultaneous technical progress in the industrial sector.<sup>6</sup> In these circumstances, there was no stimulus for agricultural production, since if the development of industrial pro-

<sup>6</sup> In reality, a stimulus was generated in case 4 too, but it was only very slight.

Table 1  
EFFECTS ON AGRICULTURE OF THE RELATION BETWEEN THE ABSORPTION OF LABOUR  
AND EXISTENCE OF TECHNICAL PROGRESS IN INDUSTRY

Technical progress industry	Absorption of labour by industry	Natural population increase not absorbed	Only natural population increase absorbed	Natural population increase and surplus labour from primary sector absorbed
Does not exist:		Case 1 Stagnation of agriculture/unemployment	Case 2 Slow growth of agriculture	Case 3 Demand for foods acts as stimulus for agriculture, leading to incorporation of technology (mechanization, etc.)
Exists:		Case 4 Very weak stimulus for agriculture	Case 5 Demand for foods acts as stimulus for agriculture, leading to incorporation of technology (non-mechanical)	Case 6 Heavy demand for foods acts as strong stimulus for agriculture, leading to incorporation of technology (mechanical, etc.)

Source: Prepared by the author on the basis of R. Prebisch, "Problemas del desarrollo...", Lecture N° 2, *op.cit.*

duction was slow and only took place through the absorption of the increase in the economically active population, the development of agriculture must necessarily be slow too. Prebisch asked: "Why should it be any other way? What incentive could agriculture have in this hypothesis for developing more quickly than industry? What incentive would an agricultural entrepreneur have for increasing his production beyond a level matching the degree and intensity of the demand from industry?" (Lecture No. 2, p. 4).

When he analysed these cases, Prebisch rejected the possibility that there could be "autonomous" development of agriculture, independent from that of industry, in view of the limitations necessarily affecting such an independent evolution. He maintained that: "once certain narrow limits have been passed, it is inconceivable that industry should develop more rapidly than agriculture or that agriculture should develop more rapidly than industry. There is a close interdependence between the two sectors of production which prevents one of them from developing more rapidly than the other" (Lecture No. 2, p. 8).

Although cases 3, 5 and 6 offered a stimulus for agricultural development, they reflected different situations. Case 6 was that which offered the best conditions for agricultural development. The expansion in industry attracted workers from the agricultural sector because of the pay-

ment of higher wages, thus bringing about a shift in population. Since in addition there was an increase in productivity in industry through the introduction of technical progress, the stimulus for agriculture reached its maximum level. As Prebisch said: "the broader the growth in industry, the greater the need for raw materials and for food for the population of industrial workers which has not only increased in number but also in per capita income" (Lecture No. 2, p. 6). In case 5, where industry only absorbed the extra labour due to natural population growth but did nevertheless register technical progress, and in case 3, where the excess labour from the agricultural sector was absorbed without any technical progress in industry, a stimulus was given to agriculture too, but it was less than in case 6.

After making this analysis, Prebisch was able to define clearly those situations where the unsatisfactory growth in agriculture was due to factors outside the sector. In the remaining situations, the key questions were: what obstacles stood in the way of increased agricultural production, and what prevented agriculture from reacting to the stimulus given by industry? Through this method of analysis, Prebisch progressively delimited and defined the different situations in order to arrive at the most suitable diagnosis in each case.

With regard to the three cases which were "favourable" to agriculture, Prebisch held that it

was necessary to study the various elements in them which affected agricultural production, so as to discover the "internal" factors limiting its development. He raised the question of whether land was available for extending the planting of crops and thus increasing agricultural production, and whether or not there was technical progress in agriculture.

He then went on to analyse one of the most serious problems for the region in this field: i.e., the shortcomings in the generation and dissemination of agricultural technology. Prebisch put forward by way of example the case of the United States, where the State had played a fundamental role through experimental stations, universities, land-grant colleges and other institutions. There, he said, the development of agricultural technology had been "the result of a process of socialization of technological research". He held that "only to a small extent" had it been the result "of individual actions by entrepreneurs who invest resources in the promotion of a technical innovation", since, unlike the situation in industry, "the agricultural entrepreneur does not usually have at his disposal the enormous resources needed for technological research and its dissemination". If the situation of the United States is compared with that of the Latin American countries, "where governments are spending only a tiny part of their resources on technological research and its dissemination to agriculture", said Prebisch, "we see why in many cases, in spite of demand incentives, agriculture has responded in such a makeshift and piecemeal manner". Consequently, he said, "even when there are powerful factors acting as an incentive for agriculture, it will not respond to them until there is simultaneously intensive action in the field of technology" (Lecture No. 2, p. 9).

In theoretical terms, the natural reflection of the absence of technological progress was the stagnation of the sector. At the same time, however, not all problems were solved simply through the incorporation of technology, since it might well be unsuitable for the various situations which existed.

With regard to case 5, for example, Prebisch held that in this case it was desirable to introduce technologies which increased the production per hectare without affecting labour use: in a case like this, mechanized technology would be coun-

terproductive. In this respect, he argued: "... what point would there be in reducing or saving labour in agriculture if industry does not have sufficient dynamic force to absorb this extra labour? It would simply be a question of changing one type of disguised unemployment (due to the low productivity previously displayed by agriculture) for other types of unemployment, giving rise to a situation where people either stand around in the fields without anything to do or concentrate like parasites in the cities" (Lecture No. 2, p. 12).

This situation contrasted with that seen in case 3, which could have resulted (as would need to be verified more accurately in a real situation) in favourable conditions for the introduction of labour-saving technologies such as mechanization.

After appraising the technological aspect, Prebisch mentioned the land tenure system as an obstacle to agricultural development. He only arrived at this point in his analysis, however, after having considered the limitations connected with the demand for agricultural products and the technological constraints on the supply side. As he said: "If the agricultural sector of a country has enjoyed favourable demand from industry and other sectors, has had at its disposal forms of technical progress which the far-seeing action of the State has made available to it, and has also had —either from private enterprise or through the action of the State— the necessary resources for capital investment and the introduction of new technical procedures, and yet if in spite of all this agriculture has still not developed, then we must see if it is not the land tenure system which is acting as a negative factor in all this".

He explained the economic reasons —connected with the appropriation of rents— why a rural landowner could leave his land producing inefficiently without this seriously affecting his interests, and he blamed the lack of response to stimuli by this type of producer on the fact that "because of the size of his holdings, the mere increment in land rents gives him sufficient means to live more or less comfortably without the problems and difficulties involved in any kind of process of assimilation of technology" (Lecture No. 2, pp. 10 and 11).

Towards the end of the lecture, Prebisch stressed once again the need to recognize the



intimate relation between the development of agriculture and that of industry and to act accordingly, eschewing absurd sectoral positions visualizing the growth of one of these sectors to the detriment of the other. He ended his lecture with the following words: "there is a very marked and close interdependence between agriculture, industry and the various other sectors of activity of a country, and ... in order to make our diagnosis of the problems affecting agriculture ... we must not base ourselves solely on the study of each of these sectors in isolation or concentrate on the possible demand potential that an indi-

vidual may have without taking into account his income; instead, we must consider the economy as a whole. ... It is therefore inconceivable that one of these lines can diverge very markedly from the other, because this would give rise to imbalances whose immediate manifestation is the deterioration of the terms of trade between the two sectors. Nor is it conceivable that highly advanced technical progress in one line should not be accompanied by technical progress in the other, since this would cause maladjustments with the most serious consequences" (Lecture No. 2, pp. 11-13).

### III

## Agriculture and the deterioration of the terms of trade

In this third lecture,<sup>7</sup> Prebisch took up the arguments of his previous lecture again, but dwelt on only one of the relationships with which he had been working: that concerning the existence of demand for foodstuffs by the developed countries. In this connection, he said, it was not possible to take the mobility of labour for granted, since in practice such mobility did not exist in the relations between developed and undeveloped countries, both for natural and social reasons and because of the "artificial barriers" erected by the first-named countries. That fact marked a fundamental difference from previous analyses made within the economy of a country, and it was therefore a key element in explaining the deterioration in the terms of trade. Prebisch maintained that not only was there no mobility of labour from the undeveloped to the developed countries (which, according to the theoretical postulates of the classical economists, must necessarily take place with the introduction of technical innovations in the forms of production used by the latter) but, in fact, the only case of major movement of labour at the international level

had taken place in a direction which was the opposite to that needed in order for the excess labour of the undeveloped countries to find employment in the industrial countries. That movement had taken place in the second half of the nineteenth century, when there were big migrations from the European countries—especially the Mediterranean lands—above all to the United States, Australia and South America.

Since the processes of transfer of labour to the developed countries had not taken place, the *virtual* excess of labour (that which technical progress could generate in the primary production sector) would tend to freeze or depress wage levels in the undeveloped countries, resulting in a decline in the prices of their products. In the developed countries, in contrast, the opposite would take place: there, instead of helping to reduce the prices of industrial products through the lower operating costs, technical progress would tend to raise wages.<sup>8</sup>

In short, the developed countries would transfer the real drop in production costs due to technical progress to wage rises and would therefore maintain the level of prices of their products.

<sup>7</sup> Raúl Prebisch, "Problemas del desarrollo económico en América Latina", Lecture No. 3, Latin American Training Centre on Agricultural Plans and Projects and Related Matters, Santiago, Chile, 25 October 1951, *mimeo*.

<sup>8</sup> For a detailed explanation of this process, see Armando di Filippo, "El deterioro de los términos de intercambio, treinta y cinco años después" in *Pensamiento Iberoamericano*, No. 11, Madrid, January-June 1987, pp. 365-369.

In contrast, the lack of progress in industrialization in the undeveloped countries would give rise to the opposite situation (table 2).

Table 2  
EFFECT OF LABOUR SURPLUS DUE TO  
INCORPORATION OF TECHNICAL PROGRESS

*In developed countries:*

Wages rise  
Prices of goods do not go down  
Technical progress is incorporated  
Benefits of technical progress are retained

*In non-developed countries:*

Wage levels remain unchanged or go down  
Prices of primary commodities go down  
Benefits of technical progress are not retained

Prebisch said in this respect: "By creating a labour surplus, technical progress demands that this labour should be absorbed by industry. And it is only if this labour is vigorously absorbed by industry that it will be possible to prevent the fruits of technical progress from being transmitted abroad in the form of lower prices. This explains the fundamental importance of the development of industry and other activities in order to absorb the surplus of manpower generated by technical progress in the primary production sector" (Lecture No. 3, p. 5).

On the basis of this argument, he indicated the "pointlessness" of disseminating technical progress in agriculture unless there was a parallel process of industrial development: "What would happen, I ask you, if this drop in the employed population were not matched by a dynamic force in industry and other activities that could absorb this population, provide it with the means of subsistence, and prevent it from adversely affecting the agricultural sector by tending to keep down wage levels? What good would it be to a country which is operating its agricultural sector with primitive techniques if it incorporated modern procedures which displaced labour from the sector but caused that same labour surplus to weigh down on rural wage levels" (Lecture No. 3, p. 6).

Linking together the two questions—that of intersectoral relations and that of the deterioration in the terms of trade—he said that "all the savings obtained through the reduction of production costs would merely be reflected in a drop

in international prices and, instead of making it possible to raise domestic wage levels, the results of the technical progress thus introduced into agriculture would oblige the country, because of the pressures of higher production, to lower its prices, so that instead of remaining within the country, the fruits of technical progress would be transferred abroad" (*Ibid.*).

Prebisch then pursued his analysis of his theory of the deterioration in the terms of trade, although he did so cautiously and sought to keep down the tone of his formulations, noting that: "... I am not at this moment seeking to put forward any general theory on the terms of trade, but merely explaining a simple mechanism without which it would not be possible to understand the problem of the terms of trade ... I have not formulated any kind of immutable law but simply drawn attention to a phenomenon which occurred in a certain period of time under the influence of certain forces" (Lecture No. 3, pp. 6-7).

In referring to the factors intervening in the price movements registered among the countries producing foodstuffs and raw materials, he emphasized the following elements:

a) In the developed countries:

- i) the intensity of industrial growth (which has a disproportionately small effect on the demand for foodstuffs and raw materials); and
- ii) the barriers placed in the way of the entry of raw materials and foodstuffs from the undeveloped countries.<sup>9</sup>

b) In the undeveloped countries:

- i) the population growth rate;
- ii) the intensity of the technical progress taking place in the primary production sector;<sup>10</sup>
- iii) the amount of land available; and
- iv) the extent of the absorption of surplus labour by industry and other activities.

The existence of different relations between the prices of primary commodities and those of

<sup>9</sup> This question, which was one of Prebisch's main concerns during his period at the head of UNCTAD (1964-1969), was dealt with in detail in the next lecture in the course we are analysing here.

<sup>10</sup> Both factors (this one and that referred to in note 9 above) exerted considerable influence on the type of employment and on wage levels.

industrial products, he observed, was explained by the combination of the above elements, which gave rise to a very varied range of situations. Prebisch's theory regarding the behaviour of these factors sought to explain why those relations acted to the detriment of primary commodities. In order to demonstrate this theory, he took as his first example the opposite case: that is to say, one in which the terms of trade improved for a country producing such goods. In order for that to take place, one or more of the following situations had to exist: a) an increase in demand for the goods in question by the central countries; b) the absence of a plentiful supply of land for the production of the goods, or c) the easy incorporation into industry, at higher wages, of the labour displaced from the production of those goods because of the incorporation of technology.

Prebisch maintained: "There are therefore a number of favourable factors (in this case) ... which help to keep up the value of the goods in question through active demand and enable the technical progress introduced into this branch of production to give rise to higher wages. Why? Because in proportion as there is a surplus of labour, it is absorbed by industry at higher wages, and when it is absorbed at higher wages there also tends to be an increase in the wages of agricultural workers: that is to say, the introduction of technical progress has not caused wage levels to stagnate but to rise, assuming, of course, that the price of the goods in question has remained stable during the process of technical progress" (Lecture No. 3, pp. 9-10). In this hypothesis, the terms of trade of the goods in question with the industrial countries would have remained constant.

Another situation in which there would be an improvement in the terms of trade in favour of primary commodities would take place when it became necessary to use new land of lower productivity to satisfy the demand for the goods. In that case, argued Prebisch, there would be an increase in land rents which would be reflected in an increase in the price of the goods, with consequent favourable effects on the terms of trade.

An analysis of what happened in agriculture in Argentina gave Prebisch an additional argument to back up his theory. In the 1920s, a pro-

cess of mechanization of agricultural work was begun in that country because of the "high" cost of labour. Prebisch considered that this process perhaps went too far in economic terms, since within a short period there was a labour supply which was required neither by agriculture, which had now been partially mechanized, nor by industry, which was still in an incipient stage at that time. Consequently, wages did not rise, and this displaced labour became an incentive for extending production, thus helping to give rise, as a final result, to a situation of over-production of certain cereals (such as wheat) in the world. Prebisch concluded his analysis of this case in the following words: "this is a typical example of how technical progress tends to transfer its benefits to the countries which purchase primary commodities rather than remaining in the producer countries. *An essential condition in order to prevent this occurring is a high degree of absorption of the surplus labour.* When scanty absorption of the surplus labour force by industry is combined with an abundance of land opened up due to the expansion of means of transport, this represents the combination of two factors which are unfavourable from the point of view of prices. One of them prevents a rise in wages, while the other reduces production costs still further by bringing into cultivation land with higher yield. Thus, the lower the degree of absorption of labour in industry and the higher the degree of opening up of new land, the stronger will be the effects on the levels of international prices (Lecture No. 3, p. 13).

Prebisch concluded this part of his lecture by setting forth his ideas on the matter in the light of the most usual situation (drop in prices and deterioration in the terms of trade) registered with respect to the products of the Latin American countries: "This drop is probably due to the fact that while the benefits of the technical progress of the industrial countries have remained in those countries through the well-known phenomenon of higher wages, it may well be that in the countries which depend on primary products, because of the high rate of population growth and the slow industrialization — and I might also say because the terms of trade have deteriorated — all these factors have helped to transfer the benefits of technical progress in the countries producing primary commodities to the

industrial countries, through a relative drop in prices (*sic*)" (lecture No. 3, p. 14). He also noted, however, that this theory could only be proved in absolute terms when a study was made on the

variations in prices on an article-by-article basis, in order to see how the factors inherent in the situations of the developed and undeveloped countries had operated in each case.

## IV

### Agriculture, industry and international trade

In this fourth lecture,<sup>11</sup> Prebisch began his reasoning process by asking whether or not it suited the undeveloped countries to embark on industrialization. In the light of the arguments of classical theory, the response must be a downright no. According to the logic of this school of thought, these countries should concentrate on producing more and better primary commodities in order to trade them for the manufactures produced in the centres. Why? Because industries installed in an undeveloped country could not compete, on account of their lower productivity, with similar industries already installed in the centres, unless some kind of protection was arranged. This raised the question: why use labour in "artificial industries" whose production costs are higher than in the great industrial centres, thus making necessary customs protection? Why, instead of using this labour for industrial production, should it not be used to increase agricultural production and thus expand exports? (Lecture No. 4, p. 3).

As we all know, Prebisch's views in this respect did not coincide with the classical theories. This was confirmed by his assertion that "even though the productivity of the labour employed in such an industry may be well below that of the labour employed in the same kind of industry in an advanced industrial centre, there is nevertheless every justification for setting up such an industry if it gives employment to labour which has been displaced from the primary production sector by technical progress and would otherwise

not be employed. To the extent that this labour contributes to a net increase in the production of goods that the country needs, then there will be a net increase in the country's income" (Lecture No. 4, p. 4). Indeed, Prebisch reasoned that: "because of technical progress, not so many people are needed in the primary production sector but more workers are required in order to satisfy the demand for industrial goods and services. If this is so, then it is not possible to see, logically, how undeveloped countries which have a high proportion of their economically active population in the primary production sector should continue to keep up that high proportion despite technical progress, sending abroad the agricultural products which they cannot consume themselves". Finally, he said: "The mere statement of this hypothesis shows how absurd it is to pretend that, despite the introduction of technical progress, the proportion of the active population employed in primary production should be maintained at the same level".

It is worth noting here, however, that Prebisch's position on this subject was not absolutely categorical. He mixed it with a good deal of pragmatism when he recognized that the question which should really be asked was: "which is better, to employ these people by using the capital available to a community for industrial production or by using it to increase primary production and to export a larger quantity of such products?" (Lecture No. 5, p. 5). His answer was that this dilemma must be determined in the light of the results that each course of action would give.<sup>12</sup>

<sup>11</sup> Raúl Prebisch, "Problemas del desarrollo económico en América Latina", lecture No. 4, Latin American Training Centre on Agricultural Plans and Projects and Related Matters, Santiago, Chile, 23 October 1951, *mimeo*.

<sup>12</sup> "We cannot take account only of the physical increase of production that would result from the employment of the labour made surplus by technical progress and by population

Thus, said Prebisch, perhaps in a small country whose production had little effect on the world market it would be reasonable to increase exports by channeling more resources towards agricultural production rather than towards the industrialization process. This would be so, provided that an increase in exportable output was not reflected in a drop in prices that would prevent a net increase in the income obtained. That is to say, it would be necessary to take account of the nature and size of the effect on prices in order to give a proper answer. If the answer were encouraging, concluded Prebisch, then it would indeed be advisable to increase exports rather than promoting industrial development.

He then went on to analyse more general situations, however, and approached the subject from a broader perspective, which led him to make a key assertion: before deciding in favour of one or the other of the alternatives, it was necessary to make a detailed analysis of the situation of each of the Latin American countries. He concluded that: "any increase in production beyond that required by the growth in demand — except in the case of some products which are affected in a particularly favourable manner by technical progress — leads to a drop in prices which may often be very severe, depending on the elasticity of demand" (Lecture No. 4, p. 6).

As we can see, Prebisch did not reject out of hand the "theoretical" possibility of taking advantage of the surplus labour force to secure increases in primary production. He took an objective attitude to the matter, however, and asked whether the whole of this production could really be sold on foreign markets without excessively affecting prices. The real situation in world trade at that time indicated that this was not possible, so that although this option might exist in theory, in practice there was no option but to promote industrialization. In order to demonstrate his assertions in that respect he even carried out a small numerical exercise.<sup>13</sup>

Bearing in mind, however, that in Prebisch's concept underdevelopment was a stage which

could eventually be left behind, it was necessary to think of a possible change in this respect when the undeveloped countries had reached the "rank" of the developed countries. In that case, when the population structure of the former came close to that of the latter, the continued absorption of agricultural labour in order to transfer it to industry would begin to be reflected in increasingly high costs. When that point was reached, argued Prebisch, the country would indeed have to pay close attention to the allocation of its productive resources to the various activities: the international trade problems would then be presented in the old classical terms. "Before that point is reached, however, as long as there is a labour surplus which cannot be economically absorbed by an increase in exportable production, then it is in the interests of that country to take that labour out of primary production and transfer it to industrial production, even though the latter may have higher costs than those of the international market" (Lecture No. 4, p. 9).

This clearly shows that in 1951 Prebisch did not totally reject the postulates of classical economics, considering them valid or suitable for explaining certain situations but not others, such as those concerning the undeveloped countries. Only when the latter countries had been turned into developed nations would the mechanisms described by the classical economists in this connection function perfectly. Before that point — which Latin America was still far from reaching — the application of such postulates would merely tend to aggravate the economic and social situation.

Prebisch stressed the importance of drawing a clear distinction between the above two stages in the development of a country in order to determine objectively the most suitable policy. In that respect, he slipped in a criticism of the Report of the Currie Mission to Colombia<sup>14</sup> because it maintained that the installation of a steel industry would only suit that country if the production cost was equal to or less than the cost of

growth. We must also look at the economic result that would be given". (Lecture No. 4, p. 6).

<sup>13</sup> Prebisch placed much emphasis on the low income-elasticity of demand for primary commodities, which could contribute to a glut of such goods.

<sup>14</sup> "Bases de un Programa de Fomento para Colombia. Informe de una misión dirigida por Lauchlin Currie y auspiciada por el Banco Internacional de Reconstrucción y Fomento en colaboración con el Gobierno de Colombia", Bogotá, Imprenta del Banco de la República, September 1950.

the imported product. For Prebisch, "the theoretical concept underlying this appraisal is based on premises quite different from those arising from the actual conditions of these countries which have available human potential" (Lecture No. 4, p. 10). He went on to insist on one of his central topics: the need to incorporate technical progress in both agriculture and industry. Why? Because this surplus available labour was not real: it was potential or virtual—it was the surplus which would be produced when technical progress was introduced in primary production.

Prebisch also recommended acting cautiously in this field, however. There could be no question of "sacrificing" agriculture in favour of industry. Bearing in mind perhaps the situation of Argentina in that period, he reflected: "we have seen many cases in Latin America, and indeed some very important recent cases, where labour has been taken from primary production without having given that sector the means for introducing the technical progress that would make such labour surplus. Thus, labour has been taken away from the sector when there was not a real surplus, but only a virtual one. There might have been a surplus of labour if, for example, agriculture had been mechanized or if yields had been increased to such an extent that a smaller cultivated area would have been enough to cover domestic consumption and export needs. A country which makes the mistake of prematurely withdrawing factors of exportable production in order to transfer them to industry would be causing an economic disturbance which might or might not be temporary, depending on the measures taken by that country to introduce into agriculture or into primary production the technical progress needed to enable that production to grow again" (Lecture No. 4, p. 11).

Once again showing his pragmatic attitude to the subject, he argued: "I do not establish my position in absolute terms, but in very relative terms. This surplus population must exist, but it will not do so unless industrial development has been accompanied by parallel technical development of agriculture. Otherwise, industry will stifle agriculture, causing serious problems for it without giving any timely solution". He went on to recommend: "instead of seeking to correct an imbalance of this nature, it is quite obvious that it would be better to forestall it, that is to say, it

would be better to promote industrial development to such an extent as to absorb the workers being made redundant by technical progress in agriculture, and nothing more. I should like to place some stress on this aspect of the problem, in order to warn you in good time of the perils of the generalization of a situation of this type" (*ibid*).

On a more theoretical plane, he went on to analyze the changes implicit in the industrialization process. He also entered (remember that we are talking about a lecture given in 1951) on a matter which is quite topical today: that of the subsidies given by developed countries to their primary activities. Why do these countries need to give subsidies? The explanation given by Prebisch was the following: "industrialization causes a rise in wage levels, or at least it leads to the transfer of people who were working for low wages in primary production to industry, where wage levels are higher. In this respect, it increases the average wages of the community. If there is considerable labour mobility in a country, then this phenomenon of the transfer of workers from a low level to a higher level gradually raises the average wage level. Consequently, there is a rise in the wages paid in poorly paid occupations, both in agriculture and in domestic service: a typical case of the absorption of workers by more productive activities. Now, if this is so, if wages rise through this process of 'contagion', of leveling-up as we have seen, and there are export activities whose technology has not been improved sufficiently to allow them to pay these higher wages, what is going to happen? The answer is that such activities simply cannot continue competing on the world market" (Lecture No. 4, p. 12). In such circumstances, it would be necessary to subsidize the activities in question in order to bring wages in all branches of production up to approximately the same level while not losing competitiveness due to the increased prices deriving from this process. Subsidies therefore had two causes: i) the trend towards the equalization of wages, and ii) the unequal technical progress of the different sectors and branches of the economy.

Prebisch put forward by way of example the case of the United States: "Why has the United States ... in spite of its tremendous efficiency in

certain lines of production, had to give protection from foreign competition not only to agricultural activities but even to certain industries? It has had to do so for the same reason: perhaps because in these industries productivity has not progressed as much as in other sectors or in other countries, or perhaps because in other competing countries wage levels have risen less than in the United States, because of the smaller increases in productivity. Thus, in order to make up for this wage differential it has been forced to resort to protection" (Lecture No. 4, p. 12).

Comparing this example with that of the Latin American countries, he said: "If this is the situation in the United States, then we should try to get a clear idea in our minds of what the problem is going to be like in countries with much smaller resources and potential, and we should not be surprised at the need for protection in countries with a capital density as low as ours" (Lecture No. 4, pp. 13-14). He went on to add: "Our countries are countries which have little capital. The average level of per capita capital is far below that of the industrial countries. How can it be possible, then, if productivity is a function of the per capita level of capital, that countries which are still in a backward stage of economic development can suddenly acquire the levels of productivity of the industrialized countries without possessing the necessary capital for

this? ... If we cannot achieve similar levels of productivity, then how can it be maintained that we can develop our industry to absorb the surplus labour from the primary production sectors without suitable customs protection? Such protection will have different degrees of justification, of course, according to the industries in question, but it seems clear to me that, in view of the difference in productivity, it would not be possible to establish the large number of industries needed to absorb labour and raise the total productivity coefficient without making use of protection" (Lecture No. 4, pp. 13-14).

Now, Prebisch—and he was to make this abundantly clear in many of his subsequent works—was never in favour of indiscriminate protection. What he was talking about in this lecture was "the protection needed to make up for differences in productivity. There is a world of difference between this and the idea of defending wholesale and exaggerated protection" (Lecture No. 4, p. 15).

Could there be some solution which avoided the use of subsidies? Yes, indeed there was such a solution, but Prebisch rejected it out of hand, for it involved the lowering of wages, which would bring with it, as he himself had pointed out in previous lectures, a deterioration in the terms of trade with its whole sequel of adverse effects for the countries of the region.

## V

### A development programme and policy

In this fifth lecture,<sup>15</sup> Prebisch first of all stressed the neutrality that economic development plans should have in order to ensure that they were free of any possible suspicion of being merely ideological. For Prebisch, a programme was a mechanism which could be adopted and used within the context of various global policies,

whether they were markedly "interventionist" or were based on unrestrained private enterprise.

The need to adopt a programme was due to the need to foresee the course of events. Recalling no doubt his own experience in Argentina in the 1930s, he noted that in the Latin American countries, during the Second World War and the immediate post-war period, "improvisation due to the effect of new and often unforeseeable circumstances" had led to a series of maladjustments and imbalances which were "hindering the smooth and orderly development of our economies". Those maladjustments were both external

<sup>15</sup> Raúl Prebisch, "Los problemas del desarrollo económico en América Latina", Lecture No. 5, Latin American Training Centre on Agricultural Plans and Projects and Related Matters, Santiago, Chile, 29 October 1951, *mimeo*.

and internal, and the imbalances were a dynamic consequence of the growth process itself. Except in the case of Venezuela and one or two other countries, the exports of the Latin American countries did not expand sufficiently to allow a growing country to satisfy all its related import needs. However, said Prebisch, "the fact that this persistent tendency towards imbalance exists in a considerable number of cases does not mean that such imbalance is an inevitable consequence of growth". In his opinion, the existence of such imbalance was due to the way the development process had taken place in the countries of the region: "devoid of any kind of programme". Consequently, in his view the establishment of a programme represented a precautionary act, "an elementary act for taking in good time measures which, when improvised, lead to upsets and maladjustments, as experience has shown" (Lecture No. 5, pp. 4-5).

Prebisch stressed later on that the programme did not specify how the State should operate in order to meet the requirements. "We do not hold an opinion on this", he said, but only on "the need to take some measures, by one means or another, to solve this problem" (Lecture No. 5, p. 5). In order to give a clearer idea of this aspect, he referred once again to Argentina, although without naming it directly. "There are countries", he said, "which have tried to take the industrial impulse a very long way. As a result of this, the country has needed increasing amounts of raw materials and capital goods on the one hand, while on the other hand agriculture has been neglected, there have been big investments in industry and public works, but it has not been borne in mind that capital goods and raw materials were obtainable mainly through exports. That aspect was overlooked, and agriculture was given neither the incentives nor the machinery needed to maintain and increase its volume of production". "Thus", he went on, "there comes a moment when the country cannot continue to progress in the industrial field because it does not have the resources to do so. It does not have external resources because agriculture has been neglected and has been given neither incentives nor means of capitalization which will enable it to produce the same or a larger amount than before with fewer workers". He concluded this section by noting "so you

have here another case where the lack of a programme that takes due account of the different aspects of the economy has led a country into a dead end, seriously prejudicing the development of its economy" (Lecture No. 5, pp. 6-7).

Later on, Prebisch showed how it was necessary to start from a suitable diagnostic study in formulating an economic development programme. From that starting point, after having identified the key problems, it was necessary to find ways of solving them through the technical means and financial resources available for making the necessary investments.<sup>16</sup> It would then be necessary to prepare a list of priorities for the efficient and effective allocation of those resources and means. Latin America's lack of this "list and order of priorities", which could only be provided through planning, thus represented one of the most serious limitations on the development process.<sup>17</sup>

After this reasoning, Prebisch indicated what the role of agriculture should be in a programme. To begin with, he asked himself: "First of all, is it possible or desirable to prepare an agricultural programme without taking into account the main lines of a general economic programme? I think that would be a serious error. If this were done, it might be possible to solve one or another partial problem of agriculture, but if what is desired is to stimulate agriculture as a whole and cause it to meet certain objectives, I maintain that the objectives of an agricultural programme could not be defined independently of the objectives of a general economic programme. Why? Because they could turn out to be incompatible, since certain agricultural objectives depend on the fulfillment of other general economic objectives". "Indeed", he continued, "we often see that agricultural plans are aimed at encouraging the production of certain crops for import sub-

<sup>16</sup> "This task of comparing and confronting ideas, this need to establish an order of priorities, has not been satisfied. We have been tackling each of the different aspects of our problems individually, in the light of our own experience, but without any overall view" (Lecture No. 5, p. 8).

<sup>17</sup> "I do not think we could find many examples at present of Latin American countries which have managed, through a systematic effort by their responsible economists, to prepare this table which is indispensable as the starting point for a programme" (Lecture No. 5, p. 9).



stitution purposes. But how is it possible to determine whether such substitution is advisable in agriculture without knowing whether there are other substitution possibilities in industry which are more economical and more desirable for the country?" (Lecture No. 5, p. 11). In that respect he mentioned the example of Mexico, which, he considered, had come to the conclusion that it was advisable to increase its exports of primary commodities in order to pay for its import needs.

Finally, Prebisch gave some words of warning about certain aspects which worried him with

regard to the way the development process was proceeding in the countries of the region; some contradictions in policy matters; and some forms of luxury consumption which he considered to be incompatible with development, stressing the importance of the role of the tax system in that respect. In that connection, he coincided with the view expressed in the Report of the Currie Mission that land should be taxed according to its production capacity so that "high-productivity land which is badly cultivated should pay a tax" of such a level as to lead the owner to sell it or cultivate it much better (Lecture No. 5, p. 15).