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**Article — Digitized Version**

## The dark side of technical progress

Intereconomics

*Suggested Citation:* Rucker, Manfred (1968) : The dark side of technical progress, Intereconomics, ISSN 0020-5346, Verlag Weltarchiv, Hamburg, Vol. 03, Iss. 7, pp. 214-215,  
<https://doi.org/10.1007/BF02930014>

This Version is available at:

<https://hdl.handle.net/10419/137988>

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they consider the volume of development aid given to India. Naturally they are rather prone to reduce the quantum of development aid on the grounds that their country is already bearing the heavy burden of feeding India for the last sixteen years. The reduction of American development aid obliges India to purchase some of its capital goods and spare parts in foreign currencies, which might have been received as aid in case the country had avoided the import of foodgrains from the USA.

#### **A Call for Canadian Collaboration**

One should therefore look for possibilities of increasing development aid for imports of investment goods

and of covering the demand for food supplies rather by ordinary foreign trade. Owing to India's 1966 rupee devaluation, we expect a change in the direction of export trade from America and Europe to Canada as well as African and Asian countries. Canada is able to produce wheat of good quality at lower costs than the USA or Australia. The obvious thing to do would be to intensify trade relations with Canada and to import Canadian wheat. Of course, it would be helpful, if, in the present circumstances, India might import wheat on a deferred payment basis. This would help our country to obtain self-sufficiency in food supplies by 1971 as it is planned.

### **Latin America**

## **The Dark Side of Technical Progress**

by Manfred Rucker, Mexico City

Since the end of World War II, there is no doubt that the countries of Latin America have made remarkable progress towards industrialisation. Apart from setbacks due to political or monetary causes or periods of stagnation in certain countries, there has been enormous growth over the last twenty years in Latin American industry, and industry has made a constantly rising contribution to the GNP.

Apart from the direct effects of World War II, however, (development of synthetics which have replaced many of Latin America's traditional exports, increased competition from the young nations of Asia and Africa, etc.), it is primarily the rapid increase in population—at 2.8 to 3.6 per cent p.a. this is the highest in the world—the deterioration in the terms of trade and the demand for a definite improvement in the social structure which make even faster and more effective industrialisation a necessity.

Although a large part of the new factories are equipped and organised in accordance with the latest discoveries of international technology, only a few Latin American countries (Mexico, for instance) have succeeded in decreasing the gap between themselves and other industrial nations; on the whole, most countries have difficulty in preventing this gap from increasing.

#### **Little Progress in spite of Modern Technology**

What is the reason for this unsatisfactory development? Apart from the fact that Latin America is faced simultaneously with a variety of problems, which industrialised countries were able to solve about 60 years ago, one of the reasons is probably too great a dependence upon knowhow from industrial countries.

This knowhow is used for very varied purposes and based upon a completely different set of circumstances than in industrial countries. Whereas industrial countries have to cut down on manpower by automation, thus incurring heavier capital costs, Latin America is forced to employ as much manpower as possible, with a relatively low level of education, thus saving capital.

The purchasing power of the population in individual industrial countries and the expansion of markets due to supra-regional arrangements or company goodwill built up over many years, together with a good horizontal industrial structure, means that industries can specialise locally, thus making good use of economies of scale by exploiting large, well-employed capacity and a limited production programme.

On the other hand, Latin American countries have a much smaller domestic market and, as a rule, only about one third or, at the most, one half of the population can be considered as real consumers. In addition, there are practically no export markets since these countries—when applying technology, which is aimed at large quantities of a small number of products—cannot keep pace with the already established competition from industrial countries, with its lower prices; for, with greater specialisation and more involved techniques the minimum economic capacity rises because of high fixed costs.

It is, of course, possible on the domestic market to create a defence against competition from imports by adopting a policy of protectionism, and this is what has largely happened in Latin America. But such a policy has considerable disadvantages: for one thing, the consumer has to 'fill the hole', i.e. when the product is assembled in the country, he has to pay a

higher price than if it is freely imported. On the other hand, this means that it is impossible to export national production or, at least, such production has to be heavily subsidised.

### **Expensive Products of Poorer Quality**

Thus a situation emerges in which, unlike previously, many industrial consumer goods are produced inside the country and employment is created, but these products are more expensive and of poorer quality than imported articles.

For this reason alone, although there has been an absolute increase in the GNP, the purchasing power per head of population has often decreased considerably. Additionally, because of the constantly rising minimum economic capacity of production plants, it is normally possible to justify only one—or a very few—factories of the same type in a single country; this again inhibits the manufacture of the corresponding investment goods and their spares in a country.

Therefore the foreign currency saved by import substitution is almost cancelled out by the demand for imported investment goods and the necessity to employ foreign specialists. Consequently, the growth of economic development due to the use of modern knowhow from abroad may even be diminished in many cases.

### **Unsuitable Supplies from Industrial Countries**

Although this is generally recognised, there are almost no technical alternatives today. It is a fact that countries which produce modern machines and plants, aim their products mainly at the requirements of industrialised countries or otherwise offer older equipment which, although smaller and simpler, has to be operated rather by skilled workers than by machine-crews. So far, it is only for a few products that machines and plants are available which are suited to the economic requirements of Latin America.

Attempts are being made to overcome this problem by expanding the markets (Latin American Free Trade Area and Central American Common Market) so as to be able to make use of modern knowhow successfully. In the long term it would be possible, in this way, to achieve economic production, but not to ensure the employment in industry of the growing population.

### **Solution: a Proper Choice of Techniques ...**

One way out of this dilemma is to develop modern techniques which, with a similar structure, would correspond more nearly to the targets of Latin America and other countries.

Basically, this is not a matter of finding new techniques; it is far more essential to choose and adapt from the mass of technical processes which have been developed during the history of modern technology, those which will give the best results in the particular

circumstances. It does not matter whether they have already been discarded in industrialised countries by 'modern', labour-saving, but capital-intensive processes.

Today, the majority of Latin American countries—in contrast to many other less industrialised countries—are sufficiently advanced to be able to tackle and solve such tasks successfully.

At the same time, here is an opportunity for industry in these countries; there is a constantly growing demand for machines which can be operated by relatively unskilled but labour-intensive manpower, whilst turning out good quality goods for a low capital investment. Machines whose functions, prices and running costs are in line with the levels of wages and skills present in developing countries, where there is primarily concealed unemployment, will therefore find both a national and an export market.

### **... but not in Isolation**

In this connection, the task of industrial nations would be to assist in the development of this type of investment goods. This is relatively easy, particularly because in many cases it is only necessary to fit older models with modern systems suited to the requirements of developing countries.

In order to achieve an effective and rapid development in this direction, it would be necessary: in industrial countries, for not only governments but also private firms to support this type of development; in developing countries, for people to stop thinking along prestige lines, so that they follow the newest developments in industrial countries. There should be a certain reservoir of well-trained local engineers and technicians who are able to tackle whatever adaptation and development is required.

Latin America ought to be able to meet these requirements; it has to be examined on what conditions private industry in the industrialised nations would be prepared actively to support such efforts.

### **Target No. 1: Competitiveness**

Whatever is done, the first consideration must always be the production of goods, which will be competitive internationally; i.e., it is not possible to manufacture every product either by a labour-intensive or a capital-intensive method with the same qualities and at the same cost. The first thing is to select those goods where both alternatives are possible. It must also be stressed that economic development only needs to be speeded up sufficiently to match industrial countries.

In the very long term, therefore, such a procedure would have to be developed further, so that wider employment and a rising standard of living of the current population is based on labour- and capital-intensiveness.