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Structural Change and Labor Productivity Growth in Latin American Manufacturing Industries 1970–96

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Summary. — This paper examines recent changes in the pattern of production specialization attained by Latin American manufacturing industries. Comparing Argentina, Brazil, Colombia, Chile and Mexico to the United States, the paper identifies “catching up” and “lagging behind” industries during 1970–96. It considers the evolution of macro and micro forces that affect whether an industry manages to close down the gap with the international technological frontier. Evidence is presented showing that recent structural reforms did not result in a major discontinuity with the past. Rather, “path dependency” forces have acted as a major factor explaining differential performance among industries after recent changes in the global incentive regime. © 2000 Published by Elsevier Science Ltd.

Key words — productivity growth, technological gaps, path dependency, structural reforms, Latin America

1. INTRODUCTION

Recent studies (Katz, Benavente, Crespi & Stumpo, 1997; Katz & Vera, 1997, 1999) examining some of the major changes that have taken place in the Latin American industrial sector during the last two decades have shown a major change in the pattern of production specialization of most economies. There has been a shift in favor of nontradable sectors—those producing telecommunication, energy or financial services, for example—as well as toward natural resource-processing industries—producing iron and steel, petrochemicals, nonferrous minerals, fishmeal, vegetable oil, pulp and paper, etc. In addition, electronic and garment *maquiladoras* (assembly plants), as well as automobile producers, have grown quite rapidly throughout this period in response to *ad hoc* industrial policies applied by local economic authorities.

Large domestically-owned conglomerates, as well as subsidiaries from transnational corporations (TNCs), have set up very modern, highly capital-intensive new production plants in the above mentioned fields. Leaving aside the case of nontradable goods and services, we notice that many of these new production facilities have become major exporters of industrial commodities to highly competitive world markets. Latin American firms act in

such markets as “price takers,” with little bargaining power and attaining low unit profit margins. Given the high degree of volatility shown by world prices of industrial commodities, the external sector of most Latin American economies now stands on rather weak foundations which need to be taken into consideration when we examine the long-term sustainability of the recent restructuring of the regional production fabric.

In contrast to the above, labor-intensive industries producing final consumer goods such as footwear or clothing, and engineering and R&D-intensive sectors producing capital goods, fine chemicals,¹ or scientific instruments, have been shrinking and contracting (with the exception of the electronic *maquila*). Following trade liberalization and market deregulation efforts the former have had a hard time competing with low-cost producers from,

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say, China or Vietnam, where wage levels are just a fraction of those typically paid in Latin America, while the latter have been unsuccessful in keeping up with the pace of technological modernization in areas characterized by large R&D and engineering expenditure, short product life cycles and high rates of technological obsolescence. As these industries have continued to incorporate the use of microprocessors, CNC technologies, new biotechnological know how, etc. at a breath-taking pace, Latin American firms have found themselves lagging further and further behind the world's technological frontier. The capability of these firms to compete in the international marketplace in such fields has lagged behind as a result of these trends.

In many countries of the region this process of change in the pattern of production specialization actually began during the late 1970s, i.e. prior to the so-called Debt Crisis, when the pace of domestic market-led growth began to slow-down. In others—particularly Chile—the restructuring toward natural resource-processing industries clearly resulted from the major transformation in the global incentive regime which obtained after the military takeover of 1973. It is important therefore to understand that the change in the pattern of production specialization we are about to examine in this paper did not come about in each country of the region as a result of trade liberalization and market deregulation efforts. In many cases, such change was already in the making well before structural reform efforts actually began.²

It is true, however, that in both cases a new relative price structure, less supportive of import substitution industrialization activities, has gained ground during the 1990s. Concomitantly, the flow of direct foreign investment and the process of capital formation have accelerated, under the impact of both a more liberalized and deregulated domestic institutional and economic environment and of a buoyant international capital market. Property rights in the area of natural resources have been strengthened and many institutions prototypical of more developed industrial societies—such as patent laws granting wider and stronger intellectual property rights—have been gradually adopted by most Latin American countries.

In short, the region's pattern of production specialization and its linkages with world markets are going through a major, and as yet

unfinished, transformation. Central to this process is a retreat to resource-based processing industries, to nontradable goods and services, to labor-intensive electronic and garment *maquiladoras*, and to vehicles and transport equipment receiving special *ad hoc* treatment from various governments in the region, notably Mexico, Brazil, Argentina, Colombia, Venezuela and Chile.

Our purpose here is to examine how the emerging new industrial structure has performed in terms of labor productivity growth *vis-à-vis* more developed industrial economies. Is the Latin American industrial sector “catching up” or “lagging behind” relative to the world's technological frontier? For the purpose of answering this question we shall use productivity growth in the US manufacturing sector as our benchmark.

For a study of this sort we should ideally be using estimates of total factor productivity growth. Figures for gross capital formation at the three-digit level of aggregation are unavailable, however, making it impossible to calculate such index. We have therefore decided to perform the comparison on the basis of labor productivity growth. Using for this purpose a data base recently put together at ECLAC we have examined the aggregate performance of the industrial sector of nine Latin American countries *vis-à-vis* the United States over 1970–96. We continue with a more detailed comparison examining labor productivity growth in 27 industries at the three-digit level of aggregation of the International Standard Industrial Classification of All Economic Activities (ISIC) for five countries—Argentina, Brazil, Chile, Colombia and Mexico—for 1970–96. Special attention is given to the 1990s, as this is the period in which structural reform efforts were strengthened.

In Section 2 we briefly discuss the analytical framework upon which the present research is based. In Section 3 we report our main statistical results. Section 3 also looks at some meso and micro aspects of recent changes in industrial production structure. In particular, we pay attention to the entry and exit of firms to and from the market, as well as to changes in the pattern of production specialization. Section 3 further summarizes our view concerning the relationship between changes in the macro-policy incentive regime and changes in the structure and behavior of manufacturing industry. Micro-to-macro linkages frequently remain unexplored in the literature on the

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